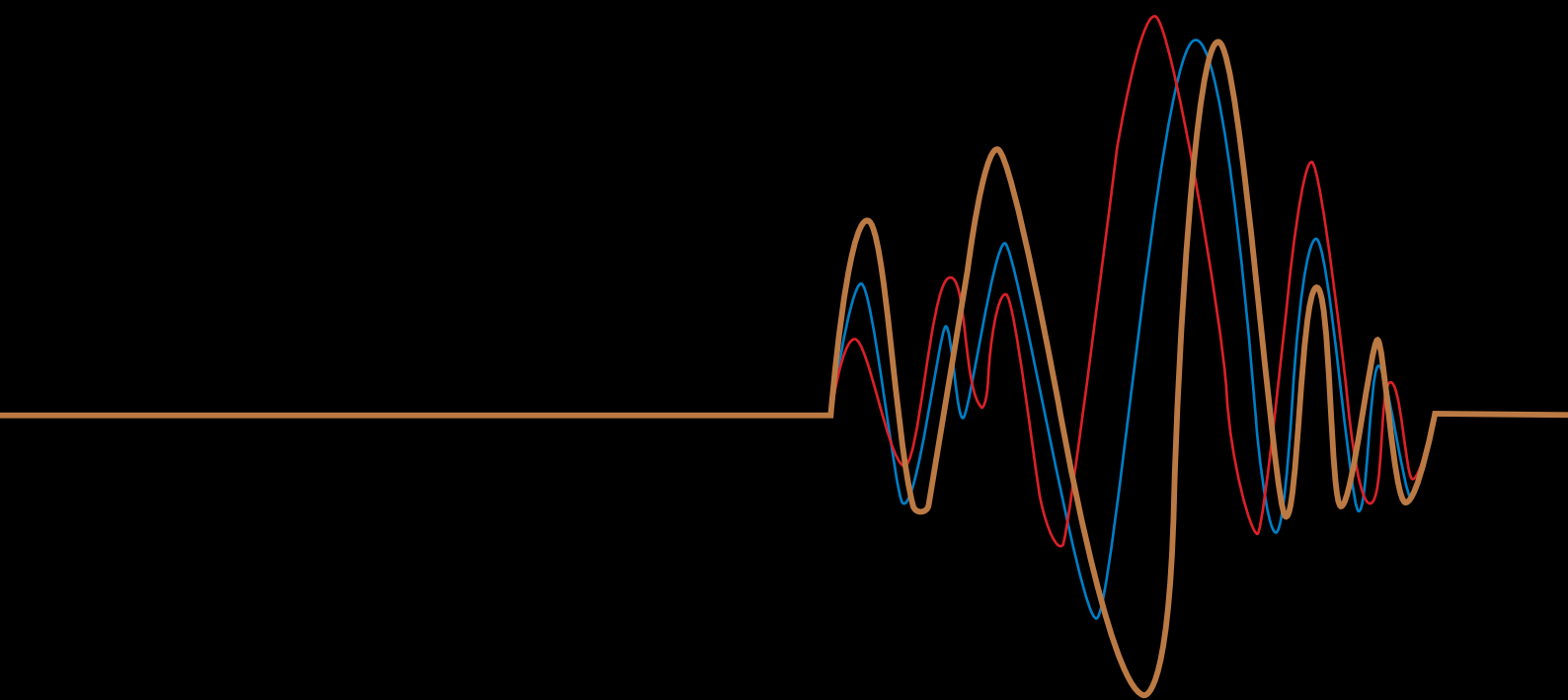


KISTI DATA INSIGHT Report no.24

Emerging Weak Signals 2023 in Science and Technology

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Summary

- Forecasting future technology is one of the pieces of information needed when the government establishes budget plans or when companies develop business strategies. As technology advances, the impact of technology on society increases, and changes in the industry caused by technology accelerate. Therefore, it is crucial to understand future technology to forecast society. Web of Science and SCOPUS are typical research databases, and they are typically utilized to predict future technological developments. Research literature refers to well-organized technical documents and is big data showing the latest research and development trends. With the advancement of big data and artificial intelligence (AI) technology, it is a trend to apply data-based machine learning methods to future technology forecasting. The Korea Institute of Science and Technology Information (KISTI) has been researching future technology forecasting methods based on big data and AI for some years. The research conducted by KISTI so far is mainly to detect clusters using paper citation relationships and interpret them as an emerging technology. Long-term data from paper-citation relationship clusters is learned to predict whether the respective clusters will grow. This method helped forecast the growth potential of the cluster with high accuracy. However, since it takes a relatively long time for an action called "citation" to occur, paper citation relationship clustering is an appropriate method for the technical fields that have accumulated over a relatively long period.
- We recognized the need for additional methods to detect changes over recent short periods. In particular, with the sudden outbreak of a global pandemic such as COVID-19, the need has increased for methods of detecting newly emerging weak signals, even if no data has accumulated over a long period. Recently, the European Commission's (EC) Joint Research Centre (JRC) has introduced an

advanced form of detecting weak signals in science and technology based on data analysis. The EC's weak signals were derived using text mining from the SCOPUS paper database. They were based on big data in the science and technology fields and showed an advanced approach for weak signal search. However, even in the EC's weak signal search process, the final weak signals were selected by reflecting the process of expert insights, such as manual filtering, custom-made indicators, and keyword grouping, in the second half of the whole process.

- We attempted to develop a method for automatically detecting weak signals without experts' help. If the fully automated detection process functions well, we can build a weak signal monitoring system that can operate constantly. We extracted keywords/keyword phrases using five-year paper data from SCOPUS, similar to the EC's methodology. Then, we used several parameters that measure the movement of keywords/keyword phrases to select "popping" keywords. Next, we used the SCOPUS paper text to build a word embedding model and measured the contextual similarity between the popping keywords. Based on this, we developed a method of automatically grouping popping keywords. The popping keyword group derived through this process was defined as a weak signal. We named this method a "weak signal automated detection process" and derived 439 weak signals from the 2017–2021 SCOPUS paper data. This report presents a list of 439 weak signals in 2023 derived through this method and also provides the result of comparing and analyzing 391 weak signals in 2022 and 439 weak signals in 2023, which were detected from the 2016–2020 SCOPUS paper database.



요약

- 미래기술을 예측하는 것은 정부가 예산계획을 수립하거나 기업이 경영전략을 수립할 때 필요한 정보 중 하나이다. 기술이 발전함에 따라 기술이 사회에 미치는 영향이 커지고 기술에 의한 산업의 변화도 가속화되기 때문에 미래사회를 전망하기 위해서는 미래기술에 대한 이해가 중요하다. 미래기술 예측에는 일반적으로 논문 데이터베이스가 이용되고, 대표적인 논문 데이터베이스는 Web of Science와 SCOPUS가 있다. 논문문헌은 잘 정리된 전문적인 문서로, 최신 연구개발 동향을 알려주는 텍스트 빅데이터이다. 빅데이터와 인공지능 기술이 발전함에 따라 미래기술 예측도 데이터 기반의 머신러닝 방법이 적용되는 추세이다. 한국과학기술정보연구원(Korea Institute of Science and Technology Information, 이하 KISTI)은 빅데이터와 인공지능 기반의 미래기술 예측방법에 대한 연구를 수년간에 걸쳐 수행하고 있다. KISTI가 그동안 수행한 연구는 주로 논문인용관계를 이용하여 클러스터를 탐지하고 이를 부상기술(emerging technology)로 해석하는 것이다. 그리고 논문인용관계 클러스터의 장기간에 걸친 데이터를 학습하여 미래에 클러스터가 성장할 것인지 여부를 예측하는 것이다. 이 방법은 높은 정확도로 클러스터의 성장성을 예측하는데 도움을 주었다. 다만, '인용'이 발생하려면 대체로 수년간의 시간이 소요되므로, 논문인용관계 클러스터는 비교적 장기간에 걸쳐 축적된 기술분야에 적합한 방법이라고 할 수 있다.
- 우리는 최근의 짧은 시구간에서 발생하는 변화를 탐지하기 위한 보완적 방법이 필요하다고 인지해왔다. 특히 코로나19와 같은 전세계적인 팬데믹이 갑작스럽게 발생한 사실을 경험하면서, 장기간 축적된 데이터에는 존재하지 않더라도 새롭게 등장하는 위크시그널(weak signals)을 탐지하는 방법의 필요성이 증가하였다. 최근 European Commission의 Joint Research Center(JRC)에서 데이터분석에 기반한 과학기술 위크시그널 탐색의 발전된 형태를 선보였다. EC의 위크시그널은 SCOPUS 논문 데이터베이스에서 텍스트마이닝을 이용하여 도출되었다. 이는 과학기술분야 빅데이터 분석에 기반한 것으로, 위크시그널 탐색의 진일보한 방식을 보여주었다. 그렇지만 EC의 위크시그널 탐색 프로세스에서도 전체 프로세스의 후반부에서는 전문가들의 검토와 필터링, 그리고 키워드 그룹핑 등

전문가의 식견에 의한 과정이 반영되어 최종적인 워크시그널을 선별한 것으로 보인다.

- 우리는 전문가의 도움 없이 워크시그널을 자동으로 탐지하는 기술의 개발을 시도하였다. 완전 자동화된 탐지 프로세스가 잘 작동한다면 상시적인 운영이 가능한 워크시그널 모니터링 시스템을 구축할 수 있다. 우리는 EC의 방법론과 유사하게 SCOPUS 5년치 논문 빅데이터를 이용하여 키워드/키워드 구문을 추출하였다. 그리고 키워드/키워드 구문의 움직임을 측정하는 몇 가지 파라미터를 이용하여 최근 떠오르는 키워드, 팝핑키워드(popping keywords)를 선별하였다. 그런 다음 SCOPUS 논문텍스트를 이용하여 구축된 워드임베딩 모델에 기반하여 팝핑키워드 사이의 문맥적 유사도를 측정하였다. 이를 이용하여 팝핑키워드를 자동으로 그룹핑하는 방법을 개발하였다. 이러한 과정을 통하여 도출된 팝핑키워드 그룹을 워크시그널로 정의하였다. 우리는 이 방법을 “워크시그널 자동탐지 프로세스”라고 명명하였고, 2017~2021년 SCOPUS 논문 데이터로부터 439개의 워크시그널을 도출하였다. 본 보고서에서는 이 방법을 통해 도출한 439개의 ‘워크시그널 2023’의 목록을 제시하였다. 또한 2016~2020년 SCOPUS 논문 데이터로부터 탐지된 391개의 워크시그널₂₀₂₂와 439개의 워크시그널₂₀₂₃을 비교하여 분석한 결과를 함께 제시하였다.
- 본 연구에서 제시된 “워크시그널 자동탐지 프로세스”와 워크시그널 탐지결과가 과학기술 전 분야의 워크시그널을 모니터링하는 데 도움이 되길 기대하고, 더 나아가 기술분야별 전문가 집단의 도메인지식과 결합하여 분야별 인사이트를 도출할 수 있기를 기대한다.

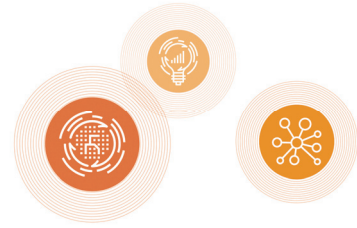
CHAPTER 01

Emerging Weak Signals



CHAPTER

01 Emerging Weak Signals



1.1. Introduction

➤ Technological Forecasting

Technological forecasting is the prediction of future characteristics of current technology or the detection of promising future technologies. The term “technological forecasting” has been around since the 1960s. After experiencing historical events such as the First and Second World Wars and lunar exploration, a consensus was formed on the importance of technological forecasting because technology was recognized as one of the very powerful drivers that can change the future of mankind and possibly trigger future changes. Launched in 1961 with the goal of “better policies for better lives”¹⁾, the Organization for Economic Co-operation and Development (OECD)¹⁾ realized how many opportunities technology provides for companies and countries and how much impact it has on society. It saw that policymakers need to understand technology and, going one step further, understand technological forecasting. As a result, the OECD tasked Jantsch, an astrophysicist and consultant scientist, with investigating technological forecasting for the OECD’s Directorate of Scientific Development. The resulting report, “Technological Forecasting in Perspective”²⁾ was published in 1967. Jantsch (1967) defined technological forecasting as an emerging field recognized in the management/business fields around the 1960s. He also defined technological forecasting as a probabilistic evaluation of the transition to future technology. Moreover, he explained the characteristics and methods of technological forecasting, technological innovation, and strategies. This report is the first to summarize the basic concept and methodology of technological forecasting.

Since then, technological forecasting has been re-examined from various perspectives. In his book “Technological Forecasting for Decision Making”, Martino (1993) defined technological forecasting as predicting the future characteristics of useful machines, procedures, or technology.

1) The Organization for European Economic Co-operation (OEEC), from which the Organization for Economic Cooperation and Development (OECD) originated, was launched in 1948 as a European economic cooperation organization supported by the United States Marshall Plan, but later, its 18 member countries, the US, and Canada joined together and created the OECD in 1961.

He argued that technological forecasting should be accepted as natural as weather forecasting, which is done every day, since every area—from individuals to companies, institutions, and countries—is affected by technological changes.³⁾ The United Nations (UN) Industrial Development Organization (2005) also published the Technology Foresight Manual⁴⁾, explaining that technological forecasting is required to identify new technologies that have the potential to bring the greatest economic and social benefits. In the 2000s, as the era of big data began, technological forecasting shifted from the traditional expert group-based method to the data analysis-based methodology. Woon and Madnick et al. (2008, 2009) published two reports on data-based technological forecasting^{5),6)}. They summarized various methods that perform technological forecasting by collecting literature data, extracting keywords, and detecting the growth potential of technology. As data analysis-based technological forecasting has become active, many studies have analyzed the data-perspective characteristics to detect promising technologies.^{7),8)}

In recent years, with the establishment of big data and the advancement of AI technology, technological forecasting methods have been becoming more advanced. In 2020, KISTI announced 100 promising technologies⁹⁾ that are expected to grow high in the future by learning research paper big data with AI. KISTI derived an AI model¹⁰⁾ that derives a technology list by analyzing big data on papers for 14 years from 2006 to 2019 and learns technologies that will show high growth in seven years. The accuracy was above 90%. This model analyzed the growth trends in the science and technology fields between 2006 and 2019 and selected the fields that will continue to grow in the next seven years. It helped many companies and organizations establish technological strategies to understand the present and the future.

Weak Signal

With the global COVID-19 pandemic outbreak in December 2019, we have entered an era we have never experienced before. Above all, we were confused because we could not forecast the outbreak of COVID-19, its strong transmissibility, and its long-term sustainability in an era where short and long-term forecasting is performed with high accuracy in various fields owing to the advancement of big data and AI. COVID-19 was a black swan^{11),12)}, which was beyond the current scope of predictive power and insight. So far, we have highly accurate prediction models that analyse long-term big data and predict trends. However, it was difficult to apply these models to new events, such as COVID-19, that could not be found in historical data. To overcome this drawback and supplement the conventional long-term data-based prediction methods, it has become necessary to study emerging weak signals, or small signals.

Ansoff (1975), a well-known strategic manager, first proposed the concept of a weak signal. In his paper “Managing Strategic Surprise by Response to Weak Signals”, he argued that environmental changes must be monitored to manage the impacts of sudden external changes

when operating corporate strategies. He used the term “weak signal” as a small signal from the outside that can cause a sudden impact¹³⁾. A weak signal refers to a small signal that has recently emerged. It is difficult to explain with empirical extrapolation, and its importance is unclear, but it is a sign that it contains information about what will happen in the future. In the past, searching for weak signals was when a group of experts determined whether there was a weak signal based on news. As a result, the dependency on experts was significant, and in many cases, there was a tendency to focus on specific fields, or the weak signal could not be identified in time. In particular, because weak signals are difficult to distinguish from noise, studies have been conducted to clarify the definition of a weak signal. Hiltunen et al. (2006) proposed a model to understand the characteristics of weak signals¹⁴⁾, and such a weak signal model is more like a conceptual methodology to help experts determine weak signals.

South Korean research institutes recognize the importance of detecting weak signals quickly in order to develop appropriate technological strategies for the rapidly changing technological environment in a timely manner. However, quantitative data analysis is still used as basic information for expert groups to select weak signal candidates. Furthermore, because the analysis target is often limited to a specific predetermined field, it is difficult to see the result as a weak signal in the true sense.¹⁵⁾

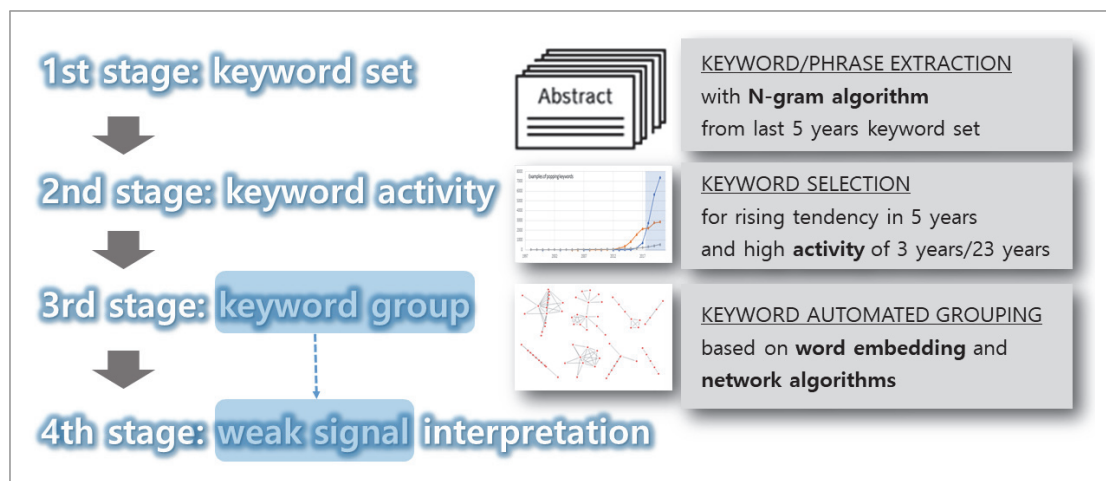
Recently, the European Commission (EC)’s Joint Research Center (JRC) has introduced an advanced form of detecting weak signals in science and technology based on data analysis^{16),17)}. They extracted keywords and keyword phrases from the SCOPUS paper database by text mining. Then, they measured the term frequency–inverse document frequency (TF–IDF) for keywords and the similarity between keywords to derive weak signals in 256 science and technology fields. The EC’s weak signal is a method of using data analysis—which had been used only as basic data—as the central role of the weak signal detection process. It was an advancement in the weak signal detection method. However, even in the EC’s weak signal detection process, the final weak signals were selected by reflecting the process of expert insights, such as manual filtering, custom–made indicators, and keyword grouping in the second half of the process. The science and technology sectors are becoming more subdivided and more complex. Therefore, it is assumed that a large group of experts must review the weak signal candidate list and select the final weak signals. Although data analysis plays a significant role in the weak signal detection method, expert dependence still exists.

We attempted a method of automatically detecting weak signals without expert help because if the method does not escape the dependence on experts, there will be a fundamental limitation in detecting weak signals in broad areas at the right time. If the fully automated detection process functions well, we can build a weak signal monitoring system that can be operated at all times without expert review and interpretation. This can help gain insights for establishing technological strategies in various fields.

1.2. Weak Signal Automated Detection Process

> Analysis Data

The database used to detect weak signals in the science and technology fields is the SCOPUS paper database. The Web of Science and SCOPUS are widely used as typical research paper databases. SCOPUS contains more journals than the Web of Science. Especially because it contains conference proceedings extensively, it is determined to be a more suitable database for weak signal detection, which needs to analyze the latest information. There are 22 types of literature included in SCOPUS: Abstract Reports, Articles, Books, Book Review, Business Articles, Book Chapters, etc. In this study, we used only five literature types: Article, Book, Book Chapter, Conference proceeding, and Review, which contain the latest information on science and technology. The bibliographic data of each document consists of items such as title, abstract, author keywords, author information, and institution information. To extract scientific and technological keywords and keyword phrases (hereinafter collectively referred to as keywords) among them, we extracted text data of three items—title, abstract, and author keywords—and used them as a text corpus for analysis. We used 15,276,962 documents for a period of five years, from 2017 to 2021, to extract the initial keyword list.



<Fig. 1> Data-based automated weak signal detection process

> Stage 1: Keyword set extraction

The initial keyword list was created by combining two keyword lists. The first keyword list is extracted from the titles and abstracts of documents. The text combining the document title and

abstract was tokenized, and an N-gram algorithm with N=5 was applied. Then, considering the part of speech, the lemmatization was applied. The second keyword list is an author keyword list of the documents. The lemmatization was also applied to the author's keywords. The two keyword lists were combined to create an initial keyword list with 26,380,650 keywords. For primary screening of the initial keyword list, we applied the TF-IDF and the growth tendency—the difference in the word appearance frequency between the first three years (2019–2021) and the second three years (2017–2019) in the five-year period. As a result, 63,956 keywords were selected.

Criterion 1. $TF_IDF \geq 0.8$

Criterion 2. $Tendency = \text{frequency (second three years, 2019-2021)} - \text{frequency (first three years, 2017-2019)} > 0$

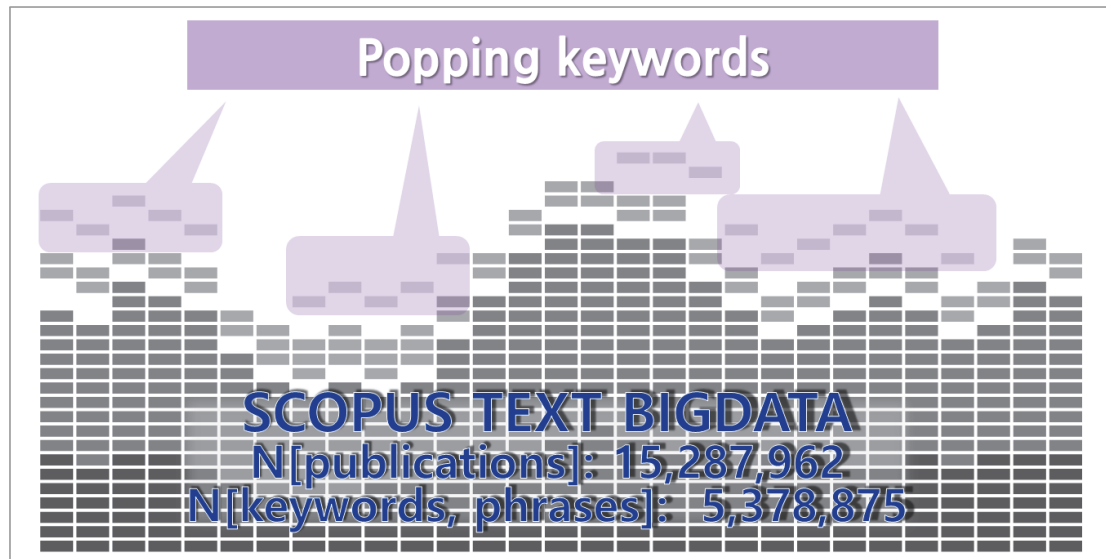
➤ Stage 2: Keyword activeness measurement

We measured the latest scale and activity for the keyword list derived from the 1st stage. The keyword scale refers to the condition that the frequency of appearance in the last three years is greater than or equal to a specific size. The keyword activeness was defined as a ratio of the keyword appearance frequency over the last three years to the appearance frequency over the last 23 years. This is to determine recent rapid growth and the up-to-dateness in the long-term trends of the keywords. As a result of applying the scale and activeness, 8,299 keywords were selected. The results selected in Stage 2 were keywords that showed rapid growth recently, and we named them popping keywords. The characteristics of each field were considered in the baseline for activeness. The activeness of the information technology (IT) and biofields is generally very high, and that of the fields with a long technology life cycle is generally low. We used a relatively mitigated value for the activity baseline to detect weak signals thoroughly in all science and technology fields. As a result, the size of the weak signals may be more significant in the IT and biofields than in other fields. To resolve this problem, we adjusted the weak signal size below a certain level²⁾ in the keyword clustering process for weak signal detection in Stage 3.

Criterion 3. $Scale (\text{frequency (the past three years, 2019-2021)}) \geq 9$

Criterion 4. $Activeness = \text{frequency (the last three years, 2019-2021)} / \text{frequency (23 years, 1999-2021)} \geq 0.5$

2) In this study, those with a size greater than or equal to 100 were excluded.



<Fig. 2> Keywords that are newly emerging or showing surging activeness in the reference keyword set of paper text corpus are named popping keywords

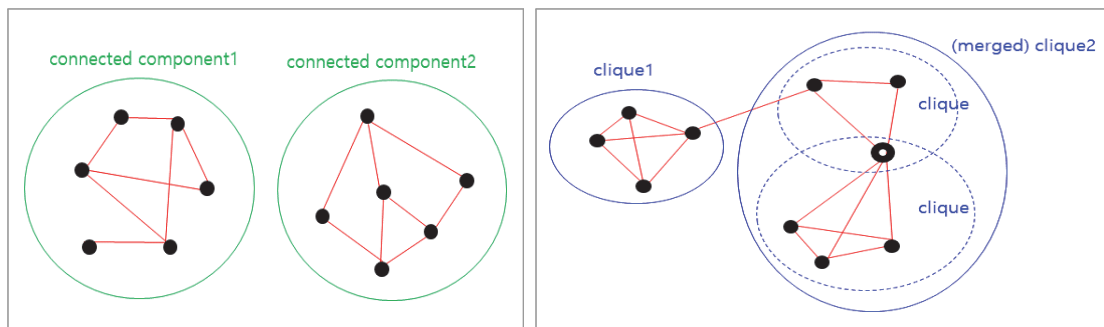
➤ Stage 3: Automated generation of keyword groups

We built a word-embedding model for the paper text corpus to automatically measure the relationships between keywords. The word-embedding model used in this study is FastText. We measured the distance for arbitrary popping keyword pairs on the created word-embedding model. Suppose a popping keyword network is implemented based on the distance data, and the distance threshold is applied. In that case, there is an effect of automatically separating the popping keyword network into keyword groups that have a certain degree of relevance. Using this, we devised a method to automatically generate groups of near-distance popping keywords with a network analysis algorithm based on distance data.

As a result of analyzing the characteristics of the popping keywords, we have found a difference between the newly emerged popping keywords (activeness=1) and the remaining popping keywords (activeness<1), i.e., popping keywords with a life of three years or less and those with a life of greater than three years. That is, the distance between a newly emerged popping keyword and its related keywords is relatively far, and the distance between an existing popping keyword and its related keywords is relatively close. It is interpreted that the robustness of the newly emerged popping keywords as research topics is weaker than that of the existing popping keywords. We wanted to detect weak signals from newly emerged popping keywords without missing any. Accordingly, we implemented an automatic generation method of near-distance popping keyword groups by applying different distance thresholds to the newly

emerged and the remaining popping keywords.

For regular popping keywords with a life of greater than three years and related popping keywords within a distance of 0.1, we extracted connected components wholly separated from other popping keywords and connected them as one network. The group of the popping words included in connected components is defined as a weak signal for the newly emerged popping keywords with a life of less than or equal to three years, extracted cliques that are completely connected on the network with related popping keywords with a distance of 0.3. A network of related popping keywords within a distance of 0.3 is a vast network connected as one whole. If the completely connected cliques are extracted on this network, some cliques may redundantly include duplicate popping keywords. The cliques with duplicate popping keywords are merged into a group, and merging is repeated until there are no more duplicate popping keywords between groups. The group of the popping keywords included in a final clique after undergoing the merging process is defined as a weak signal. A total of 439 weak signals were generated based on the regular and newly emerged popping keywords. There were 1,607 popping keywords that constituted the 439 weak signals.

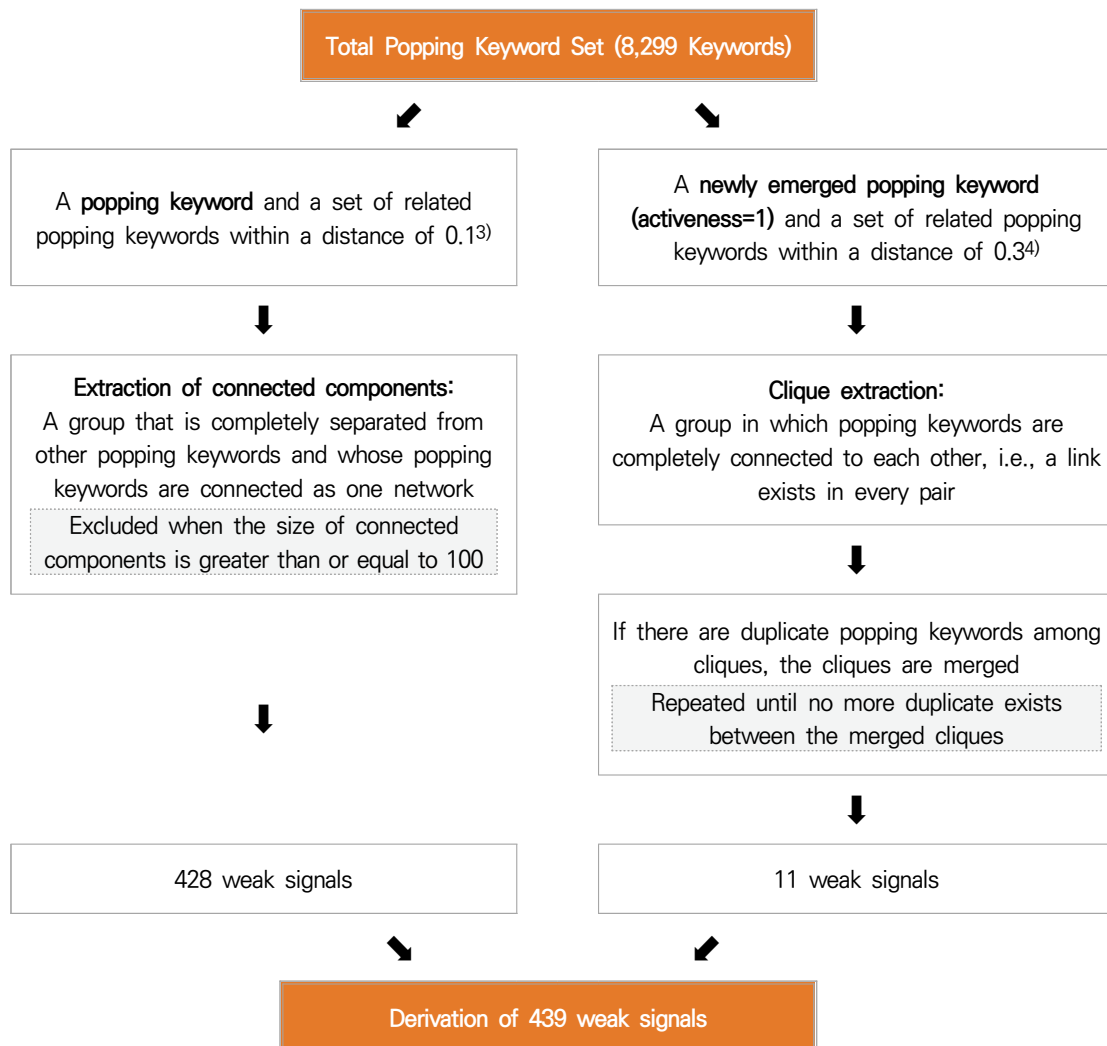


<Fig. 3> (Left) connected components and (right) clique-merging process

➤ Stage 4: Weak signal interpretation

Stages 1 through 3 are the stages of data and algorithms. Starting from the keywords extracted in Stage 1 to the generation of weak signal candidates in Stage 3, the characteristics of keywords and the relationships between keywords are measured and structured by data and algorithms. As a result, popping keyword groups, i.e., weak signals, are derived. Stage 4 is to analyze the weak signals. Our research team examined the popping keywords constituting weak signals to understand the content. The popping keyword with the highest appearance frequency, among the popping keywords constituting the weak signals, was named the head keyword. We then examined the latest paper list containing popping keywords. The weak signal 2023 list is presented in Chapter 3. Weak signals were not screened in this process. Despite the fact that

some weak signals were incomplete, the algorithm produced all of the results. The parts that need to be corrected and supplemented will be reflected in the next upgrade of the automated weak signal detection algorithm.



<Fig. 4> Weak signal extraction process by automated generation of near-distance popping keyword groups

3) A distance of 0.1 between popping keywords means the same as a similarity of 0.9 between popping keywords

4) A distance of 0.3 between popping keywords means the same as a similarity of 0.7 between popping keywords

<Table 1> 439 Emerging Weak Signals 2023

Fields	No. of Weak Signals 2023		
	type1*	type2**	subtotal
Agricultural and Biological Sciences	12		12
Arts and Humanities	3		3
Biochemistry, Genetics and Molecular Biology	21	2	23
Business, Management and Accounting	14		14
Chemical Engineering	2		2
Chemistry	10	1	11
Computer Science	72	4	76
Dentistry	1		1
Earth and Planetary Sciences	8		8
Economics, Econometrics and Finance	4		4
Energy	12		12
Engineering	33	1	34
Environmental Science	23		23
Health Professions	1		1
Immunology and Microbiology	7		7
Materials Science	30	1	31
Mathematics	7		7
Medicine	111	1	112
Nursing	2		2
Pharmacology, Toxicology and Pharmaceutics	2		2
Physics and Astronomy	11		11
Psychology	7		7
Social Sciences	34	1	35
Veterinary	1		1
Total	428	11	439

* Type1 means weak signals from complete component method.

** Type2 means weak signals from clique method.

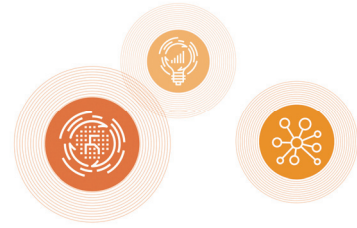
CHAPTER 02

Weak Signal Dynamics



CHAPTER

02 Weak Signal Dynamics



2.1. Introduction

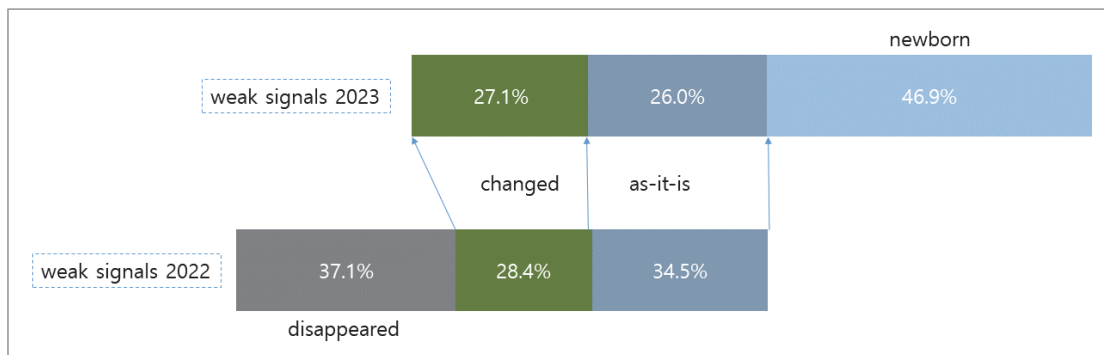
The weak signal automated detection process introduced in Chapter 1 was applied to the 2016–2020 SCOPUS database and the 2017–2021 SCOPUS database, respectively, and we detected 391 weak signals in 2022 and 439 weak signals in 2023. The weak signal results of the two years were accumulated, so they can be comparatively analyzed. We have named the analysis of changes in weak signals weak signal dynamics. By comparing the popping keywords constituting weak signals, we can find the weak signals that remain the same after one year and understand the changing patterns of weak signals, such as disappeared weak signals, newly emerged weak signals, and changed weak signals. Weak signals, which remain the same this year as last year, can be seen as having a lifetime of two years or longer as weak signals. If there were changes in the popping keywords constituting weak signals of last year and this year, it would be helpful to understand detailed changes in technologies by examining which new popping keywords had entered and which popping keywords had disappeared. If multiple weak signals were merged, it would help us understand the relationships between technologies. As the weak signal results detected every year are accumulated, the lifetime and mechanism of weak signals can be analyzed. In this report, we first analyze the basic dynamics using the weak signals in 2022 and the weak signals in 2023.

2.2. Comparative Analysis of Weak Signals 2022 and 2023

In 2021, we applied the weak signal automated detection process to the 2016–2020 SCOPUS database and derived our first weak signals in 2022. At that time, 391 weak signals were detected, and 1,389 popping keywords constituted weak signals. Table 2 shows the number of weak signals in 2022 by field.

Analyzing the weak signal dynamics by comparing 391 weak signals in 2022 and 439 weak

signals in 2023 will help us understand technological trends in more detail. 114 of the 439 weak signals in 2023 are the same weak signals as last year, and the rest are new or changed weak signals. Those not detected last year but detected for the first time this year are named newborn weak signals. Those that have diverged from last year's weak signals, interacted with other weak signals, or changed their subject area are named changed weak signals. Changed weak signals are divided into three types: a case where the subject area is changed (Area Change), a case where new popping keywords are joined (New Keywords), and a case where all or part of two or more weak signals are merged (Merge). Their abbreviations are AC, NK, and MG, respectively.



<Fig. 5> Weak signals 2022 vs Weak signals 2023

<Table 2> Numbers of Emerging Weak Signals 2022 and 2023

Fields	No of weak signals	
	2022	2023
Agricultural and Biological Sciences	9	12
Arts and Humanities	3	3
Biochemistry, Genetics and Molecular Biology	22	23
Business, Management and Accounting	25	14
Chemical Engineering	2	2
Chemistry	9	11
Computer Science	63	76
Decision Sciences	1	
Earth and Planetary Sciences	8	8
Economics, Econometrics and Finance	1	4
Energy	9	12
Engineering	33	34
Environmental Science	18	23

Fields	No of weak signals	
	2022	2023
Health Professions	2	1
Immunology and Microbiology	8	7
Materials Science	22	31
Mathematics	12	7
Medicine	90	112
Neuroscience	1	
Nursing	2	2
Pharmacology, Toxicology and Pharmaceutics	2	2
Physics and Astronomy	8	11
Psychology	6	7
Social Sciences	35	35
Dentistry		1
Veterinary		1
Total	391	439

➤ 2.2.1. Examples of Newborn Weak Signals

206 of the 439 weak signals in 2023 are new weak signals that were not detected last year. 46.9% of the total weak signals are newborns. The largest number of newborn weak signals were detected in the fields of Medicine (54) and Computer Science (36). In some fields, weak signals were detected for the first time. No weak signal was detected last year in the Dentistry and Veterinary fields, but one weak signal was detected, respectively.

- * Among the weak signals in Medicine, [long-covid, long-covid-19] is one of the newborn weak signals.
- * Among the weak signals in Computer Science, [space-air-ground integrated network, space-ground integrated network] is one of the newborn weak signals.
- * The weak signal in Dentistry consists of [teledentistry, tele-dentistry], which refers to a field that provides dental treatment services remotely using telecommunication technologies, including audio and video interactions.
- * The weak signal in Veterinary consists of [prsv-1, prsv-1 and prsv-2], which are keywords referring to two types of porcine reproductive and respiratory syndrome virus.

➤ 2.2.2. Examples of Subject Area Changes (AC)

The SCOPUS papers are classified based on the ASJC (All Science Journal Classifications codes), which consists of 334 sub-fields and 27 fields. To identify the fields of weak signals, we defined the weak signal fields by the following process. First, for all popping words constituting the weak signals, we examined the ASJC codes to which the SCOPUS papers of five years belonged. Then, by adding the ASJC code appearance frequency of each popping keyword, we identified the ASJC code that appears in the weak signals overall. The ASJC codes are classified into 334 sub-fields of 4 digits, and each weak signal was classified as one of the 27 fields, their parent categories. ASJC's 27 fields are as follows:

<Table 3> Field list among All Science Journal Classification Code

27 Main Categories (Fields)
Agricultural and Biological Sciences
Arts and Humanities
Biochemistry, Genetics and Molecular Biology
Business, Management and Accounting
Chemical Engineering
Chemistry
Computer Science
Decision Sciences
Dentistry
Earth and Planetary Sciences
Economics, Econometrics and Finance
Energy
Engineering
Environmental Science
Health Professions
Immunology and Microbiology
Materials Science
Mathematics
Medicine
Multidisciplinary
Neuroscience
Nursing
Pharmacology, Toxicology and Pharmaceutics
Physics and Astronomy
Psychology
Social Sciences
Veterinary

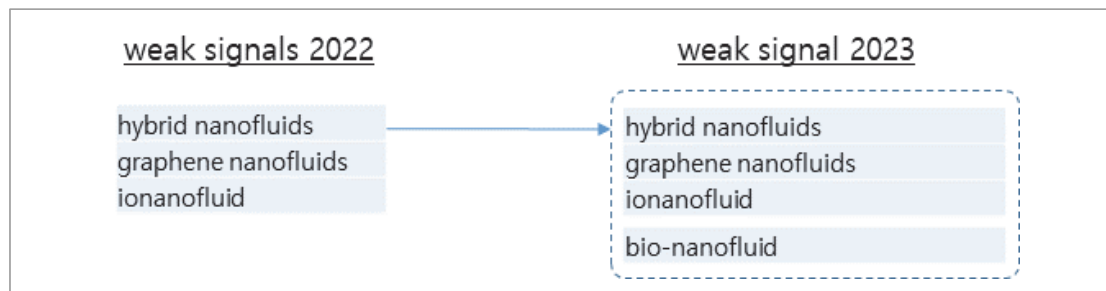
Each weak signal is classified as one of 27 fields, and for some weak signals, the field differs from last year to this year. For example:

- * Marine Plastic Pollution is a weak signal consisting of [Marine Plastic Pollution, marine plastics, marine plastic debris] and has changed its subject area from the field of Environmental Science to the field of Agricultural and Biological Sciences.
- * Micro/nanomotors is a weak signal consisting of [Micro/nanomotors, micro/nanorobots] and has changed its subject area from the field of Materials Science to the field of Chemistry.

➤ 2.2.3. Examples of New Popping Keywords Joining (NK)

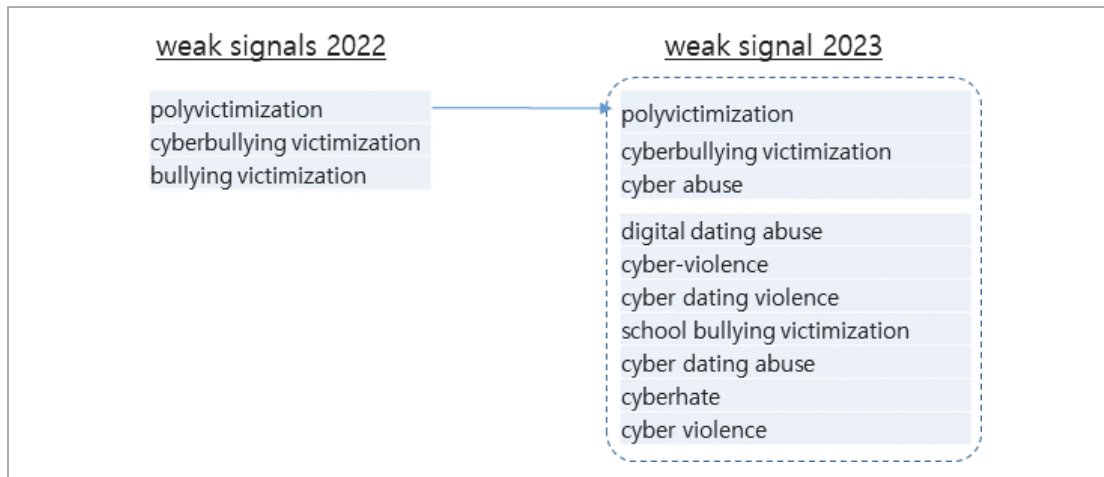
We have found that some popping keywords in some weak signals of last year were replaced with new popping keywords this year. For 102 weak signals, new popping keywords joined in the weak signals of last year, and some popping keywords disappeared.

- * Hybrid nanofluids in the field of Physics and Astronomy was a weak signal consisting of [Hybrid nanofluids, graphene nanofluids, ionanofluid] last year, but bio-nanofluid was added this year. It shows that the research field is expanding.



<Fig. 6> Example of new popping keywords joining in a weak signal (hybrid nanofluids)

- * Polyvictimization in the field of Psychology was a weak signal consisting of [Polyvictimization, cyberbullying victimization, bullying victimization] last year, but it consisted of more popping keywords this year: [Polyvictimization, cyberbullying victimization, cyber abuse, digital dating abuse, cyber-violence, cyber dating violence, school bullying victimization, cyber dating abuse, cyberhate, cyber violence]. It indicates that the research field is subdivided, covering a variety of subjects.



<Fig. 7> Example of new popping keywords joining in a weak signal (polyvictimization)

* Micro/nanomotors, whose field was changed from Materials Science to Chemistry, consisted of [Micro/nanomotors, micro/nanomachines] last year, but micro/nanomachines was dropped, and the popping keywords were replaced with [Micro/nanomotors, micro/nanorobots] instead this year.



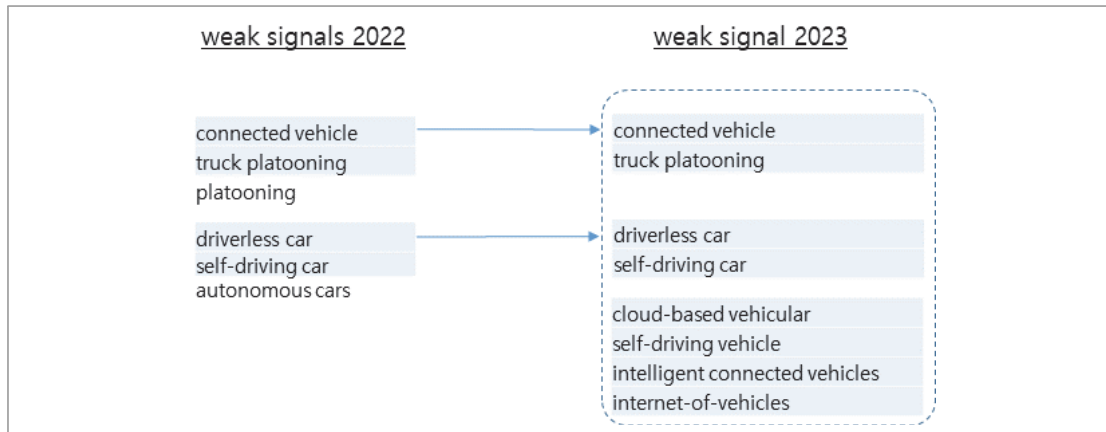
<Fig. 8> Example of new popping keywords joining in a weak signal (micro/nanomotors)

➤ 2.2.4. Examples of Merging Weak Signals (MG)

In some of the weak signals detected this year, we have found that all or part of two or three weak signals of last year were merged, forming a new weak signal. It means that the research fields of these weak signals have expanded.

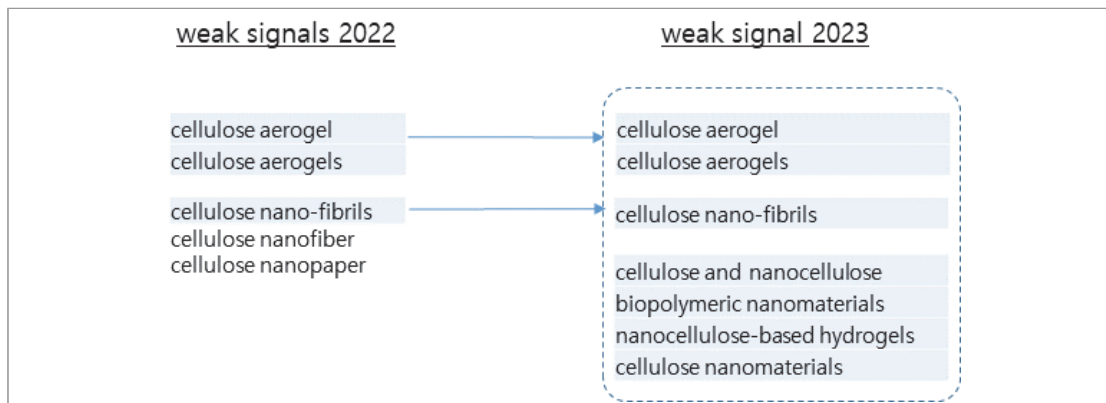
* [Self-driving car, autonomous cars, driverless car] in Computer Science and [Truck platooning, connected vehicle, platooning] in Engineering have merged, forming a weak signal of [Connected vehicle, truck platooning, driverless car, self-driving car, cloud-based vehicular, self-driving vehicle, intelligent connected vehicles, internet-of-vehicles]. Truck platooning is a technology in which three or more trucks form a group, and several trucks close to the leading truck drive autonomously without drivers or direct control of the drivers. It uses connection technology between trucks and autonomous driving systems. New popping keywords have

joined, such as cloud-based, intelligent, connected vehicles, and internet-of-vehicles. It can be seen that the field of truck-platooning is expanding to the domain of internet-of-vehicles.



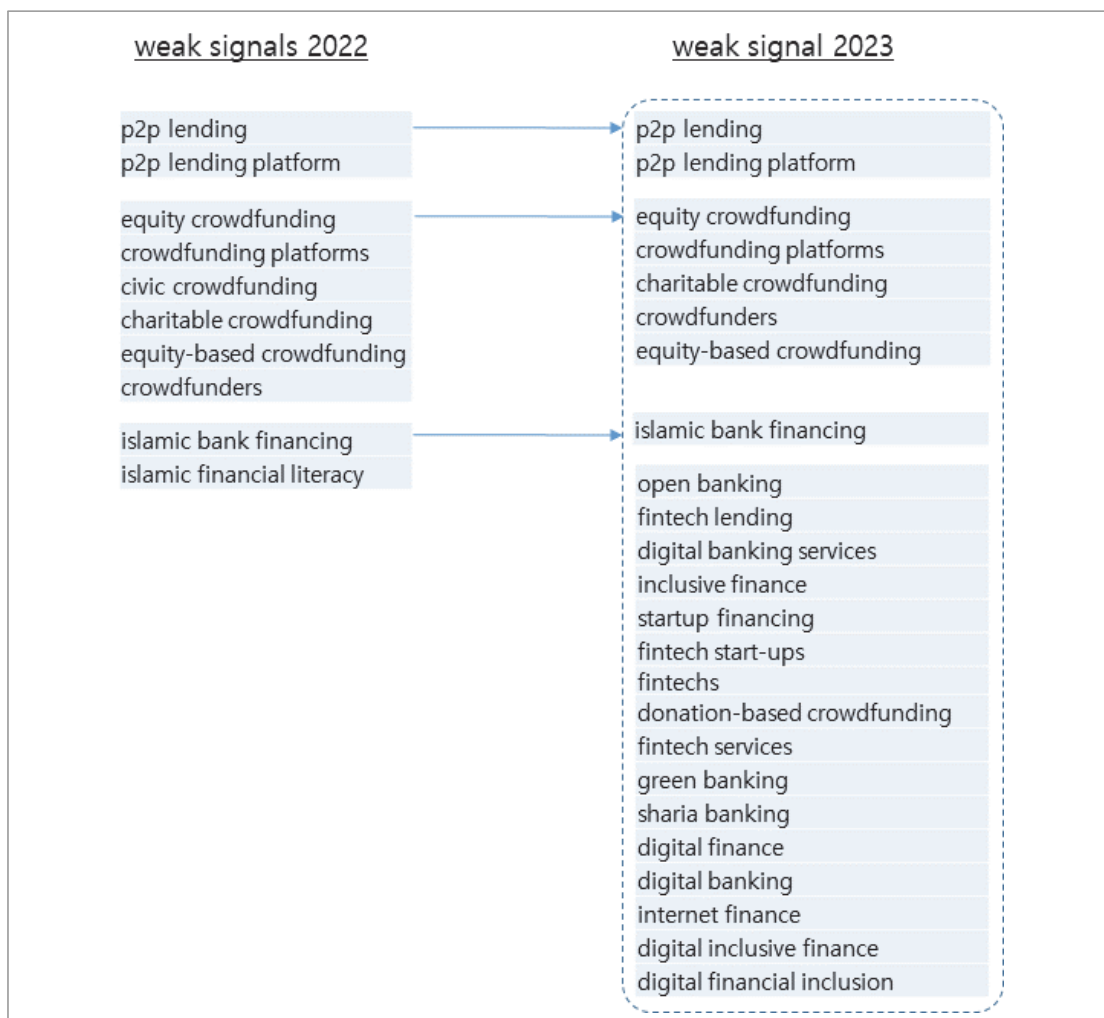
<Fig. 9> Example of merging weak signals (connected vehicle)

* [cellulose nanofiber, cellulose nano-paper, cellulose nano-fibrils] and [cellulose aerogel, cellulose aerogels] in the field of Materials Science have merged and formed a weak signal of [cellulose aerogel, cellulose aerogels, cellulose nano-fibrils, cellulose and nanocellulose, biopolymeric nanomaterials, nanocellulose-based hydrogels, cellulose nanomaterials]. Nano-materials are in the spotlight owing to their excellent physical properties, and carbon nanotube (inorganic material) and nanocellulose (organic material) are studied as future materials. Cellulose nanomaterials are eco-friendly materials extracted from plants. They are lighter than iron but have higher strength, making them popular as alternatives to iron and plastics. Research is underway to create materials with various forms and properties, such as fibers, films, bulks, and hydrogels. There is growing potential for being used as medical biomaterials, flexible wearable devices, paper batteries, and construction reinforcement materials.



<Fig. 10> Example of merging weak signals (cellulose aerogel)

* Three weak signals of [p2p lending, p2p lending platform], [equity crowdfunding, crowdfunding platforms, civic crowdfunding, charitable crowdfunding, equity-based crowdfunding, crowdfunders], and [islamic bank financing, islamic financial literacy] in Computer Science were merged into one weak signal, indicating that the field is expanding. In particular, many fintech-related popping keywords, such as fintech lending, fintech financing, fintech start-ups, fintech services, digital finance, and digital banking, have appeared. Sharia banking has newly appeared for Islamic finance, which is growing worldwide, and open banking has emerged as an open platform used commonly in the financial sector. It can be seen that as information and communications technologies (ICT) are combined in various areas of the financial sector, digital transformation is progressing faster than in any other field.



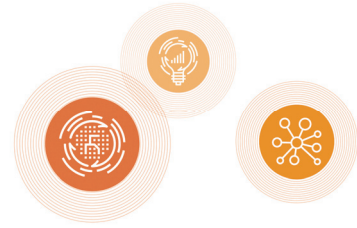
<Fig. 11> Example of merging weak signals (p2p lending)

CHAPTER 03

Result

3.1.

List of 439 Weak Signals 2023



3.1. List of 439 Weak Signals 2023

3.1.1. Agricultural and Biological Sciences

Weak Signal No.	53	Head Keyword	sulfoxaflor																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • triflumezopyrim • tetraniliprole • flupyradifurone 																																												
Activity	<table border="1"> <caption>Activity Data (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>5</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>15</td></tr> <tr><td>2014</td><td>18</td></tr> <tr><td>2015</td><td>15</td></tr> <tr><td>2016</td><td>25</td></tr> <tr><td>2017</td><td>45</td></tr> <tr><td>2018</td><td>35</td></tr> <tr><td>2019</td><td>55</td></tr> <tr><td>2020</td><td>60</td></tr> <tr><td>2021</td><td>85</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	5	2012	10	2013	15	2014	18	2015	15	2016	25	2017	45	2018	35	2019	55	2020	60	2021	85
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Recent Publications	<ul style="list-style-type: none"> • Zhao, Y., Li, X., Li, Q., Yang, H., Zhao, W., & Li, Y. (2021). Modeling and regulation of neonicotinoid insecticides exposure in agricultural planting areas for reducing the human health risks. <i>Journal of Cleaner Production</i>, 328, 129556. • Wen, S., Xue, Y., Du, R., Liu, C., Wang, X., Wang, Y., ... & Xia, X. (2021). Toxicity and sublethal effects of triflumezopyrim on the development and detoxification enzymatic activities in the small brown planthopper (SBPH), <i>Laodelphax striatellus</i> (Fallen). <i>Crop Protection</i>, 150, 105813. • Chen, Y., Marek, G. W., Marek, T. H., Porter, D. O., Brauer, D. K., & Srinivasan, R. (2021). Modeling climate change impacts on blue, green, and grey water footprints and crop yields in the Texas High Plains, USA. <i>Agricultural and Forest Meteorology</i>, 310, 108649. 																																												

Weak Signal No.	69	Head Keyword	marine litter																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • beach litter 																																												
Activity	<table border="1"> <caption>Activity Data for 'marine litter' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>0</td></tr> <tr><td>2020</td><td>0</td></tr> <tr><td>2021</td><td>0</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	0	2020	0	2021	0
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Recent Publications	<ul style="list-style-type: none"> • Benaissa, N., Haddad, F. Z., Bendiab, A. A. T., Bensahla-Talet, L., Hamou, A., & Dimache, A. (2021). A PRELIMINARY STUDY ON MACRO-LITTER POLLUTION ON BEACHES ALONG AÏN EL TURK BA Y (WESTERN MEDITERRANEAN). <i>Geo-Eco-Marina</i>, (27), 83-89. • Markose, V. J., & Ramasamy, E. (2021). Marine litter monitoring studies in India-gaps and challenges. <i>CURRENT SCIENCE</i>, 121(12), 1530-1530. • Marei, I. C. A., Saleh, F. I. E., Manullang, C. Y., Soamole, A., & Rehalat, I. (2021, December). Occurrence and distribution of microplastics in the beach sediment of Anday Beach, West Papua (Indonesia). In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 944, No. 1, p. 012070). IOP Publishing. 																																												

Weak Signal No.	89	Head Keyword	fluopyram																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • fluxapyroxad • benzovindiflupyr • pydiflumetofen 																																												
Activity	<table border="1"> <caption>Activity Data for 'fluopyram' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>0</td></tr> <tr><td>2020</td><td>0</td></tr> <tr><td>2021</td><td>0</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	0	2020	0	2021	0
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Weak Signal No.	125	Head Keyword	marine plastic pollution																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • marine plastics • marine plastic debris 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 125</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>1</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>35</td></tr> <tr><td>2020</td><td>55</td></tr> <tr><td>2021</td><td>65</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	1	2017	5	2018	15	2019	35	2020	55	2021	65
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Recent Publications	<ul style="list-style-type: none"> • Tyllianakis, E., & Ferrini, S. (2021). Personal attitudes and beliefs and willingness to pay to reduce marine plastic pollution in Indonesia. <i>Marine Pollution Bulletin</i>, 173, 113120. • Wright, L. S., Napper, I. E., & Thompson, R. C. (2021). Potential microplastic release from beached fishing gear in Great Britain's region of highest fishing litter density. <i>Marine Pollution Bulletin</i>, 173, 113115. • Walker, T. R., McGuinty, E., & Hickman, D. (2021). Marine debris database development using international best practices: A case study in Vietnam. <i>Marine Pollution Bulletin</i>, 173, 112948. 																																												

Weak Signal No.	229	Head Keyword	collapsing gully																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • collapsing gullies 																																												
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Recent Publications	<ul style="list-style-type: none"> • Wei, Y., Liu, Z., Wu, X., Zhang, Y., Cui, T., Cai, C., ... & Cheng, D. (2021). Can Benggang be regarded as gully erosion?. <i>Catena</i>, 207, 105648. • Duan, X., Deng, Y., Tao, Y., He, Y., Lin, L., & Chen, J. (2021). The soil configuration on granite residuals affects Benggang erosion by altering the soil water regime on the slope. <i>International Soil and Water Conservation Research</i>, 9(3), 419-432. • Wen, H., Ni, S., Wang, J., & Cai, C. (2021). Changes of soil quality induced by different vegetation restoration in the collapsing gully erosion areas of southern China. <i>International Soil and Water Conservation Research</i>, 9(2), 195-206. 																																												

Weak Signal No.	236	Head Keyword	postbiotics																																										
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Recent Publications	<ul style="list-style-type: none"> • Martyniak, A., Medyńska-Przęczek, A., Wędrychowicz, A., Skoczeń, S., & Tomasik, P. J. (2021). Prebiotics, probiotics, synbiotics, paraprobiotics and postbiotic compounds in IBD. <i>Biomolecules</i>, 11(12), 1903. • Ashrafian, F., Keshavarz Azizi Raftar, S., Lari, A., Shahryari, A., Abdollahiyan, S., Moradi, H. R., ... & Siadat, S. D. (2021). Extracellular vesicles and pasteurized cells derived from <i>Akkermansia muciniphila</i> protect against high-fat induced obesity in mice. <i>Microbial Cell Factories</i>, 20(1), 1–17. • Almada, C. N., Almada-Érix, C. N., Bonatto, M. S., Pradella, F., dos Santos, P., Abud, Y. K., ... & Sant'Ana, A. S. (2021). Obtaining paraprobiotics from <i>Lactobacillus acidophilus</i>, <i>Lactocaseibacillus casei</i> and <i>Bifidobacterium animalis</i> using six inactivation methods: Impacts on the cultivability, integrity, physiology, and morphology. <i>Journal of Functional Foods</i>, 87, 104826. 																																												

Weak Signal No.	258	Head Keyword	meat analogues																																										
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Weak Signal No.	279	Head Keyword	biocrusts																																										
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Weak Signal No.	296	Head Keyword	landsenses ecology																																										
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Weak Signal No.	336	Head Keyword	livestock and poultry manure																																										
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Weak Signal No.	359	Head Keyword	edible insects																																										
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Recent Publications	<ul style="list-style-type: none"> Hall, F. G., & Liceaga, A. M. (2021). Isolation and proteomic characterization of tropomyosin extracted from edible insect protein. <i>Food Chemistry: Molecular Sciences</i>, 3, 100049. Boehm, E., Borzekowski, D., Ververis, E., Lohmann, M., & Böhl, G. F. (2021). Communicating Food Risk-Benefit Assessments: Edible Insects as Red Meat Replacers. <i>Frontiers in Nutrition</i>, 8. Toxqui, A. G. H., Ramirez, J. R., Moreno, J. M. P., Gómez, J. M. T., Campos, S. C. A., & Orejel, J. C. R. (2021). Development of Nutraceutical Ice Creams Using Flour Yellow Worm Larvae (<i>Tenebrio molitor</i>), Chia (<i>Salvia hispanica</i>), and Quinoa (<i>Chenopodium quinoa</i>). <i>Frontiers in veterinary science</i>, 8. 																																												

Weak Signal No.	381	Head Keyword	aquaponics																																										
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Recent Publications	<ul style="list-style-type: none"> • Krotova, O., Polozyuk, O., Savenkov, K., Mashtykov, D., & Savenkova, M. (2021, December). The effectiveness of using a microbiological strain in the aquaponics system. In IOP Conference Series: Earth and Environmental Science (Vol. 937, No. 3, p. 032037). IOP Publishing. • Li, T., Zhang, B., Zhu, C., Su, J., Li, J., Chen, S., & Qin, J. (2021). Effects of an ex situ shrimp-rice aquaponic system on the water quality of aquaculture ponds in the Pearl River estuary, China. <i>Aquaculture</i>, 545, 737179. • Orsholits, A., Li, Z., Dhupar, K., Obuchi, Y., Zhu, C., Komata, Y., & Takagi, S. (2021). Goldfish architecture: therapeutic urban aquaponics. In SIGGRAPH Asia 2021 Art Gallery (pp. 1-1). 																																												

➤ 3.1.2. Arts and Humanities

Weak Signal No.	115	Head Keyword	russian sign language																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • bangla sign language 																																												
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Recent Publications	<ul style="list-style-type: none"> • Grif, M. G., & Kondratenko, Y. K. (2021, October). Development of a software module for recognizing the fingerspelling of the Russian Sign Language based on LSTM. In <i>Journal of Physics: Conference Series</i> (Vol. 2032, No. 1, p. 012024). IOP Publishing. • Rudnev, P., & Kuznetsova, A. (2021). Linearization constraints on sentential negation in Russian Sign Language are prosodic. <i>Sign Language & Linguistics</i>, 24(2), 259–273. • Kokhan, S. T., Osmuk, L. A., & Varinova, O. A. (2021). Distance learning for students with hearing impairments in pandemic situation. In <i>E3S Web of Conferences</i> (Vol. 273, p. 12090). EDP Sciences. 																																												

Weak Signal No.	333	Head Keyword	epistemic injustice																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • hermeneutical injustice 																																												
Activity	<table border="1"> <caption>Activity Data for 'epistemic injustice'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>10</td></tr> <tr><td>2015</td><td>15</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>30</td></tr> <tr><td>2018</td><td>40</td></tr> <tr><td>2019</td><td>70</td></tr> <tr><td>2020</td><td>120</td></tr> <tr><td>2021</td><td>200</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	10	2013	0	2014	10	2015	15	2016	10	2017	30	2018	40	2019	70	2020	120	2021	200
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Recent Publications	<ul style="list-style-type: none"> • Drożdżowicz, A. (2021). Epistemic injustice in psychiatric practice: epistemic duties and the phenomenological approach. <i>Journal of Medical Ethics</i>, 47(12), e69–e69. • Kwok, C. (2021). Epistemic injustice in workplace hierarchies: Power, knowledge and status. <i>Philosophy & Social Criticism</i>, 47(9), 1104–1131. • Webster, A. K. (2021). Making Sense of Shame in Response to Racism. <i>Canadian Journal of Philosophy</i>, 51(7), 535–550. 																																												

Weak Signal No.	345	Head Keyword	r/s struggles																																										
All Popping Keywords in this Weak Signal	• r/s struggle																																												
Activity	<table border="1"> <caption>Activity Data for 'r/s struggle'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>6</td></tr> <tr><td>2019</td><td>6</td></tr> <tr><td>2020</td><td>7</td></tr> <tr><td>2021</td><td>7</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	2	2018	6	2019	6	2020	7	2021	7
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2021	7																																												
Recent Publications	<ul style="list-style-type: none"> • Damen, A., Exline, J., Pargament, K., Yao, Y., Chochinov, H., Emanuel, L., ... & Fitchett, G. (2021). Prevalence, predictors and correlates of religious and spiritual struggles in palliative cancer patients. <i>Journal of Pain and Symptom Management</i>, 62(3), e139–e147. • King, S. D., Macpherson, C. F., Pflugeisen, B. M., & Johnson, R. H. (2021). Religious/spiritual coping in young adults with cancer. <i>Journal of Adolescent and Young Adult Oncology</i>, 10(3), 266–271. • Park, C. L., Sacco, S. J., Kraus, S. W., Mazure, C. M., & Hoff, R. A. (2021). Influences of religiousness/spirituality on mental and physical health in OEF/OIF/OND military veterans varies by sex and race/ethnicity. <i>Journal of Psychiatric Research</i>, 138, 15–23. 																																												

➤ 3.1.3. Biochemistry, Genetics and Molecular Biology

Weak Signal No.	42	Head Keyword	msc-evs																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • msc-sev, hucmsc-exosomes, mscs-exo, msc-sevs, msc-exo, msc-ev, adsc-exos, bmsc-exos, msc-exos, bmsc-exo 																																												
Activity	<table border="1"> <caption>Activity Data (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>2</td></tr> <tr><td>2015</td><td>5</td></tr> <tr><td>2016</td><td>8</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>25</td></tr> <tr><td>2020</td><td>50</td></tr> <tr><td>2021</td><td>85</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	2	2015	5	2016	8	2017	15	2018	10	2019	25	2020	50	2021	85
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Recent Publications	<ul style="list-style-type: none"> • Xiao, X., Xu, M., Yu, H., Wang, L., Li, X., Rak, J., ... & Zhao, R. C. (2021). Mesenchymal stem cell-derived small extracellular vesicles mitigate oxidative stress-induced senescence in endothelial cells via regulation of miR-146a/Src. <i>Signal transduction and targeted therapy</i>, 6(1), 1-15. • Gregorius, J., Wang, C., Stambouli, O., Hussner, T., Qi, Y., Tertel, T., ... & Hermann, D. M. (2021). Small extracellular vesicles obtained from hypoxic mesenchymal stromal cells have unique characteristics that promote cerebral angiogenesis, brain remodeling and neurological recovery after focal cerebral ischemia in mice. <i>Basic research in cardiology</i>, 116(1), 1-19. • Feng, K., Xie, X., Yuan, J., Gong, L., Zhu, Z., Zhang, J., ... & Wang, Y. (2021). Reversing the surface charge of MSC-derived small extracellular vesicles by εPL-PEG-DSPE for enhanced osteoarthritis treatment. <i>Journal of extracellular vesicles</i>, 10(13), e12160. 																																												

Weak Signal No.	83	Head Keyword	kmt2d																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • kdm6a • arid2 																																												
Activity	<table border="1"> <caption>Activity Data for kmt2d (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>15</td></tr> <tr><td>2015</td><td>25</td></tr> <tr><td>2016</td><td>50</td></tr> <tr><td>2017</td><td>50</td></tr> <tr><td>2018</td><td>60</td></tr> <tr><td>2019</td><td>90</td></tr> <tr><td>2020</td><td>125</td></tr> <tr><td>2021</td><td>130</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	5	2014	15	2015	25	2016	50	2017	50	2018	60	2019	90	2020	125	2021	130
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Weak Signal No.	86	Head Keyword	gpx4																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • slc7a11 																																												
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Weak Signal No.	93	Head Keyword	eccdna																																										
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Recent Publications	<ul style="list-style-type: none"> Zhang, P., Peng, H., Llauro, C., Bucher, E., & Mirouze, M. (2021). ecc_finder: A Robust and Accurate Tool for Detecting Extrachromosomal Circular DNA From Sequencing Data. <i>Frontiers in plant science</i>, 12. Ling, X., Han, Y., Meng, J., Zhong, B., Chen, J., Zhang, H., ... & Liu, L. (2021). Small extrachromosomal circular DNA (eccDNA): major functions in evolution and cancer. <i>Molecular Cancer</i>, 20(1), 1–15. Wang, T., Zhang, H., Zhou, Y., & Shi, J. (2021). Extrachromosomal circular DNA: a new potential role in cancer progression. <i>Journal of translational medicine</i>, 19(1), 1–16. 																																												

Weak Signal No.	95	Head Keyword	cf-mtdna																																										
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Recent Publications	<ul style="list-style-type: none"> Fernström, J., Ohlsson, L., Asp, M., Lavant, E., Holck, A., Grudet, C., ... & Lindqvist, D. (2021). Plasma circulating cell-free mitochondrial DNA in depressive disorders. <i>PloS one</i>, 16(11), e0259591. Zhou, G., Li, Y., Li, S., Liu, H., Xu, F., Lai, X., ... & Wan, S. (2021). Circulating Cell-Free mtDNA Content as a Non-invasive Prognostic Biomarker in HCC Patients Receiving TACE and Traditional Chinese Medicine. <i>Frontiers in Genetics</i>, 12, 719451. Gonçalves, V. F., Mendes-Silva, A. P., Koyama, E., Vieira, E., Kennedy, J. L., & Diniz, B. (2021). Increased levels of circulating cell-free mtDNA in plasma of late life depression subjects. <i>Journal of psychiatric research</i>, 139, 25–29. 																																												

Weak Signal No.	123	Head Keyword	cas13																																										
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Weak Signal No.	136	Head Keyword	cavin1																																										
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Recent Publications	<ul style="list-style-type: none"> Narayanan, P., Man, T. K., Gerbing, R. B., Ries, R., Stevens, A. M., Wang, Y. C., ... & Redell, M. S. (2021). Aberrantly low STAT3 and STAT5 responses are associated with poor outcome and an inflammatory gene expression signature in pediatric acute myeloid leukemia. <i>Clinical and Translational Oncology</i>, 23(10), 2141–2154. Ghalkhani, E., Akbari, M. T., Izadi, P., Mahmoodzadeh, H., & Kamali, F. (2021). Assessment of DAPK1 and CAVIN3 Gene Promoter Methylation in Breast Invasive Ductal Carcinoma and Metastasis. <i>Cell Journal (Yakhteh)</i>, 23(4), 397. Tian, Y., Liu, X., Hu, J., Zhang, H., Wang, B., Li, Y., ... & Yu, Y. (2021). Integrated Bioinformatic Analysis of the Expression and Prognosis of Caveolae-Related Genes in Human Breast Cancer. <i>Frontiers in Oncology</i>, 3252. 																																												

Weak Signal No.	174	Head Keyword	usp47																																										
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Recent Publications	<ul style="list-style-type: none"> Tao, Y., Wei, X., Yue, Y., Wang, J., Li, J., Shen, L., ... & Zhou, L. (2021). Extracellular vesicle-derived AEBP1 mRNA as a novel candidate biomarker for diabetic kidney disease. <i>Journal of translational medicine</i>, 19(1), 1–15. Lei, H., Xu, H. Z., Shan, H. Z., Liu, M., Lu, Y., Fang, Z. X., ... & Wu, Y. L. (2021). Targeting USP47 overcomes tyrosine kinase inhibitor resistance and eradicates leukemia stem/progenitor cells in chronic myelogenous leukemia. <i>Nature Communications</i>, 12(1), 1–16. Hou, X., Xia, J., Feng, Y., Cui, L., Yang, Y., Yang, P., & Xu, X. (2021). USP47-mediated deubiquitination and stabilization of TCEA3 attenuates pyroptosis and apoptosis of colorectal cancer cells induced by chemotherapeutic doxorubicin. <i>Frontiers in pharmacology</i>, 12, 713322. 																																												

Weak Signal No.	203	Head Keyword	mpro																																										
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Recent Publications	<ul style="list-style-type: none"> Yadav, P. K., Upadhyay, R. K., Kumar, D., Bano, D., Chandra, S., Jit, S., & Hasan, S. H. (2021). Synthesis of green fluorescent carbon quantum dots from the latex of <i>Ficus benghalensis</i> for the detection of tyrosine and fabrication of Schottky barrier diode. <i>New Journal of Chemistry</i>, 45(28), 12549–12556. HAO, L. J., WANG, T., DONG, G. H., ZHANG, W. Z., BAI, L. M., DU Hai-Yao, L. A. N. G., & LI, X. (2021). Preparation of green carbon quantum dots from corn starch and hydrogen ion/hydroxyl ion regulated fluorescent switch performance. <i>Chinese Journal of Applied Chemistry</i>, 38(2), 202. Moniruzzaman, M., Lakshmi, B. A., Kim, S., & Kim, J. (2020). Preparation of shape-specific (trilateral and quadrilateral) carbon quantum dots towards multiple color emission. <i>Nanoscale</i>, 12(22), 11947–11959. 																																												

Weak Signal No.	225	Head Keyword	ctrp9																																										
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Recent Publications	<ul style="list-style-type: none"> Jung, H. N., & Jung, C. H. (2021). The role of anti-inflammatory adipokines in cardiometabolic disorders: moving beyond adiponectin. <i>International Journal of Molecular Sciences</i>, 22(24), 13529. Zhang, X., Qi, W., Shi, Y., Li, X., Yin, J., Huo, C., ... & Ye, L. (2021). Role of miR-145-5p/CD40 in the inflammation and apoptosis of HUVECs induced by PM2. 5. <i>Toxicology</i>, 464, 152993. Jin, Q., Su, H., Yang, R., Tan, Y., Li, B., Yi, W., ... & Sun, X. (2021). C1q/TNF-related protein-9 ameliorates hypoxia-induced pulmonary hypertension by regulating secretion of endothelin-1 and nitric oxide mediated by AMPK in rats. <i>Scientific reports</i>, 11(1), 1-13. 																																												

Weak Signal No.	228	Head Keyword	zdhhc5																																										
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Recent Publications	<ul style="list-style-type: none"> Zeng, X. T., Yu, X. T., & Cheng, W. (2021). The interactions of ZDHHC5/GOLGA7 with SARS-CoV-2 spike (S) protein and their effects on S protein's subcellular localization, palmitoylation and pseudovirus entry. <i>Virology Journal</i>, 18(1), 1-16. Woodley, K. T., & Collins, M. O. (2021). Regulation and function of the palmitoyl-acyltransferase ZDHHC5. <i>The FEBS Journal</i>, 288(23), 6623-6634. Leskelä, J., Toppila, I., Härma, M. A., Palviainen, T., Salminen, A., Sandholm, N., ... & Pussinen, P. J. (2021). Genetic profile of endotoxemia reveals an association with thromboembolism and stroke. <i>Journal of the American Heart Association</i>, 10(21), e022482. 																																												

Weak Signal No.	232	Head Keyword	m6a modification																																										
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Recent Publications	<ul style="list-style-type: none"> • Huang, Z. D., Lin, L. L., Liu, Z. Z., Hu, C., Gu, H. Y., & Wei, R. X. (2021). M6a modification patterns with distinct immunity, metabolism, and stemness characteristics in soft tissue sarcoma. <i>Frontiers in immunology</i>, 12. • Huang, Z. D., Lin, L. L., Liu, Z. Z., Hu, C., Gu, H. Y., & Wei, R. X. (2021). M6a modification patterns with distinct immunity, metabolism, and stemness characteristics in soft tissue sarcoma. <i>Frontiers in immunology</i>, 12. • Lu, Z., & Ding, Y. (2021, December). The m6A RNA methylation regulators related transcriptome for identification of pancreatic cancer subtypes and prognostic markers. In <i>2021 4th International Conference on Algorithms, Computing and Artificial Intelligence</i> (pp. 1–5). 																																												

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Weak Signal No.	265	Head Keyword	crispr/cas system																																										
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Weak Signal No.	271	Head Keyword	tmprss11d																																										
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Recent Publications	<ul style="list-style-type: none"> • Beumer, J., Geurts, M. H., Lamers, M. M., Puschhof, J., Zhang, J., van der Vaart, J., ... & Clevers, H. (2021). A CRISPR/Cas9 genetically engineered organoid biobank reveals essential host factors for coronaviruses. <i>Nature communications</i>, 12(1), 1–12. • Berdowska, I., & Matusiewicz, M. (2021). Cathepsin L, transmembrane peptidase/serine subfamily member 2/4, and other host proteases in COVID-19 pathogenesis-with impact on gastrointestinal tract. <i>World Journal of Gastroenterology</i>, 27(39), 6590. • Kucher, A. N., Babushkina, N. P., Sleptcov, A. A., & Nazarenko, M. S. (2021). Genetic control of human infection with SARS-CoV-2. <i>Russian Journal of Genetics</i>, 57(6), 627–641. 																																												

Weak Signal No.	282	Head Keyword	fam111a																																										
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Recent Publications	<ul style="list-style-type: none"> Ren, K., Zhu, Y., Sun, H., Li, S., Duan, X., Li, S., ... & Chen, L. (2021). IRF2 inhibits ZIKV replication by promoting FAM111A expression to enhance the host restriction effect of RFC3. <i>Virology Journal</i>, 18(1), 1-9. Zakeri, M., Safaiee, M. S., Taheri, F., Taghizadeh, E., Ferns, G. A., Mobarhan, M. G., & Pasdar, A. (2021). Secondary findings from whole-exome sequencing data in families with familial combined hyperlipidemia (FCHL). <i>Egyptian Journal of Medical Human Genetics</i>, 22(1), 1-5. Ruggiano, A., & Ramadan, K. (2021). DNA-protein crosslink proteases in genome stability. <i>Communications Biology</i>, 4(1), 1-11. 																																												

Weak Signal No.	292	Head Keyword	crotonylation																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> histone crotonylation lysine crotonylation 																																												
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Recent Publications	<ul style="list-style-type: none"> Histone lysine methacrylation is a dynamic post-translational modification regulated by HAT1 and SIRT2 Chen, X., Fan, B., Fan, C., Wang, Z., Wangkahart, E., Huang, Y., ... & Wang, B. (2021). First comprehensive proteome analysis of lysine crotonylation in <i>Streptococcus agalactiae</i>, a pathogen causing meningoencephalitis in teleosts. <i>Proteome science</i>, 19(1), 1-10. Huang, J., Tang, D., Zheng, F., Xu, H., & Dai, Y. (2021). Comprehensive analysis of lysine crotonylation modification in patients with chronic renal failure. <i>BMC nephrology</i>, 22(1), 1-14. 																																												

Weak Signal No.	301	Head Keyword	adropin																																										
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Recent Publications	<ul style="list-style-type: none"> • Es-Haghi, A., Al-Abyadh, T., & Mehrad-Majd, H. (2021). The Clinical Value of Serum Adropin Level in Early Detection of Diabetic Nephropathy. <i>Kidney and Blood Pressure Research</i>, 46(6), 734–740. • Dodd, W. S., Patel, D., Lucke-Wold, B., Hosaka, K., Chalouhi, N., & Hoh, B. L. (2021). Adropin decreases endothelial monolayer permeability after cell-free hemoglobin exposure and reduces MCP-1-induced macrophage transmigration. <i>Biochemical and Biophysical Research Communications</i>, 582, 105–110. • Kim, S. J., Cho, S. Y., & Jin, D. K. (2021). Prader-Willi syndrome: an update on obesity and endocrine problems. <i>Annals of Pediatric Endocrinology & Metabolism</i>, 26(4), 227. 																																												

Weak Signal No.	332	Head Keyword	intestinal organoids																																										
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Weak Signal No.	337	Head Keyword	b4galnt1																																										
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Recent Publications	<ul style="list-style-type: none"> • Corley, M. J., Pang, A. P., Rasmussen, T. A., Tolstrup, M., Sjøgaard, O. S., & Ndhlovu, L. C. (2021). Candidate host epigenetic marks predictive for HIV reservoir size, responsiveness to latency reversal, and viral rebound. <i>AIDS</i>, 35(14), 2269–2279. • Lopez-Ozuna, V. M., Kogan, L., Hachim, M. Y., Matanes, E., Hachim, I. Y., Mitric, C., ... & Gotlieb, W. H. (2021). Identification of Predictive Biomarkers for Lymph Node Involvement in Obese Women With Endometrial Cancer. <i>Frontiers in Oncology</i>, 2677. • Uhler, R., Popa-Wagner, R., Kröning, M., Brehm, A., Rennert, P., Seifried, A., ... & Rosenlöcher, J. (2021). Glyco-engineered HEK 293-F cell lines for the production of therapeutic glycoproteins with human N-glycosylation and improved pharmacokinetics. <i>Glycobiology</i>, 31(7), 859–872. 																																												

Weak Signal No.	370	Head Keyword	stem cell-derived extracellular vesicles																																										
All Popping Keywords in this Weak Signal	• stem cell secretome																																												
Activity	<table border="1"> <caption>Activity Data for stem cell-derived extracellular vesicles (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>8</td></tr> <tr><td>2019</td><td>18</td></tr> <tr><td>2020</td><td>30</td></tr> <tr><td>2021</td><td>32</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	2	2018	8	2019	18	2020	30	2021	32
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Recent Publications	<ul style="list-style-type: none"> • Hotham, W. E., Thompson, C., Szu-Ting, L., & Henson, F. M. D. (2021). The anti-inflammatory effects of equine bone marrow stem cell-derived extracellular vesicles on autologous chondrocytes. <i>Veterinary Record Open</i>, 8(1), e22. • Aneesh, A., Liu, A., Moss, H. E., Feinstein, D., Ravindran, S., Mathew, B., & Roth, S. (2021). Emerging concepts in the treatment of optic neuritis: Mesenchymal stem cell-derived extracellular vesicles. <i>Stem Cell Research & Therapy</i>, 12(1), 1–15. • Lu, C. H., Chen, Y. A., Ke, C. C., & Liu, R. S. (2021). Mesenchymal stem cell-derived extracellular vesicle: a promising alternative therapy for osteoporosis. <i>International Journal of Molecular Sciences</i>, 22(23), 12750. 																																												

Weak Signal No.	430	Head Keyword	alphafold2																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • openprot 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 430</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>0</td></tr> <tr><td>2020</td><td>0</td></tr> <tr><td>2021</td><td>40</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	0	2020	0	2021	40
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Recent Publications	<ul style="list-style-type: none"> • Zaheed, O., Kiniry, S. J., Baranov, P. V., & Dean, K. (2021). Exploring Evidence of Non-coding RNA Translation With Trips-Viz and GWIPS-Viz Browsers. <i>Frontiers in Cell and Developmental Biology</i>, 2088. • Pan, N., Wang, Z., Wang, B., Wan, J., & Wan, C. (2021). Mapping Microproteins and ncRNA-Encoded Polypeptides in Different Mouse Tissues. <i>Frontiers in cell and developmental biology</i>, 9. • Brunet, M. A., Lucier, J. F., Levesque, M., Leblanc, S., Jacques, J. F., Al-Saedi, H. R., ... & Roucou, X. (2021). OpenProt 2021: deeper functional annotation of the coding potential of eukaryotic genomes. <i>Nucleic Acids Research</i>, 49(D1), D380–D388. 																																												

Weak Signal No.	437	Head Keyword	tptep1																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • mkln1-as • circakt3 • pimreg 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 437</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>2</td></tr> <tr><td>2020</td><td>6</td></tr> <tr><td>2021</td><td>8</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	2	2020	6	2021	8
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Recent Publications	<ul style="list-style-type: none"> • Zhu, H., Hu, X., Ye, Y., Jian, Z., Zhong, Y., Gu, L., & Xiong, X. (2021). Pan-cancer analysis of PIMREG as a biomarker for the prognostic and immunological role. <i>Frontiers in genetics</i>, 1674. • Wang, D., Hu, A., Peng, H., Li, D., & Zhang, L. (2021). Tumor-promoting function of PIMREG in glioma by activating the β-catenin pathway. <i>3 Biotech</i>, 11(8), 1–11. • Jiang, F., Liang, M., Huang, X., Shi, W., & Wang, Y. (2021). High expression of PIMREG predicts poor survival outcomes and is correlated with immune infiltrates in lung adenocarcinoma. <i>PeerJ</i>, 9, e11697. 																																												

➤ 3.1.4. Business, Management and Accounting

Weak Signal No.	2	Head Keyword	job crafting																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • ambidextrous leadership, job crafting, abusive leadership, employee innovation, exploitative leadership, organisational resilience, organizational pride, employee agility, workplace well-being, workplace gossip, workplace ostracism, inclusive leadership, unethical pro-organizational behavior, employee advocacy, humanistic leadership, health-oriented leadership, ambidextrous innovation, organizational resilience, individual ambidexterity, workplace loneliness, paradoxical leadership, despotic leadership, humble leadership, thriving at work, innovation ambidexterity, ambidextrous learning, employee resilience 																																												
Activity	<table border="1"> <caption>Activity Data (Estimated)</caption> <thead> <tr> <th>Year</th> <th>Activity Level</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>20</td></tr> <tr><td>2017</td><td>40</td></tr> <tr><td>2018</td><td>60</td></tr> <tr><td>2019</td><td>100</td></tr> <tr><td>2020</td><td>150</td></tr> <tr><td>2021</td><td>250</td></tr> </tbody> </table>			Year	Activity Level	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	10	2016	20	2017	40	2018	60	2019	100	2020	150	2021	250
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2020	150																																												
2021	250																																												
Recent Publications	<ul style="list-style-type: none"> • Mangiofico, G. L., & Tompkins, T. C. (2021). A Framework for Disrupting Incivility in the Workplace. <i>Organization Development Journal</i>, 39(4). • Sainz, M., & Baldissarri, C. (2021). Abusive leadership versus objectifying job features: Factors that influence organizational dehumanization and workers' self-objectification. <i>Journal of Applied Social Psychology</i>, 51(8), 825–837. • Labrague, L. J., Loriga, J., Nwafor, C. E., & Cummings, G. G. (2021). Predictors of toxic leadership behaviour among nurse managers: A cross-sectional study. <i>Journal of Nursing Management</i>, 29(2), 165–176. 																																												

Weak Signal No.	17	Head Keyword	entrepreneurial ecosystem																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> entrepreneurial ecosystems, senior entrepreneurship, mass entrepreneurship and innovation, digital innovation, sustainability-oriented innovation, school-enterprise cooperation, digital servitization, innovation ecosystem, entrepreneurship ecosystems, entrepreneurial education, artisan entrepreneurs, startup ecosystem, entrepreneurial passion, digital entrepreneurship, innovation and entrepreneurship education 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 17</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>20</td></tr> <tr><td>2017</td><td>40</td></tr> <tr><td>2018</td><td>60</td></tr> <tr><td>2019</td><td>100</td></tr> <tr><td>2020</td><td>180</td></tr> <tr><td>2021</td><td>300</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	10	2016	20	2017	40	2018	60	2019	100	2020	180	2021	300
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2019	100																																												
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Recent Publications	<ul style="list-style-type: none"> Bonaventura, M., Aiello, L. M., Quercia, D., & Latora, V. (2021). Predicting urban innovation from the US Workforce Mobility Network. <i>Humanities and Social Sciences Communications</i>, 8(1), 1–9. Saura, J. R., Reyes-Menéndez, A., Dematos, N., & Correia, M. B. (2021). Identifying Startups Business Opportunities from UGC on Twitter Chatting: An Exploratory Analysis. <i>Journal of Theoretical and Applied Electronic Commerce Research</i>, 16(6), 1929–1944. Singh, V. K. (2021). Policy and regulatory changes for a successful startup revolution: Experiences from the startup action plan in India. In <i>Investment in Startups and Small Business Financing</i> (pp. 33–67). 																																												

Weak Signal No.	36	Head Keyword	constructive deviance																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> constructive deviant behavior creative deviance 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 36</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>1</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>3</td></tr> <tr><td>2019</td><td>8</td></tr> <tr><td>2020</td><td>15</td></tr> <tr><td>2021</td><td>10</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	1	2017	2	2018	3	2019	8	2020	15	2021	10
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2021	10																																												
Recent Publications	<ul style="list-style-type: none"> Zhou, Y., & Qian, C. H. (2021). Research on the influence mechanism of dual leadership on the constructive deviant behavior of the new generation of employees—the chain mediating effect of promoting regulatory focus and role width self-efficacy. <i>Frontiers in Psychology</i>, 5398. Li, L., & Wang, S. (2021). Influence of Paternalistic Leadership Style on Innovation Performance Based on the Research Perspective of the Mediating Effect of the Constructive Deviance of Employees. <i>Frontiers in Psychology</i>, 4299. Gu, J., & Cheng, B. (2021). Research on the Influence of In-work Embedding on Employees' Constructive Deviant Behavior. In <i>E3S Web of Conferences</i> (Vol. 251, p. 03088). EDP Sciences. 																																												

Weak Signal No.	61	Head Keyword	msmes																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • msme 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 61 (msmes)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>20</td></tr> <tr><td>2020</td><td>100</td></tr> <tr><td>2021</td><td>280</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	10	2019	20	2020	100	2021	280
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Recent Publications	<ul style="list-style-type: none"> • Ariyani, L., Hermawati, W., Helmi, R. L., Rosaira, I., & Budiansyah, A. (2021). MSME Perceptions towards Internet Use: A Comparison of Before and During the COVID-19 Outbreak in Indonesia. <i>Asian Journal of Business and Accounting</i>, 14(2), 197-230. • Iheme, W. C. (2021). The defects of Nigeria's secured transactions in movable assets act 2017 and their potential repercussions on access to credit: A comparative analysis and lessons from the Anglo-American law. • Novianty, H., Sefrienda, A. R., Permadi, S., Suryaningtyas, I. T., Kumayanjati, B., Setyono, D. E. D., & Poeloengasih, C. D. (2021, November). Preliminary Characterization of Seaweed Agar Sheet Products: Case Study of Local Small and Medium Enterprise in Java Island. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 934, No. 1, p. 012083). IOP Publishing. 																																												

Weak Signal No.	98	Head Keyword	influencer marketing																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • digital marketing strategies • influencer marketing • native advertising • marketing analytics • media influencers 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 98 (influencer marketing)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>20</td></tr> <tr><td>2020</td><td>100</td></tr> <tr><td>2021</td><td>200</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	10	2019	20	2020	100	2021	200
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Recent Publications	<ul style="list-style-type: none"> • Kurtzke, S., & Setkute, J. (2021). Analytics Capability in Marketing Education: A Practice-Informed Model. <i>Journal of Marketing Education</i>, 43(3), 298-316. • Ordenes, F. V., & Silipo, R. (2021). Machine learning for marketing on the KNIME Hub: The development of a live repository for marketing applications. <i>Journal of Business Research</i>, 137, 393-410. • Cao, G., Duan, Y., & Tian, N. (2021). Identifying the configurational conditions for marketing analytics use in UK SMEs. <i>Management Decision</i>, 59(12), 2952-2969. 																																												

Weak Signal No.	155	Head Keyword	showrooming																																										
All Popping Keywords in this Weak Signal	• webrooming																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 155 (showrooming)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>1</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>4</td></tr> <tr><td>2016</td><td>4</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>15</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>45</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	1	2013	2	2014	5	2015	4	2016	4	2017	15	2018	25	2019	15	2020	25	2021	45
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Recent Publications	<ul style="list-style-type: none"> • Unraveling determinants of webroomingAw, E. C. X., Basha, N. K., Ng, S. I., & Ho, J. A. (2021). Unraveling Determinants of Webrooming Behavior: A Qualitative Inquiry. <i>International Journal of Business and Society</i>, 22(3), 1550–1568. behavior: A qualitative inquiry • Shankar, A., Yadav, R., Gupta, M., & Jebarajakirthy, C. (2021). How Does Online Engagement Drive Consumers' Webrooming Intention?: A Moderated-Mediation Approach. <i>Journal of Global Information Management (JGIM)</i>, 29(6), 1–25. • Viejo-Fernández, N. (2021). Retailers, All Omni-Shoppers Are Not the Same. In <i>Modern Management based on Big Data II and Machine Learning and Intelligent Systems III</i> (pp. 3–15). IOS Press. 																																												

Weak Signal No.	158	Head Keyword	p2p accommodation																																										
All Popping Keywords in this Weak Signal	• accommodation sharing																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 158 (p2p accommodation)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>8</td></tr> <tr><td>2018</td><td>8</td></tr> <tr><td>2019</td><td>25</td></tr> <tr><td>2020</td><td>30</td></tr> <tr><td>2021</td><td>30</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	8	2018	8	2019	25	2020	30	2021	30
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Recent Publications	<ul style="list-style-type: none"> • Zhang, Y., Oh, H. K., & Lee, C. H. (2021). Understanding consumer switching intention of peer-to-peer accommodation: A push-pull-mooring framework. <i>Journal of Hospitality and Tourism Management</i>, 49, 321–330. • Sengupta, P., Biswas, B., Kumar, A., Shankar, R., & Gupta, S. (2021). Examining the predictors of successful Airbnb bookings with Hurdle models: Evidence from Europe, Australia, USA and Asia-Pacific cities. <i>Journal of Business Research</i>, 137, 538–554. • Yan, R., Zhang, K. Z., & Gong, X. (2021). Listing popularity on the peer-to-peer accommodation platform: the heuristic-systematic and uncertainty reduction perspectives. <i>International Journal of Contemporary Hospitality Management</i>. 																																												

Weak Signal No.	165	Head Keyword	brand love																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • brand hate • brand passion 																																												
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Recent Publications	<ul style="list-style-type: none"> • Talwar, S., Kaur, P., Kumar, S., Hossain, M., & Dhir, A. (2021). What determines a positive attitude towards natural food products? An expectancy theory approach. <i>Journal of Cleaner Production</i>, 327, 129204. • Khan, A., Mohammad, A. S., & Muhammad, S. (2020). An integrated model of brand experience and brand love for halal brands: survey of halal fast food consumers in Malaysia. <i>Journal of Islamic Marketing</i>, 12(8), 1492–1520. • Kim, S. H., Jeon, D. H., & Jeon, H. M. (2021). Well-being perception and lovemarks formation through experiential value in the context of the eco-friendly restaurant. <i>British Food Journal</i>. 																																												

Weak Signal No.	181	Head Keyword	leader humility																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • leader humor • leader narcissism • communal narcissism 																																												
Activity	<table border="1"> <caption>Activity Data for 'leader humility' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>25</td></tr> <tr><td>2020</td><td>30</td></tr> <tr><td>2021</td><td>28</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	10	2018	15	2019	25	2020	30	2021	28
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Recent Publications	<ul style="list-style-type: none"> • Rego, A., Melo, A. I., Bluhm, D. J., & Júnior, D. R. (2021). Leader-expressed humility predicting team psychological safety: a personality dynamics lens. <i>Journal of Business Ethics</i>, 174(3), 669–686. • Ali, M., Zhang, L., Zhang, Z., Zada, M., Begum, A., Han, H., ... & Vega-Muñoz, A. (2021). Can leaders' humility enhance project management effectiveness? Interactive effect of top management support. <i>Sustainability</i>, 13(17), 9526. • Li, X., Xue, J., & Liu, J. (2021). Linking leader humility to employee creative performance: Work engagement as a mediator. <i>Social Behavior and Personality: an international journal</i>, 49(6), 1–7. 																																												

Weak Signal No.	219	Head Keyword	gig economy																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • gig work 																																												
Activity	<table border="1"> <caption>Activity Data for 'gig economy' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>40</td></tr> <tr><td>2018</td><td>90</td></tr> <tr><td>2019</td><td>180</td></tr> <tr><td>2020</td><td>180</td></tr> <tr><td>2021</td><td>275</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	5	2017	40	2018	90	2019	180	2020	180	2021	275
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Recent Publications	<ul style="list-style-type: none"> • Xiongtao, H., Wenzhu, L., Haibin, L., & Shanshi, L. (2021). How Gig Worker Responds to Negative Customer Treatment: The Effects of Work Meaningfulness and Traits of Psychological Resilience. <i>Frontiers in Psychology</i>, 12. • Posner, E. A. (2021). The Economic Basis of the Independent Contractor/Employee Distinction. <i>Tex. L. Rev.</i>, 100, 353. • Laursen, C. S., Nielsen, M. L., & Dyreborg, J. (2021). Young Workers on Digital Labor Platforms: Uncovering the Double Autonomy Paradox. <i>Nordic Journal of Working Life Studies</i>. 																																												

Weak Signal No.	240	Head Keyword	omnichannel																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • omnichannel marketing • customer journey • omni-channel 																																												
Activity	<table border="1"> <caption>Activity Data for 'omnichannel' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>5</td></tr> <tr><td>2016</td><td>15</td></tr> <tr><td>2017</td><td>30</td></tr> <tr><td>2018</td><td>60</td></tr> <tr><td>2019</td><td>110</td></tr> <tr><td>2020</td><td>140</td></tr> <tr><td>2021</td><td>200</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	5	2016	15	2017	30	2018	60	2019	110	2020	140	2021	200
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Weak Signal No.	298	Head Keyword	green purchase intention																																										
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Activity	<table border="1"> <caption>Activity Data for 'green purchase intention'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>20</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>25</td></tr> <tr><td>2020</td><td>45</td></tr> <tr><td>2021</td><td>70</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	5	2013	5	2014	0	2015	10	2016	10	2017	20	2018	15	2019	25	2020	45	2021	70
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Recent Publications	<ul style="list-style-type: none"> • Joshi, Y., Uniyal, D. P., & Sangroya, D. (2021). Investigating consumers' green purchase intention: Examining the role of economic value, emotional value and perceived marketplace influence. <i>Journal of Cleaner Production</i>, 328, 129638. • Lestari, E. R., Septifani, R., & Nisak, K. (2021, November). Green awareness and green purchase intention: The moderating role of corporate image. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 924, No. 1, p. 012051). IOP Publishing. • Doanh, D. C., & Gadomska-Lila, K. (2021). Antecedents of green purchase intention: A cross-cultural empirical evidence from Vietnam and Poland. <i>Oeconomia Copernicana</i>, 12(4), 935–971. 																																												

Weak Signal No.	363	Head Keyword	green innovation																																										
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Recent Publications	<ul style="list-style-type: none"> • Yan, X., & Huang, Y. (2021). Is there a nonlinear economic threshold effect of financial development on the efficiency of sci-tech innovation? An empirical test from the Yangtze River Economic Belt. <i>Growth and Change</i>, 52(3), 1387–1409. • Li, J., Zhang, Q., Zhang, Z., Wang, F., & Li, X. (2021, August). Valuation Analysis of Chinese and American Listed Companies Based on Multiple Linear Regression and Grey Forecasting Model. In <i>2021 4th International Conference on Control and Computer Vision</i> (pp. 202–207). • Liu, W., Qiao, W., Wang, Y., & Xu, Z. (2021). Patent transformation opportunity to realize patent value: Discussion about the conditions to be used or exchanged. <i>Information Processing & Management</i>, 58(4), 102582. 																																												

Weak Signal No.	373	Head Keyword	customer incivility																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> customer mistreatment 																																												
Activity	<table border="1"> <caption>Activity Data (Estimated)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>1</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>1</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>3</td></tr> <tr><td>2015</td><td>4</td></tr> <tr><td>2016</td><td>6</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>2</td></tr> <tr><td>2019</td><td>22</td></tr> <tr><td>2020</td><td>38</td></tr> <tr><td>2021</td><td>20</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	1	2011	0	2012	1	2013	2	2014	3	2015	4	2016	6	2017	5	2018	2	2019	22	2020	38	2021	20
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Recent Publications	<ul style="list-style-type: none"> Impact of manHur, W. M., Moon, T. W., & Kim, M. (2021). Impact of managerial control on the relationship between customer incivility and frontline employees' up-selling behavior. <i>Service Business</i>, 15(4), 639-665. Baker, M. A., & Kim, K. (2021). Becoming cynical and depersonalized: how incivility, co-worker support and service rules affect employee job performance. <i>International Journal of Contemporary Hospitality Management</i>. Pap, Z., Virgă, D., & Notelaers, G. (2021). Perceptions of Customer Incivility, Job Satisfaction, Supervisor Support, and Participative Climate: A Multi-Level Approach. <i>Frontiers in Psychology</i>, 4701. 																																												

➤ 3.1.5. Chemical Engineering

Weak Signal No.	213	Head Keyword	coal gasification fine slag																																										
All Popping Keywords in this Weak Signal	• coal gasification slag																																												
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Recent Publications	<ul style="list-style-type: none"> • Qu, J., Zhang, J., Li, H., & Li, S. (2021). A high value utilization process for coal gasification slag: Preparation of high modulus sodium silicate by mechano-chemical synergistic activation. <i>Science of The Total Environment</i>, 801, 149761. • Zhang, Y., Wang, R., Qiu, G., Jia, W., Guo, Y., Guo, F., & Wu, J. (2021). Synthesis of porous material from coal gasification fine slag residual carbon and its application in removal of methylene blue. <i>Molecules</i>, 26(20), 6116. • Wu, F., Li, H., & Yang, K. (2021). Effects of mechanical activation on physical and chemical characteristics of coal-gasification slag. <i>Coatings</i>, 11(8), 902. 																																												

Weak Signal No.	350	Head Keyword	hemoadsorption																																										
All Popping Keywords in this Weak Signal	• haemoadsorption																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 350</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>5</td></tr> <tr><td>2004</td><td>5</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>5</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>5</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>5</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>20</td></tr> <tr><td>2020</td><td>30</td></tr> <tr><td>2021</td><td>75</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	5	2004	5	2005	0	2006	0	2007	0	2008	5	2009	0	2010	0	2011	5	2012	0	2013	5	2014	5	2015	5	2016	5	2017	10	2018	15	2019	20	2020	30	2021	75
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2021	75																																												
Recent Publications	<ul style="list-style-type: none"> • Paland, M. (2021). Use of CytoSorb in cases of acute amitriptyline intoxication. <i>Journal of Clinical Pharmacy and Therapeutics</i>, 46(5), 1476–1479. • Tomescu, D., Popescu, M., David, C., Sima, R., & Dima, S. (2021). Haemoadsorption by CytoSorb® in patients with acute liver failure: A case series. <i>The International Journal of Artificial Organs</i>, 44(8), 560–564. • Datzmann, T., Sausmann, S., Reinelt, H., & Träger, K. (2021). New treatment approaches and the dilemma of medical ethics and economics using haemoadsorption with Cytosorb. <i>Anästhesiologie & Intensivmedizin</i>, 62, 193–198. 																																												

3.1.6. Chemistry

Weak Signal No.	26	Head Keyword	mil-53 fe																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> mn-mof-74, co/zif-8, mil-125, zn-mof, nh2-mil-125 ti, pcn-222, cofe2o4/c, co-mof-74, co-mofs, nh2-mil-101 al, fe-mil-88nh2, fe-mof, ni-mof-74, nife2o4/rgo, nh2-mil-125, ce-mof, znfe2o4/rgo, mil-101 fe, nh2-uio-66, cu-mofs 																																												
Activity	<table border="1"> <caption>Activity Data (Estimated)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>2</td></tr> <tr><td>2010</td><td>3</td></tr> <tr><td>2011</td><td>2</td></tr> <tr><td>2012</td><td>2</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>8</td></tr> <tr><td>2015</td><td>15</td></tr> <tr><td>2016</td><td>12</td></tr> <tr><td>2017</td><td>20</td></tr> <tr><td>2018</td><td>35</td></tr> <tr><td>2019</td><td>50</td></tr> <tr><td>2020</td><td>52</td></tr> <tr><td>2021</td><td>45</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	2	2010	3	2011	2	2012	2	2013	5	2014	8	2015	15	2016	12	2017	20	2018	35	2019	50	2020	52	2021	45
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2021	45																																												
Recent Publications	<ul style="list-style-type: none"> Wang, S., Zhu, X., Meng, Q., Zheng, P., Zhang, J., He, Z., & Jiang, H. (2021). Gold interdigitated micro-immunosensor based on Mn-MOF-74 for the detection of <i>Listeria monocytogens</i>. <i>Biosensors and Bioelectronics</i>, 183, 113186. Shi, Y., Chu, Q., Xiong, W., Gao, J., Huang, L., Zhang, Y., & Ding, Y. (2021). A new type bimetallic NiMn-MOF-74 as an efficient low-temperatures catalyst for selective catalytic reduction of NO by CO. <i>Chemical Engineering and Processing-Process Intensification</i>, 159, 108232. Gu, X., Huang, C., Xu, Z., Wu, H., Dong, R., Liu, R., ... & Zhu, H. (2021). Core-shell Co-MOF-74@ Mn-MOF-74 catalysts with Controllable shell thickness and their enhanced catalytic activity for toluene oxidation. <i>Journal of Solid State Chemistry</i>, 294, 121803. 																																												

Weak Signal No.	51	Head Keyword	ag2o nps																																										
All Popping Keywords in this Weak Signal	• ag/ag2o-nps																																												
Activity	<table border="1"> <caption>Activity Data for ag2o nps</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>7</td></tr> <tr><td>2018</td><td>6</td></tr> <tr><td>2019</td><td>8</td></tr> <tr><td>2020</td><td>7</td></tr> <tr><td>2021</td><td>12</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	7	2018	6	2019	8	2020	7	2021	12
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Recent Publications	<ul style="list-style-type: none"> • Behera, A., & Awasthi, S. (2021). Anticarcinogenic Potentials of Silver Oxide Nanoparticles Synthesized from Lagerstroemia Indica. <i>International Journal of Nanoscience</i>, 20(06), 2150060. • Ismail, A. A., Alsheheri, S. Z., Albukhari, S. M., & Mahmoud, M. H. H. (2021). Facile synthesis of visible-light-induced mesoporous Ag₂O/Fe₂ (MoO₄)₃ photocatalysts for degradation of tetracycline. <i>Optical Materials</i>, 121, 111505. • Rajivgandhi, G. N., Chenthis Kanisha, C., Vijayakumar, S., Alharbi, N. S., Kadaikunnan, S., Khaled, J. M., ... & Li, W. J. (2021). Enhanced anti-biofilm activity of facile synthesized silver oxide nanoparticles against <i>K. pneumoniae</i>. <i>Journal of Inorganic and Organometallic Polymers and Materials</i>, 31(10), 3921–3933. 																																												

Weak Signal No.	72	Head Keyword	conductive hydrogel																																										
All Popping Keywords in this Weak Signal	• conductive polymer hydrogels																																												
Activity	<table border="1"> <caption>Activity Data for conductive hydrogel</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>20</td></tr> <tr><td>2018</td><td>30</td></tr> <tr><td>2019</td><td>50</td></tr> <tr><td>2020</td><td>100</td></tr> <tr><td>2021</td><td>160</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	10	2017	20	2018	30	2019	50	2020	100	2021	160
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Weak Signal No.	103	Head Keyword	n-gqds																																										
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Recent Publications	<ul style="list-style-type: none"> • Yadav, P. K., Upadhyay, R. K., Kumar, D., Bano, D., Chandra, S., Jit, S., & Hasan, S. H. (2021). Synthesis of green fluorescent carbon quantum dots from the latex of <i>Ficus benghalensis</i> for the detection of tyrosine and fabrication of Schottky barrier diode. <i>New Journal of Chemistry</i>, 45(28), 12549–12556. • HAO, L. J., WANG, T., DONG, G. H., ZHANG, W. Z., BAI, L. M., DU Hai-Yao, L. A. N. G., & LI, X. (2021). Preparation of green carbon quantum dots from corn starch and hydrogen ion/hydroxyl ion regulated fluorescent switch performance. <i>Chinese Journal of Applied Chemistry</i>, 38(2), 202. • Moniruzzaman, M., Lakshmi, B. A., Kim, S., & Kim, J. (2020). Preparation of shape-specific (trilateral and quadrilateral) carbon quantum dots towards multiple color emission. <i>Nanoscale</i>, 12(22), 11947–11959. 																																												

Weak Signal No.	172	Head Keyword	micro/nanomotors																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • micro-nanorobots • micro-/nanorobots • micro-/nanomotors 																																												
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Recent Publications	<ul style="list-style-type: none"> • Celi, N., Gong, D., & Cai, J. (2021). Artificial flexible sperm-like nanorobot based on self-assembly and its bidirectional propulsion in precessing magnetic fields. <i>Scientific reports</i>, 11(1), 1–11. • Wang, L., Wang, J., Hao, J., Dong, Z., Wu, J., Shen, G., ... & Zheng, Y. (2021). Guiding Drug Through Interrupted Bloodstream for Potentiated Thrombolysis by C-Shaped Magnetic Actuation System In Vivo. <i>Advanced Materials</i>, 33(51), 2105351. • Song, X., Chen, Z., Zhang, X., Xiong, J., Jiang, T., Wang, Z., ... & Cheang, U. K. (2021). Magnetic tri-bead microrobot assisted near-infrared triggered combined photothermal and chemotherapy of cancer cells. <i>Scientific reports</i>, 11(1), 1–10. 																																												

Weak Signal No.	260	Head Keyword	5f-mdmb-pica																																										
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Weak Signal No.	300	Head Keyword	cuco2o4																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • cuco2s4 • conis2s4 																																												
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Recent Publications	<ul style="list-style-type: none"> • Peymanfar, R., Selseleh-Zakerin, E., Ahmadi, A., & Tavassoli, S. H. (2021). Architecting functionalized carbon microtube/carrollite nanocomposite demonstrating significant microwave characteristics. <i>Scientific reports</i>, 11(1), 1-15. • Sheng, S., Ye, K., Gao, Y., Zhu, K., Yan, J., Wang, G., & Cao, D. (2021). Simultaneously boosting hydrogen production and ethanol upgrading using a highly-efficient hollow needle-like copper cobalt sulfide as a bifunctional electrocatalyst. <i>Journal of Colloid and Interface Science</i>, 602, 325-333. • Wang, J., Quan, Y., Wang, G., Wang, D., Xiao, J., Gao, S., ... & Cui, L. (2021). 3D hollow cage copper cobalt sulfide derived from metal-organic frameworks for high-performance asymmetric supercapacitors. <i>CrystEngComm</i>, 23(42), 7385-7396. 																																												

Weak Signal No.	341	Head Keyword	tumor-on-a-chip																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> tumor-on-chip 																																												
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Recent Publications	<ul style="list-style-type: none"> Wu, Y., Zhou, Y., Qin, X., & Liu, Y. (2021). From cell spheroids to vascularized cancer organoids: Microfluidic tumor-on-a-chip models for preclinical drug evaluations. <i>Biomicrofluidics</i>, 15(6), 061503. Sankar, S., Mehta, V., Ravi, S., Sharma, C. S., & Rath, S. N. (2021). A novel design of microfluidic platform for metronomic combinatorial chemotherapy drug screening based on 3D tumor spheroid model. <i>Biomedical Microdevices</i>, 23(4), 1–10. Samadian, H., Jafari, S., Sepand, M. R., Alaei, L., Malvajerd, S. S., Jaymand, M., ... & Izadi, Z. (2021). 3D bioprinting technology to mimic the tumor microenvironment: tumor-on-a-chip concept. <i>Materials Today Advances</i>, 12, 100160. 																																												

Weak Signal No.	379	Head Keyword	cyclopropylfentanyl																																										
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Weak Signal No.	417	Head Keyword	ssz-13 zeolite																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • ssz-39 zeolite 																																												
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Weak Signal No.	434	Head Keyword	darobactin																																										
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➤ 3.1.7. Computer Science

Weak Signal No.	6	Head Keyword	hesitant fuzzy																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> bipolar fuzzy graphs, pythagorean fuzzy, intuitionistic fuzzy graphs, neutrosophic graph, neutrosophic hypersoft, neutrosophic topological, q-rung picture fuzzy, fermatean fuzzy, neutrosophic soft, -neutrosophic, n-refined neutrosophic, single-valued neutrosophic, anti fuzzy graph, neutrosophic crisp, m-polar fuzzy, single valued neutrosophic, neutrosophic quadruple, -bipolar fuzzy, pythagorean fuzzy sets., omplex pythagorean fuzzy, bipolar fuzzy, q-rof, z-numbers, bipolar fuzzy soft, neutrosophic vague, q-rung orthopair fuzzy, linguistic q-rung orthopair fuzzy, picture fuzzy, bipolar neutrosophic, t-spherical fuzzy, interval-valued neutrosophic, intuitionistic fuzzy graph, fermatean fuzzy sets, z-number, spherical fuzzy, fuzzy neutrosophic, mbj-neutrosophic, hesitant fuzzy, hesitant fuzzy linguistic preference relation, neutrosophic graphs, refined neutrosophic 																																												
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2021	125																																												
Recent Publications	<ul style="list-style-type: none"> Vertkov, A. V., Zharkov, M. Y., Lyublinskii, I. E., & Safronov, V. A. (2021). Comparative Analysis of Lithium First Wall Concepts for Tokamak with Rea Karaşan, A., Kaya, İ., Erdoğan, M., & Çolak, M. (2021). A multicriteria decision making methodology based on two-dimensional uncertainty by hesitant Z-fuzzy linguistic terms with an application for blockchain risk evaluation. <i>Applied Soft Computing</i>, 113, 108014. Yaakob, A. M., Shafie, S., Gegov, A., & Rahman, S. F. A. (2021). Z-Hesitant Fuzzy Network Model with Reliability and Transparency of Information for Decision Systems. <i>International Journal of Computational Intellctor Technologies. Plasma Physics Reports</i>, 47(12), 1245–1260. <i>igence Systems</i>, 14(1), 1–14. 																																												

Weak Signal No.	8	Head Keyword	p2p lending																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> equity crowdfunding, open banking, fintech lending, digital banking services, inclusive finance, startup financing, fintech start-ups, fintechs, p2p lending platforms, crowdfunding platforms, charitable crowdfunding, donation-based crowdfunding, fintech services, green banking, sharia banking, p2p lending platform, digital finance, digital banking, internet finance, digital inclusive finance, islamic bank financing, crowdfunders, digital financial inclusion, equity-based crowdfunding 																																												
Activity	<table border="1"> <caption>Activity Data for p2p lending (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>5</td></tr> <tr><td>2010</td><td>10</td></tr> <tr><td>2011</td><td>15</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>15</td></tr> <tr><td>2015</td><td>35</td></tr> <tr><td>2016</td><td>55</td></tr> <tr><td>2017</td><td>35</td></tr> <tr><td>2018</td><td>65</td></tr> <tr><td>2019</td><td>90</td></tr> <tr><td>2020</td><td>115</td></tr> <tr><td>2021</td><td>95</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	5	2010	10	2011	15	2012	10	2013	10	2014	15	2015	35	2016	55	2017	35	2018	65	2019	90	2020	115	2021	95
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2020	115																																												
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Recent Publications	<ul style="list-style-type: none"> Khan, H. Z., Bose, S., Sheehy, B., & Quazi, A. (2021). Green banking disclosure, firm value and the moderating role of a contextual factor: Evidence from a distinctive regulatory setting. <i>Business Strategy and the Environment</i>, 30(8), 3651–3670. Alshebami, A. S. (2021). Evaluating the relevance of green banking practices on Saudi Banks’ green image: The mediating effect of employees’ green behaviour. <i>Journal of Banking Regulation</i>, 22(4), 275–286. Khatun, M. N., Sarker, M. N. I., & Mitra, S. (2021). Green Banking and Sustainable Development in Bangladesh. <i>Sustainability and Climate Change</i>, 14(5), 262–271. 																																												

Weak Signal No.	9	Head Keyword	connected vehicle																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> driverless car, truck platooning, cloud-based vehicular self-driving car, self-driving vehicle, intelligent connected vehicles, internet-of-vehicles 																																												
Activity	<table border="1"> <caption>Activity Data for connected vehicle (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>30</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>20</td></tr> <tr><td>2017</td><td>180</td></tr> <tr><td>2018</td><td>40</td></tr> <tr><td>2019</td><td>200</td></tr> <tr><td>2020</td><td>60</td></tr> <tr><td>2021</td><td>280</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	10	2013	10	2014	30	2015	10	2016	20	2017	180	2018	40	2019	200	2020	60	2021	280
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Recent Publications	<ul style="list-style-type: none"> Khaska, K., & Miletics, D. (2021). Sight distance analyses for autonomous vehicles in Civil 3D. <i>Pollack Periodica</i>, 16(3), 33–38. Ibrahim, M. M., Atia, M. R., & Fakhr, M. W. (2021, December). Autonomous Vehicle Path Planning using Q-Learning. In <i>Journal of Physics: Conference Series</i> (Vol. 2128, No. 1, p. 012018). IOP Publishing. Wu, S., Hadachi, A., Vivet, D., & Prabhakar, Y. (2021). This Is the Way: Sensors Auto-Calibration Approach Based on Deep Learning for Self-Driving Cars. <i>IEEE Sensors Journal</i>, 21(24), 27779–27788. 																																												

Weak Signal No.	27	Head Keyword	zero-shot learning																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • graph embeddings • node embedding • multi-view representation learning • graph representation learning • low-shot learning 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 27</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>20</td></tr> <tr><td>2015</td><td>30</td></tr> <tr><td>2016</td><td>40</td></tr> <tr><td>2017</td><td>80</td></tr> <tr><td>2018</td><td>120</td></tr> <tr><td>2019</td><td>180</td></tr> <tr><td>2020</td><td>250</td></tr> <tr><td>2021</td><td>350</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	10	2014	20	2015	30	2016	40	2017	80	2018	120	2019	180	2020	250	2021	350
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Recent Publications	<ul style="list-style-type: none"> • Sun, D., Li, D., Ding, Z., Zhang, X., & Tang, J. (2021). Dual-decoder graph autoencoder for unsupervised graph representation learning. <i>Knowledge-Based Systems</i>, 234, 107564. • Atif, S. M., Gillis, N., Qazi, S., & Naseem, I. (2021). Structured nonnegative matrix factorization for traffic flow estimation of large cloud networks. <i>Computer Networks</i>, 201, 108564. • Zhang, H., Duan, D. G., & Zhang, Q. L. (2021, December). RWRel: A fast training framework for random walk-based knowledge graph embedding. In <i>2021 4th International Conference on Algorithms, Computing and Artificial Intelligence</i> (pp. 1-6). 																																												

Weak Signal No.	40	Head Keyword	web scraping																																										
All Popping Keywords in this Weak Signal	web scraped																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 40</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>10</td></tr> <tr><td>2015</td><td>20</td></tr> <tr><td>2016</td><td>25</td></tr> <tr><td>2017</td><td>30</td></tr> <tr><td>2018</td><td>80</td></tr> <tr><td>2019</td><td>100</td></tr> <tr><td>2020</td><td>150</td></tr> <tr><td>2021</td><td>200</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	5	2014	10	2015	20	2016	25	2017	30	2018	80	2019	100	2020	150	2021	200
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Weak Signal No.	46	Head Keyword	vgg19																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • densenets • squeezeenet 																																												
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Recent Publications	<ul style="list-style-type: none"> • Balaha, H. M., El-Gendy, E. M., & Saafan, M. M. (2021). CovH2SD: A COVID-19 detection approach based on Harris Hawks Optimization and stacked deep learning. <i>Expert Systems with Applications</i>, 186, 115805. • Taspinar, Y. S., Koklu, M., & Altin, M. (2021). Fire Detection in Images Using Framework Based on Image Processing, Motion Detection and Convolutional Neural Network. <i>International Journal of Intelligent Systems and Applications in Engineering</i>, 9(4), 171-177. • amsalu Wallelign, S. (2020). An intelligent system for coffee grading and disease identification (Doctoral dissertation, École nationale d'ingénieurs de Brest). 																																												

Weak Signal No.	49	Head Keyword	e-commerce platform																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • o2o commerce • e-commerce industry • cross-border e-commerce logistics • rural e-commerce • cross-border e-commerce • e-commerce logistics 																																												
Activity	<table border="1"> <caption>Activity Data for e-commerce platform</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>30</td></tr> <tr><td>2019</td><td>80</td></tr> <tr><td>2020</td><td>180</td></tr> <tr><td>2021</td><td>350</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	10	2018	30	2019	80	2020	180	2021	350
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Recent Publications	<ul style="list-style-type: none"> • Li, B., & Zhou, Z. (2021, November). Research on Network Platform System Under Mobile Internet and Smart Electronic Commerce Big Data Digitization. In <i>Journal of Physics: Conference Series</i> (Vol. 2083, No. 3, p. 032091). IOP Publishing. • Zeng, X., & Wang, W. (2021, September). Research on the third party logistics mode of cross border e-commerce based on machine learning algorithm. In <i>2021 4th International Conference on Information Systems and Computer Aided Education</i> (pp. 395-399). • Teng, S. (2021). Route planning method for cross-border e-commerce logistics of agricultural products based on recurrent neural network. <i>Soft Computing</i>, 25(18), 12107-12116. 																																												

Weak Signal No.	57	Head Keyword	digital currency																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • crypto-assets, bitcoin blockchain, cryptocurrency wallets, crypto currency, digital currencies, decentralized ledger, cashless transaction, crypto assets, hyperledger, crypto-currencies, blockchain+, cryptoassets 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 57</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>40</td></tr> <tr><td>2016</td><td>30</td></tr> <tr><td>2017</td><td>50</td></tr> <tr><td>2018</td><td>100</td></tr> <tr><td>2019</td><td>140</td></tr> <tr><td>2020</td><td>170</td></tr> <tr><td>2021</td><td>210</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	40	2016	30	2017	50	2018	100	2019	140	2020	170	2021	210
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Recent Publications	<ul style="list-style-type: none"> • Satria, D., & Wibowo, J. M. (2022). Big Data Analysis of Sustainable Tourism Competitiveness in East Java Province. <i>Academica Turistica-Tourism and Innovation Journal</i>, 14(2). • Fleck, E. M., & Ozlanski, M. E. (2021). Cash: never leave home with it?. <i>The CASE Journal</i>, 17(2), 182-201. • Madwanna, Y., Khadse, M., & Chandavarkar, B. R. (2021, May). Security Issues of Unified Payments Interface and Challenges: Case Study. In <i>2021 2nd International Conference on Secure Cyber Computing and Communications (ICSCCC)</i> (pp. 150-154). IEEE. 																																												

Weak Signal No.	59	Head Keyword	space-air-ground integrated network																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • space-ground integrated network 																																												
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Recent Publications	<ul style="list-style-type: none"> • Xu, S., Liu, J., Rodrigues, T. K., & Kato, N. (2021). Envisioning intelligent reflecting surface empowered space-air-ground integrated network. <i>IEEE Network</i>, 35(6), 225-232. • Chen, Y., Ai, B., Niu, Y., Zhang, H., & Han, Z. (2021). Energy-constrained computation offloading in space-air-ground integrated networks using distributionally robust optimization. <i>IEEE Transactions on Vehicular Technology</i>, 70(11), 12113-12125. • Ma, Z., Ai, B., He, R., Zhong, Z., & Yang, M. (2021). A non-stationary geometry-based MIMO channel model for millimeter-wave UAV networks. <i>IEEE Journal on Selected Areas in Communications</i>, 39(10), 2960-2974. 																																												

Weak Signal No.	65	Head Keyword	ransomware attacks																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • crypto-ransomware • fileless malware • cryptojacking • apt malware • iot malware 																																												
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Recent Publications	<ul style="list-style-type: none"> • Zhang, S., Wang, Z., Yang, J., Cheng, X., Ma, X., Zhang, H., ... & Wu, J. (2021, December). MineHunter: A Practical Cryptomining Traffic Detection Algorithm Based on Time Series Tracking. In Annual Computer Security Applications Conference (pp. 1051–1063). • Farion-Melnyk, A., Rozheliuk, V., Slipchenko, T., Banakh, S., Farion, M., & Bilan, O. (2021, September). Ransomware Attacks: Risks, Protection and Prevention Measures. In 2021 11th International Conference on Advanced Computer Information Technologies (ACIT) (pp. 473–478). IEEE. • Tekiner, E., Acar, A., Uluagac, A. S., Kirda, E., & Selcuk, A. A. (2021, September). SoK: cryptojacking malware. In 2021 IEEE European Symposium on Security and Privacy (EuroS&P) (pp. 120–139). IEEE. 																																												

Weak Signal No.	66	Head Keyword	visual question answering																																										
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Weak Signal No.	71	Head Keyword	esports																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • e-sports • e-sport • esports 																																												
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Recent Publications	<ul style="list-style-type: none"> • Scott, M. J., Summerley, R., Besombes, N., Connolly, C., Gawrysiak, J., Halevi, T., ... & Williams, J. P. (2021). Foundations for esports curricula in higher education. In <i>Proceedings of the 2021 Working Group Reports on Innovation and Technology in Computer Science Education</i> (pp. 27–55). • Biasoli, C., Vendramin, F., & Cassone, C. (2021). Congenital bleeding disorders and sports in Italy: a wellbeing study. <i>Medicina dello Sport</i>, 74(4), 720–30. • Yamanaka, G. K., Campos, M. V., Roble, O. J., & Mazzei, L. C. (2021). eSport: a state-of-the-art review based on bibliometric analysis. <i>Journal of Physical Education and Sport</i>, 21(6), 3547–3555. 																																												

Weak Signal No.	75	Head Keyword	internet of thing																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • industrial internet • industrial internet platform 																																												
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Weak Signal No.	84	Head Keyword	chat bot																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • chat bots 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 84 (chat bot)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>1</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>3</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>8</td></tr> <tr><td>2017</td><td>7</td></tr> <tr><td>2018</td><td>20</td></tr> <tr><td>2019</td><td>40</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>35</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	1	2012	5	2013	2	2014	3	2015	1	2016	8	2017	7	2018	20	2019	40	2020	25	2021	35
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Weak Signal No.	101	Head Keyword	e-wallet																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • e-wallets • mobile wallet 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 101 (e-wallet)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>2</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>3</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>2</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>35</td></tr> <tr><td>2020</td><td>60</td></tr> <tr><td>2021</td><td>90</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	2	2012	5	2013	2	2014	3	2015	1	2016	2	2017	5	2018	15	2019	35	2020	60	2021	90
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Weak Signal No.	104	Head Keyword	three-way decision																																										
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Recent Publications	<ul style="list-style-type: none"> Xu, W., Jia, B., & Li, X. (2021). A two-universe model of three-way decision with ranking and reference tuple. <i>Information Sciences</i>, 581, 808–839. Huang, X., & Zhan, J. (2021). TWD-R: A three-way decision approach based on regret theory in multi-scale decision information systems. <i>Information Sciences</i>, 581, 711–739. Yi, H., Zhang, H., Li, X., & Yang, Y. (2021). Three-way conflict analysis based on hesitant fuzzy information systems. <i>International Journal of Approximate Reasoning</i>, 139, 12–27. 																																												

Weak Signal No.	109	Head Keyword	yolov2																																										
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Recent Publications	<ul style="list-style-type: none"> Qidi, X. I. A., Bingyong, Y. A. N., Jiale, Z. H. O. U., & Huifeng, W. A. N. G. (2021). Architecture design of target detection hardware accelerator based on heterogeneous FPGA. <i>华东理工大学学报 (自然科学版)</i>, 47(6), 706–715. Anas, D. F., & Jaya, I. (2021, December). Design and implementation of fish freshness detection algorithm using deep learning. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 944, No. 1, p. 012007). IOP Publishing. Tang, E., & Stefanov, T. (2021, December). Low-memory and high-performance CNN inference on distributed systems at the edge. In <i>Proceedings of the 14th IEEE/ACM International Conference on Utility and Cloud Computing Companion</i> (pp. 1–8). 																																												

Weak Signal No.	110	Head Keyword	smart wearable devices																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • smart wristbands • smart wearables 																																												
Activity	<table border="1"> <caption>Activity Data for Smart Wearable Devices (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>30</td></tr> <tr><td>2017</td><td>35</td></tr> <tr><td>2018</td><td>30</td></tr> <tr><td>2019</td><td>50</td></tr> <tr><td>2020</td><td>75</td></tr> <tr><td>2021</td><td>125</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	5	2015	10	2016	30	2017	35	2018	30	2019	50	2020	75	2021	125
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Recent Publications	<ul style="list-style-type: none"> • Li, C., Yang, S., Guo, Y., Huang, H., Chen, H., Zuo, X., ... & Pan, L. (2021). Flexible, multi-functional sensor based on all-carbon sensing medium with low coupling for ultrahigh-performance strain, temperature and humidity sensing. <i>Chemical Engineering Journal</i>, 426, 130364. • Orlando, G., Prior, Y., Reeves, N. D., & Vileikyte, L. (2021). Patient and provider perspective of smart wearable technology in diabetic foot ulcer prevention: a systematic review. <i>Medicina</i>, 57(12), 1359. • Ioannidou, I., & Sklavos, N. (2021). On General Data Protection Regulation Vulnerabilities and Privacy Issues, for Wearable Devices and Fitness Tracking Applications. <i>Cryptography</i>, 5(4), 29. 																																												

Weak Signal No.	111	Head Keyword	credit card fraud detection																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • financial fraud detection 																																												
Activity	<table border="1"> <caption>Activity Data for Credit Card Fraud Detection (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>5</td></tr> <tr><td>2008</td><td>10</td></tr> <tr><td>2009</td><td>5</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>15</td></tr> <tr><td>2012</td><td>15</td></tr> <tr><td>2013</td><td>15</td></tr> <tr><td>2014</td><td>10</td></tr> <tr><td>2015</td><td>20</td></tr> <tr><td>2016</td><td>25</td></tr> <tr><td>2017</td><td>35</td></tr> <tr><td>2018</td><td>65</td></tr> <tr><td>2019</td><td>95</td></tr> <tr><td>2020</td><td>105</td></tr> <tr><td>2021</td><td>130</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	5	2008	10	2009	5	2010	5	2011	15	2012	15	2013	15	2014	10	2015	20	2016	25	2017	35	2018	65	2019	95	2020	105	2021	130
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Recent Publications	<ul style="list-style-type: none"> • Rouhollahi, Z., Beheshti, A., Mousaeirad, S., & Goluguri, S. R. (2021, November). Towards Proactive Financial Crime and Fraud Detection through Artificial Intelligence and RegTech Technologies. In <i>The 23rd International Conference on Information Integration and Web Intelligence</i> (pp. 538-546). • Zhu, X., Ao, X., Qin, Z., Chang, Y., Liu, Y., He, Q., & Li, J. (2021). Intelligent financial fraud detection practices in post-pandemic era. <i>The Innovation</i>, 2(4), 100176. • Jin, M., Liu, Y., Zheng, Y., Chi, L., Li, Y. F., & Pan, S. (2021, October). Anemone: graph anomaly detection with multi-scale contrastive learning. In <i>Proceedings of the 30th ACM International Conference on Information & Knowledge Management</i> (pp. 3122-3126). 																																												

Weak Signal No.	116	Head Keyword	fixed-time synchronization																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • bipartite synchronization 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 116</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>2</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>35</td></tr> <tr><td>2019</td><td>40</td></tr> <tr><td>2020</td><td>50</td></tr> <tr><td>2021</td><td>85</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	2	2017	15	2018	35	2019	40	2020	50	2021	85
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Recent Publications	<ul style="list-style-type: none"> • Zhao, H., Liu, A., Wang, Q., Zheng, M., Chen, C., Niu, S., & Li, L. (2021). Predefined-time stability/synchronization of coupled memristive neural networks with multi-links and application in secure communication. <i>Frontiers in Neurobotics</i>, 176. • Bao, Y., Zhang, Y., & Zhang, B. (2021). Fixed-time synchronization of coupled memristive neural networks via event-triggered control. <i>Applied Mathematics and Computation</i>, 411, 126542. • Liu, M., Lu, B., Li, Z., Jiang, H., & Hu, C. (2021). Fixed-Time Synchronization Control of Delayed Dynamical Complex Networks. <i>Entropy</i>, 23(12), 1610. 																																												

Weak Signal No.	119	Head Keyword	sequential recommendation																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • conversational search • explainable recommendations • explainable recommendation • conversational ai • conversational recommendation 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 119</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>80</td></tr> <tr><td>2020</td><td>120</td></tr> <tr><td>2021</td><td>220</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	5	2018	10	2019	80	2020	120	2021	220
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Recent Publications	<ul style="list-style-type: none"> • Chen, X., Tang, T., Ren, J., Lee, I., Chen, H., & Xia, F. (2021, December). Heterogeneous Graph Learning for Explainable Recommendation over Academic Networks. In <i>IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology</i> (pp. 29–36). • Yıldırım, E., Azad, P., & Ögütücü, Ş. G. (2021). biDeepFM: A multi-objective deep factorization machine for reciprocal recommendation. <i>Engineering Science and Technology, an International Journal</i>, 24(6), 1467–1477. • Yıldırım, E., Azad, P., & Ögütücü, Ş. G. (2021). biDeepFM: A multi-objective deep factorization machine for reciprocal recommendation. <i>Engineering Science and Technology, an International Journal</i>, 24(6), 1467–1477. 																																												

Weak Signal No.	121	Head Keyword	block chain technology																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • block-chain • ledger technology 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 121</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>130</td></tr> <tr><td>2020</td><td>100</td></tr> <tr><td>2021</td><td>160</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	10	2018	25	2019	130	2020	100	2021	160
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Weak Signal No.	127	Head Keyword	label noise																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • noisy label • pseudo labels 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 127</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>40</td></tr> <tr><td>2018</td><td>20</td></tr> <tr><td>2019</td><td>140</td></tr> <tr><td>2020</td><td>170</td></tr> <tr><td>2021</td><td>280</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	40	2018	20	2019	140	2020	170	2021	280
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Recent Publications	<ul style="list-style-type: none"> • Li, S., Pang, J., Wu, Q., Yao, N., & Yuan, W. (2021). Transfer learning based attack detection for wireless communication networks. <i>Concurrency and Computation: Practice and Experience</i>, 33(24), e6461. • Qian, B., & Lu, S. (2021). Detection of mobile network abnormality using deep learning models on massive network measurement data. <i>Computer Networks</i>, 201, 108571. • Li, J., Pu, J., Zhou, X., Zheng, H., Gao, Q., Xue, E., & Tong, T. (2021, December). Multi-angle Dual-task Consistency for Semi-Supervised Medical Image Segmentation. In 2021 The 9th International Conference on Information Technology: IoT and Smart City (pp. 61–66). 																																												

Weak Signal No.	128	Head Keyword	voice assistants																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • virtual assistants • virtual assistant 																																												
Activity	<table border="1"> <caption>Activity Data for 'voice assistants'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>120</td></tr> <tr><td>2020</td><td>170</td></tr> <tr><td>2021</td><td>275</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	5	2018	25	2019	120	2020	170	2021	275
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Recent Publications	<ul style="list-style-type: none"> • Jones, V. K., Hanus, M., Yan, C., Shade, M. Y., Boron, J. B., & Bicudo, R. M. (2021). Reducing Loneliness Among Aging Adults: The Roles of Personal Voice Assistants and Anthropomorphic Interactions. <i>Frontiers in public health</i>, 9. • Wei, J., Dingler, T., & Kostakos, V. (2021). Understanding User Perceptions of Proactive Smart Speakers. <i>Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies</i>, 5(4), 1–28. • Huang, L., & Wang, C. (2021). Unobtrusive Pedestrian Identification by Leveraging Footstep Sounds with Replay Resistance. <i>Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies</i>, 5(4), 1–19. 																																												

Weak Signal No.	130	Head Keyword	cyber resilience																																										
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Recent Publications	<ul style="list-style-type: none"> • OTA, Y., MIZUNO, E., WATARAI, K., & AOYAMA, T. (2022). DEVELOPMENT OF A HYBRID EXERCISE FOR ORGANIZATIONAL CYBER RESILIENCE. <i>Safety and Security Engineering IX</i>, 206, 55. • Röckl, J., Protsenko, M., Huber, M., Müller, T., & Freiling, F. C. (2021, December). Advanced System Resiliency Based on Virtualization Techniques for IoT Devices. In <i>Annual Computer Security Applications Conference</i> (pp. 455–467). • Annarelli, A., & Palombi, G. (2021). Digitalization Capabilities for Sustainable Cyber Resilience: A Conceptual Framework. <i>Sustainability</i>, 13(23), 13065. 																																												

Weak Signal No.	145	Head Keyword	hate speech detection																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • sarcasm detection • abusive language • hate speech and offensive language • hateful speech 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 145</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>30</td></tr> <tr><td>2019</td><td>75</td></tr> <tr><td>2020</td><td>130</td></tr> <tr><td>2021</td><td>140</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	5	2018	30	2019	75	2020	130	2021	140
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Recent Publications	<ul style="list-style-type: none"> • Dowlagar, S., & Mamidi, R. (2021, December). A survey of recent neural network models on code-mixed indian hate speech data. In Forum for Information Retrieval Evaluation (pp. 67–74). • Aziz, N. A. A., Maarof, M. A., & Zainal, A. (2021, January). Hate Speech and Offensive Language Detection: A New Feature Set with Filter-Embedded Combining Feature Selection. In 2021 3rd International Cyber Resilience Conference (CRC) (pp. 1–6). IEEE. • Benhur, S., & Sivanraju, K. (2021). Pretrained Transformers for Offensive Language Identification in Tanglish. arXiv preprint arXiv:2110.02852. 																																												

Weak Signal No.	146	Head Keyword	smart logistics																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • logistics 4.0 • intelligent logistics 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 146</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>5</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>25</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>50</td></tr> <tr><td>2020</td><td>75</td></tr> <tr><td>2021</td><td>120</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	5	2013	5	2014	5	2015	5	2016	10	2017	25	2018	10	2019	50	2020	75	2021	120
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Recent Publications	<ul style="list-style-type: none"> • Nobrega, J. H. C., Rampasso, I. S., Sanchez-Rodrigues, V., Quelhas, O. L. G., Leal Filho, W., Serafim, M. P., & Anholon, R. (2021). Logistics 4.0 in Brazil: Critical Analysis and Relationships with SDG 9 Targets. Sustainability, 13(23), 13012. • Nantee, N., & Sureeyatanapas, P. (2021). The impact of Logistics 4.0 on corporate sustainability: a performance assessment of automated warehouse operations. Benchmarking: An International Journal. • Efthymiou, O. K., & Ponis, S. T. (2021). Industry 4.0 Technologies and Their Impact in Contemporary Logistics: A Systematic Literature Review. Sustainability, 13(21), 11643. 																																												

Weak Signal No.	147	Head Keyword	serverless																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • microservice-based • fog/edge computing • fpga virtualization • cloud-native • serverless computing • fog-computing • microservice architecture 																																												
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Recent Publications	<ul style="list-style-type: none"> • Pakdil, M. E., & Çelik, R. N. (2021). DESIGN OF A SERVERLESS OGC WPS BASED GEOPROCESSING SERVICE SOLUTION. <i>ISPRS Annals of Photogrammetry, Remote Sensing & Spatial Information Sciences</i>. • Al-Haboobi, A., & Kecskemeti, G. (2021). Execution Time Reduction in Function Oriented Scientific Workflows. <i>Acta Cybernetica</i>, 25(2), 131-150. • Sallo, D. H., & Kecskemeti, G. (2021). A Parallel Event System for Large-Scale Cloud Simulations in DISSECT-CF. <i>Acta Cybernetica</i>, 25(2), 469-484. 																																												

Weak Signal No.	157	Head Keyword	vr technology																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • immersive technology • virtual reality and augmented reality 																																												
Activity	<table border="1"> <caption>Activity Data for 'vr technology'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>100</td></tr> <tr><td>2019</td><td>200</td></tr> <tr><td>2020</td><td>100</td></tr> <tr><td>2021</td><td>480</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	100	2019	200	2020	100	2021	480
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Weak Signal No.	159	Head Keyword	multimooraa																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • best-worst method 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 159</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>20</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>35</td></tr> <tr><td>2020</td><td>70</td></tr> <tr><td>2021</td><td>0</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	10	2017	20	2018	25	2019	35	2020	70	2021	0
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Weak Signal No.	163	Head Keyword	dark web																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • darkweb 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 163</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>45</td></tr> <tr><td>2018</td><td>50</td></tr> <tr><td>2019</td><td>85</td></tr> <tr><td>2020</td><td>100</td></tr> <tr><td>2021</td><td>140</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	10	2017	45	2018	50	2019	85	2020	100	2021	140
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Weak Signal No.	166	Head Keyword	document embedding																																										
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Weak Signal No.	167	Head Keyword	computational drug repositioning																																										
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Recent Publications	<ul style="list-style-type: none"> Cotrina, E. Y., Santos, L. M., Rivas, J., Blasi, D., Leite, J. P., Liz, M. A., ... & Arsequell, G. (2021). Targeting transthyretin in Alzheimer's disease: Drug discovery of small-molecule chaperones as disease-modifying drug candidates for Alzheimer's disease. <i>European Journal of Medicinal Chemistry</i>, 226, 113847. Groza, V., Udrescu, M., Bozdog, A., & Udrescu, L. (2021). Drug repurposing using modularity clustering in drug–drug similarity networks based on drug-gene interactions. <i>Pharmaceutics</i>, 13(12), 2117. Mokou, M., Frantzi, M., Mischak, H., Vlahou, A., & Latosinska, A. (2021). Developing novel drug candidates and repurposed drugs for prostate cancer based on molecular profiles. <i>Current Medicinal Chemistry</i>, 28(40), 8392–8415. 																																												

Weak Signal No.	168	Head Keyword	monocular depth estimation																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • 6d pose estimation • v-slam • rgb-d slam • multi-person pose estimation • vslam 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 168</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>20</td></tr> <tr><td>2019</td><td>50</td></tr> <tr><td>2020</td><td>100</td></tr> <tr><td>2021</td><td>250</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	5	2018	20	2019	50	2020	100	2021	250
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Recent Publications	<ul style="list-style-type: none"> • Tallón-Ballesteros, A. J. (2022, January). Incremental 2D Grid Map Generation from RGB-D Images. In Proceedings of CECNet 2021: The 11th International Conference on Electronics, Communications and Networks (CECNet), November 18-21, 2021 (Vol. 345, p. 450). IOS Press. • Dai, W., Zhang, Y., Zheng, Y., Sun, D., & Li, P. (2021). RGB-D SLAM with moving object tracking in dynamic environments. IET Cyber-Systems and Robotics, 3(4), 281-291. • Dai, W., Zhang, Y., Zheng, Y., Sun, D., & Li, P. (2021). RGB-D SLAM with moving object tracking in dynamic environments. IET Cyber-Systems and Robotics, 3(4), 281-291. 																																												

Weak Signal No.	171	Head Keyword	cybersecurity incidents																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • cyber security awareness • cybersecurity threat 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 171</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>35</td></tr> <tr><td>2020</td><td>30</td></tr> <tr><td>2021</td><td>50</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	5	2018	15	2019	35	2020	30	2021	50
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Weak Signal No.	179	Head Keyword	darknet																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • darknets 																																												
Activity	<table border="1"> <caption>Activity Data for 'darknet'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>0</td></tr> <tr><td>2020</td><td>0</td></tr> <tr><td>2021</td><td>170</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	0	2020	0	2021	170
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Recent Publications	<ul style="list-style-type: none"> • Zhang, P., Wang, X., Ya, J., Zhao, J., Liu, T., & Shi, J. (2021, December). Darknet Public Hazard Entity Recognition Based on Deep Learning. In Proceedings of the 2021 ACM International Conference on Intelligent Computing and its Emerging Applications (pp. 94–100). • Prajapati, R., Honavar, V., Wu, D., Yen, J., & Kallitsis, M. (2021, December). Shedding light into the darknet: scanning characterization and detection of temporal changes. In Proceedings of the 17th International Conference on emerging Networking EXperiments and Technologies (pp. 469–470). • Gioacchini, L., Vassio, L., Mellia, M., Drago, I., Houidi, Z. B., & Rossi, D. (2021, December). DarkVec: automatic analysis of darknet traffic with word embeddings. In Proceedings of the 17th International Conference on emerging Networking EXperiments and Technologies (pp. 76–89). 																																												

Weak Signal No.	184	Head Keyword	clickbait																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • clickbaits 																																												
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Recent Publications	<ul style="list-style-type: none"> • Chang, S., Wang, R., Huang, H., & Luo, J. (2021). TA-BiLSTM: An Interpretable Topic-Aware Model for Misleading Information Detection in Mobile Social Networks. <i>Mobile Networks and Applications</i>, 26(6), 2298–2314. • Kovalev, A. (2021). The political economics of news making in Russian media: Ownership, clickbait and censorship. <i>Journalism</i>, 22(12), 2906–2918. • Stephens, J., Natoli, R., & Gilchrist, M. (2021). Too close for comfort: journalists' ethical challenges in regional Australia. <i>Media International Australia</i>, 181(1), 72–86. 																																												

Weak Signal No.	185	Head Keyword	live streaming platforms																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • deepfakes • deep fakes 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 185</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>15</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>35</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	5	2018	10	2019	15	2020	25	2021	35
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Weak Signal No.	186	Head Keyword	micro-video																																										
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Weak Signal No.	194	Head Keyword	deepfake																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • deep fakes • deepfakes 																																												
Activity	<table border="1"> <caption>Activity Data for 'deepfake'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>25</td></tr> <tr><td>2020</td><td>130</td></tr> <tr><td>2021</td><td>280</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	10	2019	25	2020	130	2021	280
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Weak Signal No.	205	Head Keyword	uav swarm																																										
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Recent Publications	<ul style="list-style-type: none"> • Chen, B. S., Wang, C. P., & Lee, M. Y. (2020). Stochastic robust team tracking control of multi-UAV networked system under Wiener and Poisson random fluctuations. <i>IEEE Transactions on Cybernetics</i>, 51(12), 5786–5799. • Day, R., & Salmon, J. (2021). A Framework for Multi-UAV Persistent Search and Retrieval with Stochastic Target Appearance in a Continuous Space. <i>Journal of Intelligent & Robotic Systems</i>, 103(4), 1–17. • Qu, C., Calyam, P., Yu, J., Vandanapu, A., Opeoluwa, O., Gao, K., ... & Palaniappan, K. (2021). DroneCOCO: Learning-based edge computation offloading and control networking for drone video analytics. <i>Future Generation Computer Systems</i>, 125, 247–262. 																																												

Weak Signal No.	206	Head Keyword	360-degree video																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • 360-degree videos 																																												
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Weak Signal No.	208	Head Keyword	multimodal sentiment analysis																																										
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Weak Signal No.	218	Head Keyword	lower limb exoskeleton																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • lower limb exoskeleton robot 																																												
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Recent Publications	<ul style="list-style-type: none"> • Zheng, Y., Wang, Y., & Liu, J. (2021). Analysis and experimental research on stability characteristics of squatting posture of wearable lower limb exoskeleton robot. <i>Future Generation Computer Systems</i>, 125, 352–363. • Zhao, J., Yang, T., Ma, Z., Yang, C., Wang, Z., & Xu, J. (2021). Design of MG modal space sliding mode control for lower limb exoskeleton robot driven by electrical actuators. <i>Mechatronics</i>, 78, 102610. • Guo, S., Ding, Y., & Guo, J. (2021, August). Control of A Lower Limb Exoskeleton Robot by Upper Limb sEMG Signal. In <i>2021 IEEE International Conference on Mechatronics and Automation (ICMA)</i> (pp. 1113–1118). IEEE. 																																												

Weak Signal No.	226	Head Keyword	person re-id																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • vehicle re-identification • person reid 																																												
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Recent Publications	<ul style="list-style-type: none"> • Zhang, J., Zhong, X., Yuan, J., Zhao, S., Zhang, R., Feng, D., & Zhong, L. (2021). Local-enhanced Multi-resolution Representation Learning for Vehicle Re-identification. In <i>ACM Multimedia Asia</i> (pp. 1–6). • Deng, J., Hao, Y., Khokhar, M. S., Kumar, R., Cai, J., Kumar, J., & Aftab, M. U. (2021). Trends in vehicle re-identification past, present, and future: A comprehensive review. <i>Mathematics</i>, 9(24), 3162. • Xiong, Z., Li, M., Ma, Y., & Wu, X. (2020). Vehicle re-identification with image processing and car-following model using multiple surveillance cameras from urban arterials. <i>IEEE Transactions on Intelligent Transportation Systems</i>, 22(12), 7619–7630. 																																												

Weak Signal No.	241	Head Keyword	caption generation																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> paraphrase generation headline generation 																																												
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Weak Signal No.	245	Head Keyword	factorization machine																																										
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Weak Signal No.	247	Head Keyword	micro-lecture																																										
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Weak Signal No.	249	Head Keyword	opc ua																																										
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Recent Publications	<ul style="list-style-type: none"> • Iaremko, I., Senkerik, R., Jasek, R., & Lukastik, P. (2021). An effective data reduction model for machine emergency state detection from big data tree topology structures. International Journal of Applied Mathematics and Computer Science, 31(4). • Cavalieri, S., & Mulè, S. (2021). Interoperability between OPC UA and oneM2M. Journal of Internet Services and Applications, 12(1), 1–31. • Song, Y., Guo, C., Xu, P., Li, L., & Zhang, R. (2021). Research on routing and scheduling algorithms for the simultaneous transmission of diverse data streaming services on the industrial internet. Scientific Reports, 11(1), 1–13. 																																												

Weak Signal No.	257	Head Keyword	ufmc																																										
All Popping Keywords in this Weak Signal	• oqam-fbmc																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 257 (ufmc)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>10</td></tr> <tr><td>2015</td><td>15</td></tr> <tr><td>2016</td><td>45</td></tr> <tr><td>2017</td><td>50</td></tr> <tr><td>2018</td><td>55</td></tr> <tr><td>2019</td><td>110</td></tr> <tr><td>2020</td><td>70</td></tr> <tr><td>2021</td><td>65</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	2	2014	10	2015	15	2016	45	2017	50	2018	55	2019	110	2020	70	2021	65
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Recent Publications	<ul style="list-style-type: none"> Alrabeiy, S. M., Fathy, S. A., Gasser, S. M., & El-Mahallawy, M. S. (2021, December). A Modified SLM Scheme for PAPR Reduction of UFMC Systems. In <i>Journal of Physics: Conference Series</i> (Vol. 2128, No. 1, p. 012004). IOP Publishing. Pindiprolu, K., Pasham, H., Bangaru, S., Devulapalli, P. K., & Pokkunuri, P. S. (2021, December). Comparative performance analysis of candidate waveform. In <i>AIP Conference Proceedings</i> (Vol. 2407, No. 1, p. 020023). AIP Publishing LLC. Şimsir, Ş., & Taşpınar, N. (2021). An improved PTS scheme based on a novel discrete invasive weed optimization algorithm for PAPR reduction in the UFMC signal. <i>Neural Computing and Applications</i>, 33(23), 16403–16424. 																																												

Weak Signal No.	270	Head Keyword	smart glasses																																										
All Popping Keywords in this Weak Signal	• smartglasses																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 270 (smart glasses)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>15</td></tr> <tr><td>2014</td><td>35</td></tr> <tr><td>2015</td><td>130</td></tr> <tr><td>2016</td><td>135</td></tr> <tr><td>2017</td><td>115</td></tr> <tr><td>2018</td><td>145</td></tr> <tr><td>2019</td><td>175</td></tr> <tr><td>2020</td><td>185</td></tr> <tr><td>2021</td><td>220</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	5	2013	15	2014	35	2015	130	2016	135	2017	115	2018	145	2019	175	2020	185	2021	220
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Recent Publications	<ul style="list-style-type: none"> Lang, F., & Machulla, T. (2021, December). Pressing a Button You Cannot See: Evaluating Visual Designs to Assist Persons with Low Vision through Augmented Reality. In <i>Proceedings of the 27th ACM Symposium on Virtual Reality Software and Technology</i> (pp. 1–10). Siean, A. I., & Vatavu, R. D. (2021, October). Wearable interactions for users with motor impairments: Systematic review, inventory, and research implications. In <i>The 23rd International ACM SIGACCESS Conference on Computers and Accessibility</i> (pp. 1–15). Bröning, L., & Herpers, M. (2021). Analysis of Significant Factors Influencing the Technology Acceptance of Smartglasses in the Craft Sector: Analyse signifikanter Einflussfaktoren auf die Technologieakzeptanz von Smartglasses im Handwerk. In <i>Mensch und Computer 2021</i> (pp. 92–109). 																																												

Weak Signal No.	277	Head Keyword	edge caching																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • mobile edge caching • f-ran 																																												
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Recent Publications	<ul style="list-style-type: none"> • Jiang, F., Ma, R., Gao, Y., & Gu, Z. (2021). A reinforcement learning-based computing offloading and resource allocation scheme in F-RAN. <i>EURASIP Journal on Advances in Signal Processing</i>, 2021(1), 1–25. • Al-Abiad, M. S., & Hossain, M. J. (2021). A Low-Complexity Multicast Scheduling for D2D-Aided F-RANs Using Network Coding. <i>IEEE Wireless Communications Letters</i>, 10(11), 2484–2488. • Zhu, W., Tuan, H. D., Dutkiewicz, E., Fang, Y., & Hanzo, L. (2021). A new class of structured beamforming for content-centric fog radio access networks. <i>IEEE Transactions on Communications</i>, 69(11), 7269–7282. 																																												

Weak Signal No.	286	Head Keyword	micro-expression																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • micro-expression spotting 																																												
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Recent Publications	<ul style="list-style-type: none"> • Zhao, Y., Chen, Z., & Luo, S. (2021). Micro-Expression Recognition Based on Pixel Residual Sum and Cropped Gaussian Pyramid. <i>Frontiers in Neurorobotics</i>, 15. • Guo, G., & Zhang, N. (2019). A survey on deep learning based face recognition. <i>Computer vision and image understanding</i>, 189, 102805. • Ali, M. R., Myers, T., Wagner, E., Ratnu, H., Dorsey, E., & Hoque, E. (2021). Facial expressions can detect Parkinson's disease: Preliminary evidence from videos collected online. <i>NPJ digital medicine</i>, 4(1), 1–4. 																																												

Weak Signal No.	288	Head Keyword	internet celebrity																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> internet celebritys 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 288</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>4</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>14</td></tr> <tr><td>2020</td><td>17</td></tr> <tr><td>2021</td><td>20</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	4	2018	10	2019	14	2020	17	2021	20
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Recent Publications	<ul style="list-style-type: none"> Attribution Model of Travel Intention to Internet Celebrity Spots: A Systematic Exploration Based on Psychological Perspective Cai, Z., Fu, L., & Li, W. (2021, November). Research and analysis of music development based on k-means and PCA algorithm. In <i>Journal of Physics: Conference Series</i> (Vol. 2083, No. 3, p. 032044). IOP Publishing. Shi, P., Lu, X., Zhou, Y., Sun, C., Wang, L., & Geng, B. (2021). Online Star vs. Celebrity Endorsements: The Role of Self-Concept and Advertising Appeal in Influencing Purchase Intention. <i>Frontiers in psychology</i>, 12. Sun, W., Gao, W., & Geng, R. (2021). The impact of the interactivity of internet celebrity anchors on consumers' purchase intention. <i>Frontiers in Psychology</i>, 12. 																																												

Weak Signal No.	289	Head Keyword	speaker embeddings																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> audio embeddings 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 289</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>70</td></tr> <tr><td>2020</td><td>80</td></tr> <tr><td>2021</td><td>100</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	5	2018	25	2019	70	2020	80	2021	100
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Weak Signal No.	303	Head Keyword	smart home devices																																										
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Weak Signal No.	313	Head Keyword	green vehicle routing problem																																										
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Recent Publications	<ul style="list-style-type: none"> Al Theeb, N., Hayajneh, M., & Qubelat, N. A. (2020). Optimization of logistic plans with adopting the green technology considerations by utilizing electric vehicle routing problem. <i>Industrial Engineering & Management Systems</i>, 19(4), 774–789. Wang, D., & Zhou, H. (2021, November). The Electric Vehicle Routing Problem with Time Windows under Travel Time Uncertainty. In <i>Journal of Physics: Conference Series</i> (Vol. 2095, No. 1, p. 012032). IOP Publishing. Wang, D., & Zhou, H. (2021). A Two-Echelon Electric Vehicle Routing Problem with Time Windows and Battery Swapping Stations. <i>Applied Sciences</i>, 11(22), 10779. 																																												

Weak Signal No.	327	Head Keyword	smart mobility																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • shared mobility • smart city services 																																												
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Recent Publications	<ul style="list-style-type: none"> • Wang, Y., Wu, J., Chen, K., & Liu, P. (2021). Are shared electric scooters energy efficient?. <i>Communications in Transportation Research</i>, 1, 100022. • Li, J., Ma, M., Xia, X., & Ren, W. (2021). The Spatial Effect of Shared Mobility on Urban Traffic Congestion: Evidence from Chinese Cities. <i>Sustainability</i>, 13(24), 14065. • Aburukba, R., Al-Ali, A. R., Riaz, A. H., Al Nabulsi, A., Khan, D., Khan, S., & Amer, M. (2021). Fog Computing Approach for Shared Mobility in Smart Cities. <i>Energies</i>, 14(23), 8174. 																																												

Weak Signal No.	351	Head Keyword	iot gateway																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • iot gateways 																																												
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Weak Signal No.	357	Head Keyword	hackathon																																										
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Recent Publications	<ul style="list-style-type: none"> • Longmeier, M. M. (2021). Hackathons and Libraries. <i>Information Technology and Libraries</i>, 40(4). • Lyonnet, B. (2021, December). Hackathon Approach: Its Contributions on Collaboration and Teamwork Skills: A Case Study in Maritime Sector. In <i>2021 4th International Conference on Education Technology Management</i> (pp. 91–98). • Divi, N., & Smolinski, M. (2021). EpiHacks, a Process for Technologists and Health Experts to Cocreate Optimal Solutions for Disease Prevention and Control: User-Centered Design Approach. <i>Journal of Medical Internet Research</i>, 23(12), e34286. 																																												

Weak Signal No.	365	Head Keyword	emoji																																										
All Popping Keywords in this Weak Signal	• emojis																																												
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Recent Publications	<ul style="list-style-type: none"> • Escoufflaire, L. (2021). Signaling irony, displaying politeness, replacing words: The eight linguistic functions of emoji in computer-mediated discourse. <i>Lingvisticæ Investigationes</i>, 44(2), 204–235. • Makhachashvili, R., Bakhtina, A., Semenist, I., Prihodko, G., & Prykhodchenko, O. (2021, December). Emoji Explication in Digital Communication: Logical-Phenomenological Experiment. In <i>Digital Humanities Workshop</i> (pp. 191–197). • Chen, L., & Huang, Y. (2021, December). Sentiment Analysis of MicroBlog Comments Based on Multi-feature Fusion. In <i>2021 4th International Conference on Algorithms, Computing and Artificial Intelligence</i> (pp. 1–5). 																																												

Weak Signal No.	367	Head Keyword	jupyter notebooks																																										
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Weak Signal No.	368	Head Keyword	pull requests																																										
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Recent Publications	<ul style="list-style-type: none"> • Iyer, R. N., Yun, S. A., Nagappan, M., & Hoey, J. (2019). Effects of personality traits on pull request acceptance. IEEE Transactions on Software Engineering, 47(11), 2632–2643. • Abid, C., Alizadeh, V., Kessentini, M., Dhaouadi, M., & Kazman, R. (2021). Prioritizing refactorings for security-critical code. Automated Software Engineering, 28(2), 1–28. • Wessel, M., Wiese, I., Steinmacher, I., & Gerosa, M. A. (2021). Don't Disturb Me: Challenges of Interacting with Software Bots on Open Source Software Projects. Proceedings of the ACM on Human-Computer Interaction, 5(CSCW2), 1–21. 																																												

Weak Signal No.	371	Head Keyword	employee attrition																																										
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Weak Signal No.	392	Head Keyword	todim																																										
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Weak Signal No.	395	Head Keyword	video anomaly detection																																										
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Recent Publications	<ul style="list-style-type: none"> Lee, J., Lee, S., Cho, W., Siddiqui, Z. A., & Park, U. (2021). Vision Transformer-Based Tailing Detection in Videos. <i>Applied Sciences</i>, 11(24), 11591. Chandrakala, S., Srinivas, V., & Deepak, K. (2021). Residual Spatiotemporal Autoencoder with Skip Connected and Memory Guided Network for Detecting Video Anomalies. <i>Neural Processing Letters</i>, 53(6), 4677-4692. Ma, Z., Machado, J. J., & Tavares, J. M. R. (2021). Weakly supervised video anomaly detection based on 3D convolution and LSTM. <i>Sensors</i>, 21(22), 7508. 																																												

Weak Signal No.	400	Head Keyword	digital wallet																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> digital wallet 																																												
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Recent Publications	<ul style="list-style-type: none"> Sedlmeir, J., Smethurst, R., Rieger, A., & Fridgen, G. (2021). Digital identities and verifiable credentials. <i>Business & Information Systems Engineering</i>, 63(5), 603-613. Sedlmeir, J., Smethurst, R., Rieger, A., & Fridgen, G. (2021). Digital identities and verifiable credentials. <i>Business & Information Systems Engineering</i>, 63(5), 603-613. Lo, K., Liu, F., & Huang, J. (2021). OneFeather Mobile Wallet: A Digital Solution for Indigenous Peoples in Canada?. <i>Accounting Perspectives</i>, 20(3), 403-419. 																																												

Weak Signal No.	402	Head Keyword	cybersickness																																										
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Weak Signal No.	406	Head Keyword	digital footprints																																										
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Weak Signal No.	418	Head Keyword	network public opinion																																										
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Weak Signal No.	424	Head Keyword	sigfox																																										
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Weak Signal No.	428	Head Keyword	phishing detection																																										
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Weak Signal No.	432	Head Keyword	autoai																																										
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Weak Signal No.	435	Head Keyword	wechat applet																																										
All Popping Keywords in this Weak Signal	• douyin																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 435</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>10</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>30</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	10	2020	25	2021	30
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Recent Publications	<ul style="list-style-type: none"> • Wang, A. (2021, November). Real-time monitoring software for electric vehicle battery power based on WeChat applet. In <i>Journal of Physics: Conference Series</i> (Vol. 2083, No. 2, p. 022053). IOP Publishing. • Yuan, Q., Liu, Z., Yang, F., & Ma, T. (2021). Intelligent Shopping Cart Design Based on the Multi-Sensor Information Fusion Technology and Vision Servo Technology. <i>IEEE Sensors Journal</i>, 21(22), 26033–26041. • Ding, Y., Lu, X., Xie, Z., Jiang, T., Song, C., & Wang, Z. (2021). Evaluation of a Novel WeChat Applet for Image-Based Dietary Assessment among Pregnant Women in China. <i>Nutrients</i>, 13(9), 3158. 																																												

Weak Signal No.	436	Head Keyword	stylegan																																										
All Popping Keywords in this Weak Signal	• res2net																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 436</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>10</td></tr> <tr><td>2020</td><td>40</td></tr> <tr><td>2021</td><td>110</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	10	2020	40	2021	110
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Recent Publications	<ul style="list-style-type: none"> • Wei, Y., & Hou, W. (2021). Blurring kernel extraction and super-resolution image reconstruction based on style generative adversarial networks. <i>Optics Express</i>, 29(26), 44024–44044. • Ma, D., Liu, J., Fang, H., Wang, N., Zhang, C., Li, Z., & Dong, J. (2021). A Multi-defect detection system for sewer pipelines based on StyleGAN-SDM and fusion CNN. <i>Construction and Building Materials</i>, 312, 125385. • Prasanthi, J., & Anuradha, G. (2021, November). Face Transferring on Webcam images using StyleGAN. In <i>Journal of Physics: Conference Series</i> (Vol. 2062, No. 1, p. 012011). IOP Publishing. 																																												

Weak Signal No.	438	Head Keyword	tinyml																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • wifi6 • wireless federated learning • encrypted malicious traffic • multi-station integration • wireless tsn • broadcasting and hosting 																																												
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Recent Publications	<ul style="list-style-type: none"> • Bai, X. (2021, November). Research on the Application of Renewable Energy in DC Data Center. In <i>Journal of Physics: Conference Series</i> (Vol. 2108, No. 1, p. 012054). IOP Publishing. • Zhang, X., Fang, J., Zou, J., Li, W., Xu, W., & Ling, B. (2021, October). Data-driven User Behavior Prediction Based on Integrated Prediction Model. In <i>2021 IEEE 5th Information Technology, Networking, Electronic and Automation Control Conference (ITNEC)</i> (Vol. 5, pp. 1232–1236). IEEE. • Zhang, X., Fang, J., Zou, J., Li, W., Xu, W., & Ling, B. (2021, October). Small-scale Source-network-load-storage Friendly Interaction Fusion Method. In <i>2021 IEEE 5th Information Technology, Networking, Electronic and Automation Control Conference (ITNEC)</i> (Vol. 5, pp. 1237–1241). IEEE. 																																												

➤ 3.1.8. Dentistry

Weak Signal No.	222	Head Keyword	teledentistry																																										
All Popping Keywords in this Weak Signal	• tele-dentistry																																												
Activity	<table border="1"> <caption>Activity Data (Estimated)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>5</td></tr> <tr><td>2003</td><td>5</td></tr> <tr><td>2004</td><td>5</td></tr> <tr><td>2005</td><td>5</td></tr> <tr><td>2006</td><td>5</td></tr> <tr><td>2007</td><td>5</td></tr> <tr><td>2008</td><td>5</td></tr> <tr><td>2009</td><td>5</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>5</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>5</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>10</td></tr> <tr><td>2020</td><td>80</td></tr> <tr><td>2021</td><td>110</td></tr> </tbody> </table>			Year	Activity	2002	5	2003	5	2004	5	2005	5	2006	5	2007	5	2008	5	2009	5	2010	5	2011	5	2012	5	2013	5	2014	5	2015	5	2016	10	2017	15	2018	10	2019	10	2020	80	2021	110
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Recent Publications	<ul style="list-style-type: none"> • Joshi, V., Bhardwaj, P., Joshi, N. K., Singh, K., Bajaj, K., & Suthar, P. (2021). A Scoping review of challenges, scope and assessment approaches of teledentistry: an Indian perspective. <i>Indian Journal of Community Health</i>, 33(4). • Celesti, A., De Falco, I., Pecchia, L., & Sannino, G. (2021). Guest Editorial Enabling Technologies for Next Generation Telehealthcare. <i>IEEE Journal of Biomedical and Health Informatics</i>, 25(12), 4240–4242. • Arqub, S. A., Voldman, R., Ahmida, A., Kuo, C. L., Godoy, L. D. C., Nasrawi, Y., ... & Uribe, F. (2021). Patients' perceptions of orthodontic treatment experiences during COVID-19: a cross-sectional study. <i>Progress in Orthodontics</i>, 22(1), 1–12. 																																												

➤ 3.1.9. Earth and Planetary Sciences

Weak Signal No.	74	Head Keyword	broken coal																																										
All Popping Keywords in this Weak Signal	• gas-bearing coal																																												
Activity	<table border="1"> <caption>Activity Data for 'broken coal'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>1</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>1</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>18</td></tr> <tr><td>2018</td><td>5</td></tr> <tr><td>2019</td><td>28</td></tr> <tr><td>2020</td><td>22</td></tr> <tr><td>2021</td><td>30</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	1	2010	0	2011	0	2012	1	2013	0	2014	0	2015	1	2016	0	2017	18	2018	5	2019	28	2020	22	2021	30
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Weak Signal No.	100	Head Keyword	coal-based graphite																																										
All Popping Keywords in this Weak Signal	• coal-based graphene																																												
Activity	<table border="1"> <caption>Activity Data for 'coal-based graphite'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>4</td></tr> <tr><td>2018</td><td>2</td></tr> <tr><td>2019</td><td>7</td></tr> <tr><td>2020</td><td>20</td></tr> <tr><td>2021</td><td>7</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	4	2018	2	2019	7	2020	20	2021	7
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Weak Signal No.	273	Head Keyword	nighttime lights																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> night-time light 																																												
Activity	<table border="1"> <caption>Activity Data for 'nighttime lights' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>10</td></tr> <tr><td>2008</td><td>5</td></tr> <tr><td>2009</td><td>15</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>10</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>15</td></tr> <tr><td>2015</td><td>20</td></tr> <tr><td>2016</td><td>20</td></tr> <tr><td>2017</td><td>35</td></tr> <tr><td>2018</td><td>35</td></tr> <tr><td>2019</td><td>60</td></tr> <tr><td>2020</td><td>50</td></tr> <tr><td>2021</td><td>75</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	10	2008	5	2009	15	2010	5	2011	10	2012	10	2013	5	2014	15	2015	20	2016	20	2017	35	2018	35	2019	60	2020	50	2021	75
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Weak Signal No.	322	Head Keyword	islands and reefs																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> coralligenous reefs 																																												
Activity	<table border="1"> <caption>Activity Data for 'islands and reefs' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>7</td></tr> <tr><td>2015</td><td>2</td></tr> <tr><td>2016</td><td>6</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>4</td></tr> <tr><td>2019</td><td>8</td></tr> <tr><td>2020</td><td>22</td></tr> <tr><td>2021</td><td>25</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	2	2014	7	2015	2	2016	6	2017	2	2018	4	2019	8	2020	22	2021	25
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Recent Publications	<ul style="list-style-type: none"> Liang, X., & Yin, S. (2021). Evaluation of the flexural behavior and serviceability of engineered cementitious composite-coral aggregate concrete beams reinforced with BFRP bars. <i>Construction and Building Materials</i>, 308, 124937. Zhu, W., Ye, L., Qiu, Z., Luan, K., He, N., Wei, Z., ... & Yang, F. (2021). Research of the Dual-Band Log-Linear Analysis Model Based on Physics for Bathymetry without In-Situ Depth Data in the South China Sea. <i>Remote Sensing</i>, 13(21), 4331. Liang, X., & Yin, S. (2021). Mechanical properties and gas permeability of coral aggregate concrete incorporating supplementary cementitious materials. <i>Construction and Building Materials</i>, 302, 124237. 																																												

Weak Signal No.	342	Head Keyword	tourism poverty alleviation																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • pv poverty alleviation 																																												
Activity	<table border="1"> <caption>Activity Data for 'pv poverty alleviation'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>1</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>1</td></tr> <tr><td>2019</td><td>3</td></tr> <tr><td>2020</td><td>13</td></tr> <tr><td>2021</td><td>15</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	1	2013	0	2014	0	2015	0	2016	0	2017	2	2018	1	2019	3	2020	13	2021	15
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Recent Publications	<ul style="list-style-type: none"> • Meng, R., Zhang, L., Zang, H., & Jin, S. (2021). Evaluation of Environmental and Economic Integrated Benefits of Photovoltaic Poverty Alleviation Technology in the Sanjiangyuan Region of Qinghai Province. <i>Sustainability</i>, 13(23), 13236. • Chen, C. F., Li, J., Shuai, J., Nelson, H., Walzem, A., & Cheng, J. (2021). Linking social-psychological factors with policy expectation: Using local voices to understand solar PV poverty alleviation in Wuhan, China. <i>Energy Policy</i>, 151, 112160. • Liu, J., Huang, F., Wang, Z., & Shuai, C. (2021). What is the anti-poverty effect of solar PV poverty alleviation projects? Evidence from rural China. <i>Energy</i>, 218, 119498. 																																												

Weak Signal No.	343	Head Keyword	flash drought																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • flash droughts 																																												
Activity	<table border="1"> <caption>Activity Data for 'flash droughts'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>1</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>5</td></tr> <tr><td>2019</td><td>20</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>35</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	1	2015	0	2016	0	2017	2	2018	5	2019	20	2020	25	2021	35
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Recent Publications	<ul style="list-style-type: none"> • Brust, C., Kimball, J. S., Maneta, M. P., Jencso, K., & Reichle, R. H. (2021). DroughtCast: A Machine Learning Forecast of the United States Drought Monitor. <i>Frontiers in big Data</i>, 4. • Ho, S., Tian, L., Disse, M., & Tuo, Y. (2021). A new approach to quantify propagation time from meteorological to hydrological drought. <i>Journal of Hydrology</i>, 603, 127056. • Hunt, E., Femia, F., Werrell, C., Christian, J. I., Otkin, J. A., Basara, J., ... & McGaughey, K. (2021). Agricultural and food security impacts from the 2010 Russia flash drought. <i>Weather and Climate Extremes</i>, 34, 100383. 																																												

Weak Signal No.	356	Head Keyword	burnt rock																																										
All Popping Keywords in this Weak Signal	• burnt rocks																																												
Activity	<table border="1"> <caption>Activity Data for 'burnt rock' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>1</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>1</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>4</td></tr> <tr><td>2019</td><td>6</td></tr> <tr><td>2020</td><td>6</td></tr> <tr><td>2021</td><td>16</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	1	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	1	2016	1	2017	5	2018	4	2019	6	2020	6	2021	16
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Recent Publications	<ul style="list-style-type: none"> • Wang, S., Sun, Q., Wang, N., Luo, T., & Zhang, H. (2021). Responses of the magnetic susceptibility and chromaticity of loess to temperature in a coal fire area. <i>Acta Geodaetica et Geophysica</i>, 56(3), 425-437. • Xue, J., Shi, L., Wang, H., Ji, Z., Shang, H., Xu, F., ... & Luo, A. (2021). Water abundance evaluation of a burnt rock aquifer using the AHP and entropy weight method: a case study in the Yongxin coal mine, China. <i>Environmental Earth Sciences</i>, 80(11), 1-12. • Xie, H., Li, J., Dong, Y., Li, G., & Han, Z. (2021). Fast Fisher discrimination of water-rich burnt rock based on DC electrical sounding data. <i>Mine Water and the Environment</i>, 40(2), 539-546. 																																												

Weak Signal No.	384	Head Keyword	strainburst																																										
All Popping Keywords in this Weak Signal	• strainbursts																																												
Activity	<table border="1"> <caption>Activity Data for 'strainburst' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>1</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>1</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>4</td></tr> <tr><td>2015</td><td>3</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>8</td></tr> <tr><td>2018</td><td>8</td></tr> <tr><td>2019</td><td>14</td></tr> <tr><td>2020</td><td>9</td></tr> <tr><td>2021</td><td>16</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	1	2009	0	2010	1	2011	0	2012	0	2013	2	2014	4	2015	3	2016	5	2017	8	2018	8	2019	14	2020	9	2021	16
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Recent Publications	<ul style="list-style-type: none"> • Shi, L., Li, C. C., & Zhang, X. (2021, October). Determination of an intrinsic proneness index for strainburst and its verification by true triaxial compression tests. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 861, No. 6, p. 062092). IOP Publishing. • Gao, F., & Yang, L. (2021). Experimental and numerical investigation on the role of energy transition in strainbursts. <i>Rock Mechanics and Rock Engineering</i>, 54(9), 5057-5070. • Zhao, X. G., Wang, J., Cai, M., & Su, G. S. (2021). Influence of intermediate principal stress on the strainburst characteristics of beishan granite with consideration of end effect. <i>Rock Mechanics and Rock Engineering</i>, 54(9), 4771-4791. 																																												

➤ 3.1.10. Economics, Econometrics and Finance

Weak Signal No.	294	Head Keyword	single-cell omics																																										
All Popping Keywords in this Weak Signal	• single-cell multi-omics																																												
Activity	<table border="1"> <caption>Activity Data for single-cell omics</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>2</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>50</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>65</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	2	2017	5	2018	10	2019	50	2020	25	2021	65
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Recent Publications	<ul style="list-style-type: none"> • Yan, R., Cheng, X., & Guo, F. (2021). Protocol for scChaRM-seq: Simultaneous profiling of gene expression, DNA methylation, and chromatin accessibility in single cells. <i>STAR protocols</i>, 2(4), 100972. • Zhang, X., & Grimes, H. L. (2021). Why Single-Cell Sequencing Has Promise in MDS. <i>Frontiers in Oncology</i>, 11. • Hu, Y., Cao, G., Chen, X., Huang, X., Asby, N., Ankenbruck, N., ... & Huang, J. (2021). Antigen multimers: Specific, sensitive, precise, and multifunctional high-avidity CAR-staining reagents. <i>Matter</i>, 4(12), 3917–3940. 																																												

Weak Signal No.	306	Head Keyword	uncertainty shocks																																										
All Popping Keywords in this Weak Signal	• monetary policy uncertainty																																												
Activity	<table border="1"> <caption>Activity Data for uncertainty shocks</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>35</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>45</td></tr> <tr><td>2020</td><td>40</td></tr> <tr><td>2021</td><td>90</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	5	2017	35	2018	15	2019	45	2020	40	2021	90
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Weak Signal No.	376	Head Keyword	investor attention																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • stock price crash risk 																																												
Activity	<table border="1"> <caption>Activity Data for 'investor attention'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>20</td></tr> <tr><td>2014</td><td>10</td></tr> <tr><td>2015</td><td>30</td></tr> <tr><td>2016</td><td>40</td></tr> <tr><td>2017</td><td>50</td></tr> <tr><td>2018</td><td>60</td></tr> <tr><td>2019</td><td>80</td></tr> <tr><td>2020</td><td>120</td></tr> <tr><td>2021</td><td>180</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	10	2013	20	2014	10	2015	30	2016	40	2017	50	2018	60	2019	80	2020	120	2021	180
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Weak Signal No.	396	Head Keyword	share pledging																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • share pledges 																																												
Activity	<table border="1"> <caption>Activity Data for 'share pledging'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>2</td></tr> <tr><td>2019</td><td>7</td></tr> <tr><td>2020</td><td>7</td></tr> <tr><td>2021</td><td>28</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	2	2019	7	2020	7	2021	28
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➤ 3.1.11. Energy

Weak Signal No.	22	Head Keyword	solar power plants																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • rooftop solar pv • rooftop solar power plant 																																												
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Weak Signal No.	76	Head Keyword	prelithiation																																										
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Weak Signal No.	97	Head Keyword	sspcms																																										
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Recent Publications	<ul style="list-style-type: none"> • Jafaripour, M., Sadrameli, S. M., Mousavi, S. A. H. S., & Soleimanpour, S. (2021). Experimental investigation for the thermal management of a coaxial electrical cable system using a form-stable low temperature phase change material. <i>Journal of Energy Storage</i>, 44, 103450. • Cai, Y., Zhang, N., Yuan, Y., Zhong, W., & Yu, N. (2021). Multi-energy driven form-stable phase change materials based on SEBS and reduced graphene oxide aerogel. <i>Solar Energy Materials and Solar Cells</i>, 233, 111390. • Cao, Y., Fan, D., Lin, S., Ng, F. T., & Pan, Q. (2021). Branched alkylated polynorbornene and 3D flower-like MoS₂ nanospheres reinforced phase change composites with high thermal energy storage capacity and photothermal conversion efficiency. <i>Renewable Energy</i>, 179, 687–695. 																																												

Weak Signal No.	152	Head Keyword	park-level integrated energy system																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • electricity-gas integrated energy system 																																												
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Recent Publications	<ul style="list-style-type: none"> • Fan, J., & Tong, X. (2021). Tri-level defense strategy for electricity-gas integrated systems against load redistribution attacks. <i>International Transactions on Electrical Energy Systems</i>, 31(11), e13062. • Su, J., Chiang, H. D., & Alberto, L. F. C. (2021). Two-Time-Scale Approach to Characterize the Steady-State Security Region for the Electricity-Gas Integrated Energy System. <i>IEEE Transactions on Power Systems</i>, 36(6), 5863–5873. • Liu, X., Li, X., Geng, C., Huang, J., Yang, L., Zhu, J., & Wang, T. (2021, August). Day-ahead economic dispatch of integrated energy system including power to gas. In <i>2021 IEEE 16th Conference on Industrial Electronics and Applications (ICIEA)</i> (pp. 1889–1894). IEEE. 																																												

Weak Signal No.	177	Head Keyword	lithium plating																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • li plating 																																												
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Weak Signal No.	178	Head Keyword	photovoltaic power station																																										
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Weak Signal No.	198	Head Keyword	crowd logistics																																										
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Recent Publications	<ul style="list-style-type: none"> XIONG, G. W., ZHANG, M., & XU, W. X. Vehicle routing optimization of two-echelon opening and closing hybrid based on crowdsourcing mode. <i>Journal of Zhejiang University (Engineering Science)</i>, 55(12), 2397–2408. DU, Z. C., LU, F. Q., WANG, S. X., & WANG, L. Z. Vehicle Scheduling Model and Optimization of Crowdsourcing Logistics Distribution. <i>Journal of Northeastern University (Natural Science)</i>, 42(8), 1210. Fu, M., & Wang, D. D. (2021). Evaluation of crowdsourcing logistics service quality based on entropy weight method and analytic hierarchy process. In <i>E3S Web of Conferences</i> (Vol. 257, p. 02082). EDP Sciences. 																																												

Weak Signal No.	212	Head Keyword	agricultural carbon emissions																																										
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Recent Publications	<ul style="list-style-type: none"> Xue, D., Yue, L., Ahmad, F., Draz, M. U., & Chandio, A. A. (2021). Urban eco-efficiency and its influencing factors in Western China: Fresh evidence from Chinese cities based on the US-SBM. <i>Ecological Indicators</i>, 127, 107784. Wang, Z., Liu, B., Wang, L., & Shao, Q. (2021). Measurement and temporal & spatial variation of urban eco-efficiency in the Yellow River Basin. <i>Physics and Chemistry of the Earth, Parts A/B/C</i>, 122, 102981. Chen, P., Xie, R., Lu, M., & Huang, Z. (2021). The impact of the spatio-temporal neighborhood effect on urban eco-efficiency in China. <i>Journal of Cleaner Production</i>, 285, 124860. 																																												

Weak Signal No.	237	Head Keyword	clean energy consumption																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> renewable electricity consumption consumption-based carbon emissions 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 237</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>1</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>2</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>2</td></tr> <tr><td>2019</td><td>20</td></tr> <tr><td>2020</td><td>10</td></tr> <tr><td>2021</td><td>55</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	1	2015	1	2016	2	2017	5	2018	2	2019	20	2020	10	2021	55
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Recent Publications	<ul style="list-style-type: none"> Chakraborty, S. K., & Mazzanti, M. (2021). Renewable electricity and economic growth relationship in the long run: Panel data econometric evidence from the OECD. <i>Structural Change and Economic Dynamics</i>, 59, 330–341. Nguyen, C. P., & Su, T. D. (2021). The ‘vicious cycle’ of energy poverty and productivity: Insights from 45 developing countries. <i>Environmental Science and Pollution Research</i>, 28(40), 56345–56362. Ma, J., Oppong, A., Adjei, G. K., Adjei, H., Atta-Osei, E., Agyei-Sakyi, M., & Adu-Poku, D. (2021). Demand and supply-side determinants of electric power consumption and representative roadmaps to 100% renewable systems. <i>Journal of Cleaner Production</i>, 299, 126832. 																																												

Weak Signal No.	267	Head Keyword	electricity transaction																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> local electricity markets p2p electricity trading intraday electricity market 																																												
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Weak Signal No.	318	Head Keyword	food-energy-water nexus																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • wef nexus • few nexus 																																												
Activity	<table border="1"> <caption>Activity Data for 'food-energy-water nexus'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>2</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>60</td></tr> <tr><td>2020</td><td>50</td></tr> <tr><td>2021</td><td>65</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	2	2016	5	2017	15	2018	25	2019	60	2020	50	2021	65
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Recent Publications	<ul style="list-style-type: none"> • Xue, J., Liu, G., Cristiano, S., Casazza, M., Nawab, A., Ghisellini, P., & Ulgiati, S. (2021). Development of an urban household food-energy-water policy nexus dynamic simulator. <i>Journal of Cleaner Production</i>, 328, 129521. • Coudard, A., Corbin, E., de Koning, J. I. J. C., Tukker, A., & Mogollón, J. M. (2021). Global water and energy losses from consumer avoidable food waste. <i>Journal of Cleaner Production</i>, 326, 129342. • Zhuang, J., Löffler, F., & Saylor, G. (2021). Closing transdisciplinary collaboration gaps of food-energy-water nexus research. <i>Environmental Science & Policy</i>, 126, 164-167. 																																												

Weak Signal No.	347	Head Keyword	power-to-x																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • power-to-methane 																																												
Activity	<table border="1"> <caption>Activity Data for 'power-to-x'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>2</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>20</td></tr> <tr><td>2019</td><td>40</td></tr> <tr><td>2020</td><td>85</td></tr> <tr><td>2021</td><td>80</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	2	2016	5	2017	10	2018	20	2019	40	2020	85	2021	80
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Recent Publications	<ul style="list-style-type: none"> • Ashraf, M. T., Yde, L., Triolo, J. M., & Wenzel, H. (2021). Optimizing the dosing and trickling of nutrient media for thermophilic biomethanation in a biotrickling filter. <i>Biochemical Engineering Journal</i>, 176, 108220. • Szuhaj, M., Wirth, R., Bagi, Z., Maróti, G., Rákhely, G., & Kovács, K. L. (2021). Development of stable mixed microbiota for high yield power to methane conversion. <i>Energies</i>, 14(21), 7336. • Sterner, M., & Specht, M. (2021). Power-to-gas and power-to-X—the history and results of developing a new storage concept. <i>Energies</i>, 14(20), 6594. 																																												

➤ 3.1.12. Engineering

Weak Signal No.	13	Head Keyword	rubberized concrete																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • 3d printable concrete, coral concrete, rubberised concrete, 3d printed concrete, coral aggregate concrete, sea sand concrete, desert sand concrete, coal gangue concrete, lightweight foam concrete 																																												
Activity	<table border="1"> <caption>Activity Data for 'rubberized concrete'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>5</td></tr> <tr><td>2005</td><td>5</td></tr> <tr><td>2006</td><td>5</td></tr> <tr><td>2007</td><td>5</td></tr> <tr><td>2008</td><td>10</td></tr> <tr><td>2009</td><td>10</td></tr> <tr><td>2010</td><td>15</td></tr> <tr><td>2011</td><td>20</td></tr> <tr><td>2012</td><td>20</td></tr> <tr><td>2013</td><td>20</td></tr> <tr><td>2014</td><td>20</td></tr> <tr><td>2015</td><td>30</td></tr> <tr><td>2016</td><td>50</td></tr> <tr><td>2017</td><td>45</td></tr> <tr><td>2018</td><td>35</td></tr> <tr><td>2019</td><td>85</td></tr> <tr><td>2020</td><td>80</td></tr> <tr><td>2021</td><td>100</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	5	2005	5	2006	5	2007	5	2008	10	2009	10	2010	15	2011	20	2012	20	2013	20	2014	20	2015	30	2016	50	2017	45	2018	35	2019	85	2020	80	2021	100
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Recent Publications	<ul style="list-style-type: none"> • Sun, J., Ding, Z., Wei, Y., Li, X., & Wang, Z. (2021). Compressive behavior of GFRP tube filled with structural polypropylene fiber reinforced seawater coral aggregates concrete. <i>Construction and Building Materials</i>, 312, 125372. • Chu, Y., Wang, A., Zhu, Y., Wang, H., Liu, K., Ma, R., ... & Sun, D. (2021). Enhancing the performance of basic magnesium sulfate cement-based coral aggregate concrete through gradient composite design technology. <i>Composites Part B: Engineering</i>, 227, 109382. • Fu, Q., Xu, W., He, J., Su, L., Song, H., & Niu, D. (2021). Dynamic strength criteria for basalt fibre-reinforced coral aggregate concrete. <i>Composites Communications</i>, 28, 100983. 																																												

Weak Signal No.	30	Head Keyword	jaya algorithm																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • elephant herding optimization algorithm, butterfly optimization algorithm, crow search algorithm, cso algorithm etc 																																												
Activity	<table border="1"> <caption>Activity Data for 'jaya algorithm'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>20</td></tr> <tr><td>2017</td><td>40</td></tr> <tr><td>2018</td><td>150</td></tr> <tr><td>2019</td><td>180</td></tr> <tr><td>2020</td><td>230</td></tr> <tr><td>2021</td><td>250</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	10	2016	20	2017	40	2018	150	2019	180	2020	230	2021	250
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Weak Signal No.	37	Head Keyword	multi-microgrid																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> sub-microgrids, flexible dc grid, ac/dc hybrid distribution network, ac/dc hybrid microgrid, multi-energy storage, dc power grid etc 																																												
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Recent Publications	<ul style="list-style-type: none"> Wong, Y. C. C., Lim, C. S., Cruden, A. J., Rotaru, M. D., & Xin, K. (2021, July). Semi-Distributed Optimal Secondary Control Based on Decoupled Linearized Power Flow for Large-Area Droop-Controlled Microgrids. In 2021 International Conference on Green Energy, Computing and Sustainable Technology (GECOST) (pp. 1-7). IEEE. Ma, Z., Lin, E., Deng, H., Wang, Z., & Zhu, Y. (2021, June). Bidirectional Virtual Inertia Control Strategy for Interlinking Converter in Hybrid AC/DC Microgrid. In Journal of Physics: Conference Series (Vol. 1887, No. 1, p. 012040). IOP Publishing. Li, K., Zhang, J., & Zhang, J. (2021, May). Research on the Control Strategy of AC/DC Interlinking Converters in Islanded Hybrid Microgrid. In 2021 IEEE 4th International Conference on Electronics Technology (ICET) (pp. 479-483). IEEE. 																																												

Weak Signal No.	88	Head Keyword	collaborative robots																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> collaborative robot, cobots 																																												
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Recent Publications	<ul style="list-style-type: none"> FAUNDEZ-ZANUY, M. A. R. C. O. S., MORAL-VIÑALS, A. L. E. I. X., & LOPEZ-XARBAU, J. O. S. E. P. (2022). USE OF EYE-TRACKING TO CONTROL A COBOT MOVEMENT: RESULTS COMING FROM THE APPLICATION OF TOBII PRO X2-30 TO AN OMRON TM5-700 ROBOT. Safety and Security Engineering IX, 206, 241. Grushko, S. T. E. F. A. N., Vysocky, A. L. E. S., Suder, J. I. R. I., Glogar, L. A. D. I. S. L. A. V., & Bobovsky, Z. D. E. N. K. O. (2021). Improving human awareness during collaboration with robot. MM Science Journal, (6), 5475-5480. Suder, J., Kot, T., Panec, A., & Vocetka, M. (2021). Analysis of increasing the friction force of the robot jaws by adding 3D printed flexible inserts. MM Science Journal, 5322-5326. 																																												

Weak Signal No.	99	Head Keyword	virtual inertia control																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • synchronverter, grid-forming control 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 99</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>30</td></tr> <tr><td>2016</td><td>15</td></tr> <tr><td>2017</td><td>30</td></tr> <tr><td>2018</td><td>45</td></tr> <tr><td>2019</td><td>90</td></tr> <tr><td>2020</td><td>90</td></tr> <tr><td>2021</td><td>140</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	2	2014	5	2015	30	2016	15	2017	30	2018	45	2019	90	2020	90	2021	140
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Recent Publications	<ul style="list-style-type: none"> • Mao, J., Zhang, X., Dai, T., Wu, A., & Yin, C. (2021). An Adaptive Backstepping Sliding Mode Cascade-Control Method for a DC Microgrid Based on Nonlinear Virtual Inertia. <i>Electronics</i>, 10(24), 3100. • Jafari, H., Moghaddami, M., Olowu, T. O., Sarwat, A. I., & Mahmoudi, M. (2020). Virtual Inertia-Based Multipower Level Controller for Inductive Electric Vehicle Charging Systems. <i>IEEE Journal of Emerging and Selected Topics in Power Electronics</i>, 9(6), 7369-7382. • Zhu, Z., Ye, C., & Wu, S. (2021). Comprehensive control method of energy storage system to participate in primary frequency regulation with adaptive state of charge recovery. <i>International Transactions on Electrical Energy Systems</i>, 31(12), e13220. 																																												

Weak Signal No.	120	Head Keyword	bio-asphalt																																										
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Weak Signal No.	134	Head Keyword	charging piles																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • dc charging pile • charging pile 																																												
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Recent Publications	<ul style="list-style-type: none"> • Liu, W., Wang, C., Zhang, Y., Xiao, T., & Lu, C. (2021, December). Operation Platform of Charging Pile Metering Equipment Based on Big Data. In <i>Journal of Physics: Conference Series</i> (Vol. 2143, No. 1, p. 012038). IOP Publishing. • Jiang, Z., Long, Y., & Zhang, L. (2022). How Does the ConsumersT Attention Affect the Sale Volumes of New Energy Vehicles: Evidence From ChinaTs Market. <i>Rethinking Green Energy Development: Cognitive Biases</i>. • Suri, M., Raj, N., & Sireesha, K. (2021, November). Prediction of EV arrivals at Battery Swapping Station using Hybrid Neural Network models. In <i>Journal of Physics: Conference Series</i> (Vol. 2062, No. 1, p. 012021). IOP Publishing. 																																												

Weak Signal No.	139	Head Keyword	cold chain logistics																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • cold-chain logistics 																																												
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Recent Publications	<ul style="list-style-type: none"> • Demircan, M. L., & Özcan, B. (2021). A Proposed Method to Evaluate Warehouse Location for 3PL Cold Chain Suppliers in Gulf Countries Using Neutrosophic Fuzzy EDAS. <i>International Journal of Computational Intelligence Systems</i>, 14(1), 1-22. • Ji, J., Wang, Y., Lin, X., Liu, B., & Zhang, X. (2021). Fabrication of highly thermal conductive and shape-stabilized phase change materials. <i>Journal of Energy Storage</i>, 44, 103256. • Kong, Q., Mu, H., Han, Y., Wu, W., Tong, C., Fang, X., ... & Gao, H. (2021). Biodegradable phase change materials with high latent heat: Preparation and application on <i>Lentinus edodes</i> storage. <i>Food Chemistry</i>, 364, 130391. 																																												

Weak Signal No.	156	Head Keyword	unmanned surface vehicles																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • unmanned boat • unmanned sailboat • unmanned ship 																																												
Activity	<table border="1"> <caption>Activity Data for Unmanned Surface Vehicles</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>5</td></tr> <tr><td>2008</td><td>5</td></tr> <tr><td>2009</td><td>5</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>5</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>10</td></tr> <tr><td>2015</td><td>20</td></tr> <tr><td>2016</td><td>25</td></tr> <tr><td>2017</td><td>30</td></tr> <tr><td>2018</td><td>60</td></tr> <tr><td>2019</td><td>90</td></tr> <tr><td>2020</td><td>100</td></tr> <tr><td>2021</td><td>130</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	5	2008	5	2009	5	2010	5	2011	5	2012	10	2013	10	2014	10	2015	20	2016	25	2017	30	2018	60	2019	90	2020	100	2021	130
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Recent Publications	<ul style="list-style-type: none"> • Dong, Y., Wu, N., Qi, J., Chen, X., & Hua, C. (2021). Predictive Course Control and Guidance of Autonomous Unmanned Sailboat Based on Efficient Sampled Gaussian Process. <i>Journal of Marine Science and Engineering</i>, 9(12), 1420. • Yang, D., Pan, Z., Cao, Y., Wang, Y., Lai, X., Yang, J., & Liu, Y. (2021). Wind measurement by computer vision on unmanned sailboat. <i>International Journal of Intelligent Robotics and Applications</i>, 5(2), 252–263. • Yang, S., Liu, C., Liu, Y., An, J., & Xiang, X. (2021). Generic and Flexible Unmanned Sailboat for Innovative Education and World Robotic Sailing Championship. <i>Frontiers in Robotics and AI</i>, 8, 630081. 																																												

Weak Signal No.	161	Head Keyword	capsule network																																										
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Weak Signal No.	169	Head Keyword	off-site construction																																										
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Weak Signal No.	176	Head Keyword	sparse auto-encoder																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • sparse autoencoders 																																												
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Recent Publications	<ul style="list-style-type: none"> • Cai, J., Wang, S., & Guo, W. (2021). Unsupervised embedded feature learning for deep clustering with stacked sparse auto-encoder. Expert Systems with Applications, 186, 115729. • Finotti, R. P., Barbosa, F. D. S., Cury, A. A., & Pimentel, R. L. (2021). Numerical and experimental evaluation of structural changes using sparse auto-encoders and SVM applied to dynamic responses. Applied Sciences, 11(24), 11965. • Yu, Z., Fang, H., Zhangjin, Q., Mi, C., Feng, X., & He, Y. (2021). Hyperspectral imaging technology combined with deep learning for hybrid okra seed identification. Biosystems Engineering, 212, 46-61. 																																												

Weak Signal No.	193	Head Keyword	supraharmonics																																										
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Weak Signal No.	201	Head Keyword	coding metasurface																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> reconfigurable metasurfaces 																																												
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Weak Signal No.	204	Head Keyword	multiscale permutation entropy																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> weighted-permutation entropy 																																												
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Recent Publications	<ul style="list-style-type: none"> Junfeng, L. I. U., Xiang, Y. U., & Haibo, W. A. N. (2021). Rolling bearing fault diagnosis method based on FSC-MPE and BP neural network. <i>中国舰船研究</i>, 16(6), 183-190. Ravier, P., Dávalos, A., Jabloun, M., & Buttelli, O. (2021). The Refined Composite Downsampling Permutation Entropy Is a Relevant Tool in the Muscle Fatigue Study Using sEMG Signals. <i>Entropy</i>, 23(12), 1655. Gao, W., & Wai, R. J. (2021). Series arc fault detection of grid-connected PV system via SVD denoising and IEWT-TWSVM. <i>IEEE Journal of Photovoltaics</i>, 11(6), 1493-1510. 																																												

Weak Signal No.	207	Head Keyword	refractory high entropy alloys																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> high-entropy metallic glasses 																																												
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Recent Publications	<ul style="list-style-type: none"> Jiang, J., Lu, Z., Shen, J., Wada, T., Kato, H., & Chen, M. (2021). Decoupling between calorimetric and dynamical glass transitions in high-entropy metallic glasses. <i>Nature communications</i>, 12(1), 1-10. Jiang, W., Zhao, Y., & Zhang, B. (2021). Intrinsic correlation between β relaxation and electronic heterogeneity in high entropy metallic glasses. <i>Journal of Non-Crystalline Solids</i>, 571, 121062. Chen, T. C., Elveny, M., Surendar, A., Lawal, A. I., Zekiy, A. O., & Anzum, R. (2021). Developing a multilateral-based neural network model for engineering of high entropy amorphous alloys. <i>Modelling and Simulation in Materials Science and Engineering</i>, 29(6), 065019. 																																												

Weak Signal No.	210	Head Keyword	more-electric aircraft																																										
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Weak Signal No.	224	Head Keyword	4d bim																																										
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Weak Signal No.	239	Head Keyword	series arc fault																																										
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Recent Publications	<ul style="list-style-type: none"> • Zhao, S., You, G., Hou, X., Xu, X., Zhang, Y., & An, H. (2021). A Spatial Location Method for DC Series Arc Faults Based on RSSI and Bayesian Regularization Neural Network. <i>IEEE Sensors Journal</i>, 21(24), 27868–27877. • Jeong, J. Y., Kim, J. C., & Kwak, S. (2021). DC series arc diagnosis based on deep-learning algorithm with frequency-domain characteristics. <i>Journal of Power Electronics</i>, 21(12), 1900–1909. • Omran, A. H., Said, D. M., Hussin, S. M., Abdhussain, S. H., & Samet, H. (2021). Utilizing different types of deep learning models for classification of series arc in photovoltaics systems. <i>Computers & Electrical Engineering</i>, 96, 107478. 																																												

Weak Signal No.	248	Head Keyword	underground pipe gallery																																										
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Recent Publications	<ul style="list-style-type: none"> • Zhou, J., Wang, Y., & Ding, B. (2021, November). Fire Safety of Integrated Pipeline Corridor Cable Block Based on Numerical Simulation. In <i>Journal of Physics: Conference Series</i> (Vol. 2074, No. 1, p. 012092). IOP Publishing. • Song-yu, C. A. O., Kun, F., Xun, L., Ming-qing, X. I. A. O., & Chuan, H. E. (2021). Experimental investigation of the shear mechanism on mortise and tenon segment lining. <i>China Journal of Highway and Transport</i>, 34(9), 273. • Shixia, D., & Jielin, D. (2021). Risk Sharing of Urban Underground Comprehensive Pipe Gallery PPP Project Based on Grey Relational Analysis. In <i>E3S Web of Conferences</i> (Vol. 253, p. 01015). EDP Sciences. 																																												

Weak Signal No.	253	Head Keyword	soft manipulator																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> soft robotic arm 																																												
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Recent Publications	<ul style="list-style-type: none"> Jiang, C., Wang, D., Zhao, B., Liao, Z., & Gu, G. (2021). Modeling and inverse design of bio-inspired multi-segment pneu-net soft manipulators for 3D trajectory motion. <i>Applied Physics Reviews</i>, 8(4), 041416. Zhang, G., Li, S., Wu, Y., & Zhu, M. (2021). An Investigation on the Grasping Position Optimization-Based Control for Industrial Soft Robot Manipulator. <i>Machines</i>, 9(12), 363. Gao, L., He, Y., Zhu, H., Sun, G., & Zhu, L. (2021). Stiffness Modelling and Performance Evaluation of a Soft Cardiac Fixator Flexible Arm with Granular Jamming. <i>Machines</i>, 9(12), 303. 																																												

Weak Signal No.	264	Head Keyword	ehmi																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> ehmis 																																												
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Weak Signal No.	275	Head Keyword	basin insulator																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • basin-type insulator 																																												
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Recent Publications	<ul style="list-style-type: none"> • Luo, Y., Tang, J., Pan, Z., & Pan, C. (2021). How Temperature and Pressure Affect the Electric Field Distribution in HVDC GIS/GIL: A Numerical Study. <i>IEEE Transactions on Dielectrics and Electrical Insulation</i>, 28(4), 1334–1342. • Guo, M., Lai, Q., Li, M., Wang, Z., & Lu, J. (2021, May). Study on partial discharge of GIS based on optical fiber EFPI sensor. In <i>2021 IEEE 4th International Electrical and Energy Conference (CIEEC)</i> (pp. 1–5). IEEE. • Yang, X., Jia, Y., Gao, L., Ji, S., & Li, Z. (2020). A method for measuring surface electric field intensity of insulators based on electroluminescent effect. <i>Energy Reports</i>, 6, 1537–1543. 																																												

Weak Signal No.	293	Head Keyword	uav-bs																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • uav-bss 																																												
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Recent Publications	<ul style="list-style-type: none"> • Montero, E., Rocha, C., Oliveira, H., Cerqueira, E., Mendes, P., Santos, A., & Rosário, D. (2021). Proactive radio-and QoS-aware UAV as BS deployment to improve cellular operations. <i>Computer Networks</i>, 200, 108486. • Lee, W., Jeon, Y., Kim, T., & Kim, Y. I. (2021). Deep Reinforcement Learning for UAV Trajectory Design Considering Mobile Ground Users. <i>Sensors</i>, 21(24), 8239. • Gopi, S. P., & Magarini, M. (2021). Reinforcement learning aided uav base station location optimization for rate maximization. <i>Electronics</i>, 10(23), 2953. 																																												

Weak Signal No.	297	Head Keyword	cyber-physical production systems																																										
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Weak Signal No.	319	Head Keyword	electricity theft																																										
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Weak Signal No.	324	Head Keyword	seru production system																																										
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Weak Signal No.	331	Head Keyword	pointer meter																																										
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Recent Publications	<ul style="list-style-type: none"> Hou, L., & Qu, H. (2021). Automatic recognition system of pointer meters based on lightweight CNN and WSNs with on-sensor image processing. <i>Measurement</i>, 183, 109819. Shao, L., Chen, Y., Xu, X., Sun, W., & Liu, H. (2021, August). Research on Recognition of Pointer Meter Based on Improved East Algorithm. In <i>2021 IEEE International Conference on Mechatronics and Automation (ICMA)</i> (pp. 287-292). IEEE. Wu, X., Shi, X., Jiang, Y., & Gong, J. (2021). A high-precision automatic pointer meter reading system in low-light environment. <i>Sensors</i>, 21(14), 4891. 																																												

Weak Signal No.	364	Head Keyword	energy router																																										
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Recent Publications	<ul style="list-style-type: none"> • Yao, P., Wang, H., Liu, Y., Niu, J., Zhu, Z., & Lin, L. (2021). Integrated railway smart grid architecture based on energy routers. <i>Chinese Journal of Electrical Engineering</i>, 7(4), 93-106. • Chi, S., Lv, Z., Liu, L., & Shan, Y. (2021). Free Switching Control Strategy for Multi-Operation Modes of Multi-Port Energy Router in Distribution Area. <i>Energies</i>, 14(23), 7860. • Chen, M., Xia, M., & Chen, Q. (2021). Hierarchical structure design and primary energy dispatching strategy of net energy router. <i>Electric Power Systems Research</i>, 201, 107539. 																																												

Weak Signal No.	378	Head Keyword	utility tunnel																																										
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Weak Signal No.	380	Head Keyword	prefabricated building																																										
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Recent Publications	<ul style="list-style-type: none"> • Wu, Z., Zhang, Q., & Wang, Z. (2021, December). Intelligent assembly farm house design based on BIM and sensor technology. In 2021 International Conference on Aviation Safety and Information Technology (pp. 935–939). • Feng, Y. (2021, December). Research on Visualization of Prefabricated Building Process Based on BIM Technology. In 2021 International Conference on Aviation Safety and Information Technology (pp. 307–312). • Wang, Y., Tan, H., Gu, X., He, X., & Zhang, J. (2021). Preparation of nano-kaolin by wet-grinding process and its application as accelerator in Portland cement. <i>Journal of Building Engineering</i>, 44, 103401. 																																												

Weak Signal No.	416	Head Keyword	synchronous condenser																																										
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Weak Signal No.	422	Head Keyword	cyber risk																																										
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Weak Signal No.	433	Head Keyword	marine predators algorithm																																										
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➤ 3.1.13. Environmental Science

Weak Signal No.	18	Head Keyword	marine tourism																																										
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Recent Publications	<ul style="list-style-type: none"> • Akyuwen, R. J., Salmon, H., Latupono, B., Labetubun, M. A., & Angga, L. O. (2021). Management of Maritime Tourism of the Kei Indigenous Peoples of Southeast Maluku Regency as an Economic Driver Based on Environmental Sustainability. <i>Planning</i>, 16(8), 1591–9. • Palippui, H., & Pairunan, T. (2021, November). Ship building design of general cargo vessel using comparator ship method in port route of Jakarta–Makassar–Manokwari. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 921, No. 1, p. 012035). IOP Publishing. • Simarangkir, O. R., Tawang, F., Irwan, I., Utami, P. B., Nani, N., & Kodiran, T. (2021, November). Impact of the COVID–19 Pandemic on Marine Tourism Derawan Island, Berau Regency, East Kalimantan Province. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 934, No. 1, p. 012040). IOP Publishing. 																																												

Weak Signal No.	38	Head Keyword	black and odorous water																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • black-odor water • black-odorous 																																												
Activity	<table border="1"> <caption>Activity Data for 'black and odorous water'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>1</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>3</td></tr> <tr><td>2019</td><td>17</td></tr> <tr><td>2020</td><td>8</td></tr> <tr><td>2021</td><td>12</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	1	2017	2	2018	3	2019	17	2020	8	2021	12
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Recent Publications	<ul style="list-style-type: none"> • Xinyuan, Z. H. E. N. G., & Yinghao, H. U. A. (2021). Application of magnetic ballasted clarification technology in black and smelly water treatment and domestic sewage treatment. <i>Chinese Journal of Environmental Engineering</i>, 15(9), 3142–3148. • Siyu, W., Long, Y., Xiangchun, W., & Yuan, Z. (2021, July). Research advances of microbial denitrification and application in black and odorous water. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 825, No. 1, p. 012011). IOP Publishing. • Yuan, H., Chen, G., Xiao, Y., Yang, J., Huang, L., Tao, K., ... & Ye, J. (2021). Isolation and degradation characteristics of bacteria in black and odorous water. <i>Water Supply</i>, 21(5), 2249–2260. 																																												

Weak Signal No.	43	Head Keyword	nanoplastics																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> polyethylene microplastics, pe microplastics, microplastics and nanoplastics, microplastics pollution, nanoplastic, nano- and microplastics, nano/microplastics, micro/nanoplastics 																																												
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Recent Publications	<ul style="list-style-type: none"> Leiser, R., Schumann, M., Dadi, T., & Wendt-Potthoff, K. (2021). Burial of microplastics in freshwater sediments facilitated by iron-organoflocs. <i>Scientific reports</i>, 11(1), 1–12. Zhu, Y., Li, X., Wang, L., Hui, N., Ma, J., & Chen, F. (2021). Adsorption of BDE-209 to Polyethylene Microplastics: Effect of Microplastics Property and Metal Ions. <i>Water, Air, & Soil Pollution</i>, 232(12), 1–10. Jacob, H., Besson, M., Oberhaensli, F., Taylor, A., Gillet, B., Hughes, S., ... & Metian, M. (2021). A multifaceted assessment of the effects of polyethylene microplastics on juvenile gilthead seabreams (<i>Sparus aurata</i>). <i>Aquatic Toxicology</i>, 241, 106004. 																																												

Weak Signal No.	50	Head Keyword	cuo nps																																										
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Weak Signal No.	52	Head Keyword	grey water footprint																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> gray water footprint 																																												
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Recent Publications	<ul style="list-style-type: none"> Liu, P., Yi, X., Feng, Y., Shang, M., & Bao, Z. (2021). Water environment carrying capacity assessment of Yangtze River Economic Belt using grey water footprint model. <i>Water Supply</i>, 21(8), 4003-4014. Yu, L., Xiong, X., Samim, S. A., & Hu, Z. (2021). Analysis of Water Resources and Water Environmental Carrying Capacity of Animal Husbandry in China—Based on Water Footprint Theory. <i>Water</i>, 13(23), 3386. Olivera Rodriguez, P., Holzman, M. E., Mujica, C. R., Rivas, R. E., & Aldaya, M. M. (2021). Different Approaches to Assessing Pollution Load: The Case of Nitrogen-Related Grey Water Footprint of Barley and Soybean in Argentina. <i>Water</i>, 13(24), 3558. 																																												

Weak Signal No.	129	Head Keyword	ecological conservation redline																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> ecological water conservancy farmland water conservancy 																																												
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Recent Publications	<ul style="list-style-type: none"> Chao, Z., Fang, X., Na, J., & Che, M. (2021). A Collaborative Sensing System for Farmland Water Conservancy Project Maintenance through Integrating Satellite, Aerial, and Ground Observations. <i>Water</i>, 13(16), 2163. Huan, Z., & Meng, L. (2021, March). Research on Application Effect of Construction Technology in Agricultural Water Conservancy Project. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 692, No. 4, p. 042030). IOP Publishing. Zhang, Z., Tian, M., Li, J., Wang, F., & Ma, S. (2021, February). Analysis and Research on the Value of Farmland Transfer Based on Environmental Protection Evaluation System. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 651, No. 4, p. 042013). IOP Publishing. 																																												

Weak Signal No.	132	Head Keyword	kampung																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • kampung kota • pondok 																																												
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Weak Signal No.	135	Head Keyword	nanopolystyrene																																										
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Recent Publications	<ul style="list-style-type: none"> • Auguste, M., Balbi, T., Miglioli, A., Alberti, S., Prandi, S., Narizzano, R., ... & Canesi, L. (2021). Comparison of different commercial nanopolystyrenes: Behavior in exposure media, effects on immune function and early larval development in the model bivalve <i>mytilus galloprovincialis</i>. <i>Nanomaterials</i>, 11(12), 3291. • Geng, Y., Sun, J., Wang, J., Wang, R., Yang, J., Wang, Q., & Ni, X. (2021). Modified Nanopolystyrene as a Plugging Agent for Oil-Based Drilling Fluids Applied in Shale Formation. <i>Energy & Fuels</i>, 35(20), 16543-16552. • Zhao, X., Liu, Z., Ren, X., & Duan, X. (2021). Parental transfer of nanopolystyrene-enhanced tris (1, 3-dichloro-2-propyl) phosphate induces transgenerational thyroid disruption in zebrafish. <i>Aquatic Toxicology</i>, 236, 105871. 																																												

Weak Signal No.	143	Head Keyword	green finance																																										
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Recent Publications	<ul style="list-style-type: none"> • Ji, L., Jia, P., & Yan, J. (2021). Green credit, environmental protection investment and debt financing for heavily polluting enterprises. <i>Plos one</i>, 16(12), e0261311. • Hu, Y., & Zheng, J. (2021). Is green credit a good tool to achieve “double carbon” goal? Based on coupling coordination model and PVAR model. <i>Sustainability</i>, 13(24), 14074. • Lei, X., Wang, Y., Zhao, D., & Chen, Q. (2021). The local-neighborhood effect of green credit on green economy: a spatial econometric investigation. <i>Environmental Science and Pollution Research</i>, 28(46), 65776–65790. 																																												

Weak Signal No.	150	Head Keyword	engineered biochar																																										
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Recent Publications	<ul style="list-style-type: none"> • Zhu, R., Xia, J., Zhang, H., Kong, F., Hu, X., Shen, Y., & Zhang, W. H. (2021). Synthesis of magnetic activated carbons from black liquor lignin and Fenton sludge in a one-step pyrolysis for methylene blue adsorption. <i>Journal of Environmental Chemical Engineering</i>, 9(6), 106538. • Tong, S., Shen, J., Jiang, X., Li, J., Sun, X., Xu, Z., & Chen, D. (2021). Recycle of Fenton sludge through one-step synthesis of aminated magnetic hydrochar for Pb²⁺ removal from wastewater. <i>Journal of Hazardous Materials</i>, 406, 124581. • Wang, M., Zhao, Z., & Zhang, Y. (2021). Magnetite-contained biochar derived from fenton sludge modulated electron transfer of microorganisms in anaerobic digestion. <i>Journal of Hazardous Materials</i>, 403, 123972. 																																												

Weak Signal No.	154	Head Keyword	water insecurity																																										
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Recent Publications	<ul style="list-style-type: none"> Wang, L., Li, Y., Liang, S., Xu, M., & Qu, S. (2021). Trade-related water scarcity risk under the Belt and Road Initiative. <i>Science of The Total Environment</i>, 801, 149781. Omidinia-Anarkoli, T., & Shayannejad, M. (2021). Improving the quality of stabilization pond effluents using hybrid constructed wetlands. <i>Science of The Total Environment</i>, 801, 149615. Summers, H. M., & Quinn, J. C. (2021). Improving water scarcity footprint capabilities in arid regions through expansion of characterization factor methods. <i>Science of The Total Environment</i>, 801, 149586. 																																												

Weak Signal No.	170	Head Keyword	pm2.5 pollution																																										
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Recent Publications	<ul style="list-style-type: none"> Li, W., Duan, F., Zhao, Q., Song, W., Cheng, Y., Wang, X., ... & He, K. (2021). Investigating the effect of sources and meteorological conditions on wintertime haze formation in Northeast China: A case study in Harbin. <i>Science of The Total Environment</i>, 801, 149631. Tan, X. (2021, December). The Impact of Industrial Agglomeration on Air Pollution: Evidence from Urban Panel Data in China. In <i>2021 3rd International Conference on E-Business and E-commerce Engineering</i> (pp. 170-174). Liu, S., Huang, D., Wang, Y., Zhang, S., Liu, X., Wu, C., ... & Wang, G. (2021). Synergetic effects of NH₃ and NO_x on the production and optical absorption of secondary organic aerosol formation from toluene photooxidation. <i>Atmospheric Chemistry and Physics</i>, 21(23), 17759-17773. 																																												

Weak Signal No.	191	Head Keyword	gowa regency																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • mamasa regency • demak regency 																																												
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Recent Publications	<ul style="list-style-type: none"> • Rijal, S., Ilyas, A., Barkey, R., Yani, N., Chairil, A., & Nursaputra, M. (2021, November). Spatial of model deforestation model based on physical factors in South Sulawesi and West Sulawesi provinces period 1990–2019. In IOP Conference Series: Earth and Environmental Science (Vol. 886, No. 1, p. 012089). IOP Publishing. • MUSTAQIM, W. A., & ARDI, W. H. (2021). <i>Rigiolepis argentii</i> (Ericaceae): a new species from Sulawesi, Indonesia. <i>Phytotaxa</i>, 521(1), 63–69. • Padjung, R., Asrul, L., Baja, S., & Neswati, R. (2021, July). Land suitability evaluation for cocoa using a parametric approach in West Sulawesi. In IOP Conference Series: Earth and Environmental Science (Vol. 807, No. 4, p. 042064). IOP Publishing. 																																												

Weak Signal No.	200	Head Keyword	ecological civilization																																										
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Weak Signal No.	291	Head Keyword	comammox																																										
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Weak Signal No.	305	Head Keyword	tofu wastewater																																										
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Recent Publications	<ul style="list-style-type: none"> Hanafiah, M. A. K. M., Ibrahim, S., Subberi, N. I. F. M., Kantasamy, N., & Fatimah, I. (2021). Application of Cationic Surfactant Modified Mengkuang Leaves (<i>Pandanus atropacus</i>) for the Removal of Reactive Orange 16 from Batik Wastewater: A Column Study. <i>Nature Environment and Pollution Technology</i>, 20(4), 1703–1708. Sa'adah, A. N., Saputra, K. B., Fadholi, M. D., Hermansyah, V., & Aryanti, N. (2021, November). Plasma generation using dielectric barrier discharge reactor for phenol degradation in batik wastewater. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 912, No. 1, p. 012090). IOP Publishing. Soedjono, E. S., Slamet, A., Fitriani, N., Sumarlan, M. S., Supriyanto, A., Isnadina, D. R. M., & Othman, N. B. (2021). Residual seawater from salt production (bittern) as a coagulant to remove lead (Pb²⁺) and turbidity from batik industry wastewater. <i>Heliyon</i>, 7(11), e08268. 																																												

Weak Signal No.	325	Head Keyword	sustainable development of territories																																										
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Recent Publications	<ul style="list-style-type: none"> • Tolstoguzov, O. V. (2021, October). Sustainable rural development in the context of modern political economy discourse. In IOP Conference Series: Earth and Environmental Science (Vol. 862, No. 1, p. 012087). IOP Publishing. • Smirnov, V. O., Sergeev, M. A., & Emelianova, N. S. (2021, September). Digitalization for remote monitoring to sustainable development of agrarian areas at VI Vernadsky Crimean Federal University. In IOP Conference Series: Earth and Environmental Science (Vol. 853, No. 1, p. 012038). IOP Publishing. • Andreeva, E. S., Lipovitskaya, I. N., Lazareva, E. O., Andreev, S. S., & Zharkova, M. G. (2021, September). Ensuring the Environmental Safety of Large Cities Based on an Innovative Approach to Predicting Atmospheric Air Pollution. In IOP Conference Series: Earth and Environmental Science (Vol. 852, No. 1, p. 012007). IOP Publishing. 																																												

Weak Signal No.	330	Head Keyword	sponge city																																										
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Recent Publications	<ul style="list-style-type: none"> • Song, H., Yao, J., Luo, Y., & Gui, F. (2021). A chemical–mechanics model for the mechanics deterioration of pervious concrete subjected to sulfate attack. <i>Construction and Building Materials</i>, 312, 125383. • Liu, M., Huang, Z., & Chang, Y. (2021, December). Econo–environmental Evaluation of Rainwater Management Measures based on Entropy Weight Method—a Case from Beijing. In <i>2021 3rd International Conference on E–Business and E–commerce Engineering</i> (pp. 93–97). • Yang, Y., Li, M., Feng, X., Yan, H., Su, M., & Wu, M. (2021). Spatiotemporal variation of essential ecosystem services and their trade–off/synergy along with rapid urbanization in the Lower Pearl River Basin, China. <i>Ecological Indicators</i>, 133, 108439. 																																												

Weak Signal No.	348	Head Keyword	nanobiochar																																										
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Recent Publications	<ul style="list-style-type: none"> • Zhou, S., Ni, X., Zhou, H., Meng, X., Sun, H., Wang, J., & Yin, X. (2021). Effect of nZVI/biochar nanocomposites on Cd transport in clay mineral-coated quartz sand: Facilitation and rerelease. <i>Ecotoxicology and Environmental Safety</i>, 228, 112971. • Khan, H. A., Naqvi, S. R., Mehran, M. T., Khoja, A. H., Niazi, M. B. K., Juchelková, D., & Atabani, A. (2021). A performance evaluation study of nano-biochar as a potential slow-release nano-fertilizer from wheat straw residue for sustainable agriculture. <i>Chemosphere</i>, 285, 131382. • Khare, P. (2021). A comprehensive evaluation of inherent properties and applications of nano-biochar prepared from different methods and feedstocks. <i>Journal of Cleaner Production</i>, 320, 128759. 																																												

Weak Signal No.	352	Head Keyword	housing and communal services																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • housing and communal 																																												
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Recent Publications	<ul style="list-style-type: none"> • Vasilyev, G., Gornov, V., Kolesova, M., Leskov, V., Silaeva, V., Marchenkova, S., & Dmitriev, A. (2021, December). Experimental studies of energy efficiency of heat pump equipment for hot water supply and air conditioning systems in apartment buildings. In <i>IOP Conference Series: Earth and Environmental Science</i> (Vol. 937, No. 4, p. 042037). IOP Publishing. • Yekimov, S., Meerson, A., Egorushkina, T., Nianko, V., & Kucherenko, D. (2021, December). State support and regulation of housing and communal services during the Covid-19 pandemic. In <i>AIP Conference Proceedings</i> (Vol. 2442, No. 1, p. 070002). AIP Publishing LLC. • Yekimov, S., Nianko, V., & Mazhigova, E. M. (2021, December). Remote work of employees of housing and communal services enterprises in the context of the Covid-19 pandemic. In <i>AIP Conference Proceedings</i> (Vol. 2442, No. 1, p. 070001). AIP Publishing LLC. 																																												

Weak Signal No.	386	Head Keyword	cw-mfc																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • cw-mfcs 																																												
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2021	40																																												
Recent Publications	<ul style="list-style-type: none"> • Kong, Q., Guo, W., Sun, R., Qin, M., Zhao, Z., Du, Y., ... & Zhang, X. (2021). Enhancement of chromium removal and energy production simultaneously using iron scrap as anodic filling material with pyrite-based constructed wetland-microbial fuel cell. <i>Journal of Environmental Chemical Engineering</i>, 9(6), 106630. • Zhang, K., Wu, X., Wang, W., Chen, J., Chen, J., & Luo, H. (2021). Roles of external circuit and rhizosphere location in CH₄ emission control in sequencing batch flow constructed wetland-microbial fuel cell. <i>Journal of Environmental Chemical Engineering</i>, 9(6), 106583. • Srivastava, P., Abbassi, R., Yadav, A., Garaniya, V., Asadnia, M., Lewis, T., & Khan, S. J. (2021). Influence of applied potential on treatment performance and clogging behaviour of hybrid constructed wetland-microbial electrochemical technologies. <i>Chemosphere</i>, 284, 131296. 																																												

Weak Signal No.	414	Head Keyword	bali cattle																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • madura cattle 																																												
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Weak Signal No.	427	Head Keyword	agro-industrial complex																																										
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➤ 3.1.14. Health Professions

Weak Signal No.	254	Head Keyword	trail running																																										
All Popping Keywords in this Weak Signal	• trail runners																																												
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➤ 3.1.15. Immunology and Microbiology

Weak Signal No.	56	Head Keyword	soil microbiome																																										
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Recent Publications	<ul style="list-style-type: none"> Ali, M. A., Naeem, F., Tariq, N., Ahmad, I., & Imran, A. (2021). Bioactive Nutrient Fortified Fertilizer (BNFF): a novel hybrid approach for the enrichment of wheat grain with Zinc. <i>Frontiers in plant science</i>, 2870. Leite, M. F., Dimitrov, M. R., Freitas-lório, R. P., De Hollander, M., Cipriano, M. A., Andrade, S. A., ... & Kuramae, E. E. (2021). Rearranging the sugarcane holobiont via plant growth-promoting bacteria and nitrogen input. <i>Science of the Total Environment</i>, 800, 149493. Ковалевская, Н. П. (2021). INFLUENCE OF NITROGEN NUTRITION CONDITIONS AND PHYTHORMONES ON CHANGE OF FATTY ACID COMPOSITION OF VEGETATIVE ORGANS OF SPRING WHEAT TRITICUM AESTIVUM L. 																																												

Weak Signal No.	85	Head Keyword	alistipes																																										
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Weak Signal No.	138	Head Keyword	mcr-3																																										
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Weak Signal No.	195	Head Keyword	mlkl																																										
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Weak Signal No.	234	Head Keyword	m-mdscs																																										
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Recent Publications	<ul style="list-style-type: none"> • Li, X., Li, Y., Yu, Q., Xu, L., Fu, S., Wei, C., ... & Lin, Y. (2021). mTOR Signaling Regulates the Development and Therapeutic Efficacy of PMN-MDSCs in Acute GVHD. <i>Frontiers in cell and developmental biology</i>, 9, 741911–741911. • Pullikuth, A. K., Routh, E. D., Zimmerman, K. D., Chifman, J., Chou, J. W., Soike, M. H., ... & Miller, L. D. (2021). Bulk and Single-Cell Profiling of Breast Tumors Identifies TREM-1 as a Dominant Immune Suppressive Marker Associated With Poor Outcomes. <i>Frontiers in oncology</i>, 11. • Singh, B., Singh, D. K., Ganatra, S. R., Escobedo, R. A., Khader, S., Schlesinger, L. S., ... & Mehra, S. (2021). Myeloid-derived suppressor cells mediate T cell dysfunction in nonhuman primate TB granulomas. <i>Mbio</i>, 12(6), e03189–21. 																																												

Weak Signal No.	307	Head Keyword	tfh cells																																										
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Weak Signal No.	346	Head Keyword	immunopeptidome																																										
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➤ 3.1.16. Materials Science

Weak Signal No.	1	Head Keyword	flash sintering																																										
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2018	75																																												
2019	105																																												
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2021	135																																												
Recent Publications	<ul style="list-style-type: none"> • Zhou, H., Li, X., Huang, R., Yan, N., Wang, X., & Jia, Z. (2021). Effect of atmospheric conditions on the onset electric field of ZnO and Y2O3 ceramics flash sintering at room temperature. <i>Ceramics International</i>, 47(24), 34068–34071. • Deng, H., Biesuz, M., Vilémová, M., Kermani, M., Veverka, J., Tyrpekl, V., ... & Grasso, S. (2021). Ultrahigh Temperature Flash Sintering of Binder-Less Tungsten Carbide within 6 s. <i>Materials</i>, 14(24), 7655. • Xiang, S., Hu, H., Liang, Y., & Zhang, X. (2021). Fabrication of sub-stoichiometric titanium carbide-reinforced copper matrix composites using electropulsing-assisted flash sintering. <i>Composites Part A: Applied Science and Manufacturing</i>, 151, 106664. 																																												

Weak Signal No.	12	Head Keyword	perovskite quantum dots																																										
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Recent Publications	<ul style="list-style-type: none"> • Gokul, M. A., & Rahman, A. (2021). Phase evolution of all-inorganic perovskite nanowires during its growth from quantum dots. <i>Nanotechnology</i>, 33(8), 085706. • Gökbulut, B., Topcu, G., Demir, M. M., & Inci, M. N. (2021). Plasmon-induced spectral tunability of Perovskite nanowires. <i>Optical Materials</i>, 122, 111702. • Markina, D. I., Pushkarev, A. P., & Makarov, S. V. (2021, November). Theoretical study of perovskite nanowires optical response to hydrogen halides vapor exposure. In <i>Journal of Physics: Conference Series</i> (Vol. 2015, No. 1, p. 012087). IOP Publishing. 																																												

Weak Signal No.	29	Head Keyword	ti3c2 mxene																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • 2d-mos2 nanosheets, mose2 nanosheets, 1t mos2, mof nanosheets, v2c mxene, 2h-mos2, biobr nanoflakes, janus nanosheets, moo3-x nanosheets, bi2o2se nanosheets 																																												
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Weak Signal No.	33	Head Keyword	brick waste																																										
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Recent Publications	<ul style="list-style-type: none"> • Monish, K., Jesuran, J. J., & Kolathayar, S. (2021). A sustainable approach to turn plastic waste into useful construction blocks. In <i>Smart Technologies for Sustainable Development</i> (pp. 55–62). Springer, Singapore. • Hérou, S., Ribadeneyra, M. C., Schlee, P., Luo, H., Tanase, L. C., Roßberg, C., & Titirici, M. (2021). The impact of having an oxygen-rich microporous surface in carbon electrodes for high-power aqueous supercapacitors. <i>Journal of Energy Chemistry</i>, 53, 36–48. • Suleman, S., & Needhidasan, S. (2020). Utilization of manufactured sand as fine aggregates in electronic plastic waste concrete of M30 mix. <i>Materials Today: Proceedings</i>, 33, 1192–1197. 																																												

Weak Signal No.	45	Head Keyword	borophene																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> penta-graphene, doped phosphorene, violet phosphorene, black phosphorene, tellurene, phosphorene nanoflakes, antimonene, arsenene, bismuthene, blue phosphorene 																																												
Activity	<table border="1"> <caption>Activity Data for Borophene (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>100</td></tr> <tr><td>2018</td><td>100</td></tr> <tr><td>2019</td><td>100</td></tr> <tr><td>2020</td><td>150</td></tr> <tr><td>2021</td><td>200</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	5	2017	100	2018	100	2019	100	2020	150	2021	200
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Recent Publications	<ul style="list-style-type: none"> Qiu, M., Wang, D., Huang, H., Yin, T., Bao, W., Zhang, B., ... & Zhang, H. (2021). A Regioselectively Oxidized 2D Bi/BiOx Lateral Nano-Heterostructure for Hypoxic Photodynamic Therapy. <i>Advanced Materials</i>, 33(49), 2102562. Gaffar, M., Wella, S. A., & Hasdeo, E. H. (2021). Effects of topological band structure on thermoelectric transport of bismuthene. <i>Physical Review B</i>, 104(20), 205105. Basyouni, O. H., Abdelfatah, M., El-Khouly, M. E., Mohamed, T., El-Shaer, A., & Ismail, W. (2021). Facile and environmentally friendly fabrication of few-layer bismuthene by electrochemical exfoliation method for ultrafast photonic applications. <i>Journal of Alloys and Compounds</i>, 882, 160766. 																																												

Weak Signal No.	47	Head Keyword	cellulose aerogel																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> cellulose and nanocellulose, cellulose aerogels, biopolymeric nanomaterials, cellulose nano-fibrils, nanocellulose-based hydrogels, cellulose nanomaterials 																																												
Activity	<table border="1"> <caption>Activity Data for Cellulose Aerogel (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>15</td></tr> <tr><td>2015</td><td>20</td></tr> <tr><td>2016</td><td>20</td></tr> <tr><td>2017</td><td>25</td></tr> <tr><td>2018</td><td>30</td></tr> <tr><td>2019</td><td>45</td></tr> <tr><td>2020</td><td>50</td></tr> <tr><td>2021</td><td>70</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	5	2013	10	2014	15	2015	20	2016	20	2017	25	2018	30	2019	45	2020	50	2021	70
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Recent Publications	<ul style="list-style-type: none"> Lei, Y., Sun, W., Tiwari, S. K., Thummavichai, K., Ola, O., Qin, X., ... & Zhu, Y. (2021). Zn/Co-ZIF reinforced sugarcane bagasse aerogel for highly efficient catalytic activation of peroxy monosulfate. <i>Journal of Environmental Chemical Engineering</i>, 9(6), 106885. Shaheed, N., Javanshir, S., Esmkhani, M., Dekamin, M. G., & Naimi-Jamal, M. R. (2021). Synthesis of nanocellulose aerogels and Cu-BTC/nanocellulose aerogel composites for adsorption of organic dyes and heavy metal ions. <i>Scientific Reports</i>, 11(1), 1-11. Hasanpour, M., Motahari, S., Jing, D., & Hatami, M. (2021). Investigation of operation parameters on the removal efficiency of methyl orange pollutant by cellulose/zinc oxide hybrid aerogel. <i>Chemosphere</i>, 284, 131320. 																																												

Weak Signal No.	64	Head Keyword	cubi2o4																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> s-doped g-c3n4, bivo4/wo3, bi-based photocatalysts, direct z-scheme photocatalysts, znin2s4/tio2, porous g-c3n4, single-atom photocatalysts, cds/g-c 																																												
Activity	<table border="1"> <caption>Activity Data for 'cubi2o4'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>1</td></tr> <tr><td>2007</td><td>2</td></tr> <tr><td>2008</td><td>1</td></tr> <tr><td>2009</td><td>1</td></tr> <tr><td>2010</td><td>1</td></tr> <tr><td>2011</td><td>2</td></tr> <tr><td>2012</td><td>1</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>3</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>18</td></tr> <tr><td>2018</td><td>22</td></tr> <tr><td>2019</td><td>23</td></tr> <tr><td>2020</td><td>42</td></tr> <tr><td>2021</td><td>43</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	1	2007	2	2008	1	2009	1	2010	1	2011	2	2012	1	2013	2	2014	3	2015	10	2016	10	2017	18	2018	22	2019	23	2020	42	2021	43
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Weak Signal No.	92	Head Keyword	topological photonics																																										
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Recent Publications	<ul style="list-style-type: none"> Arakelian, S. M., Kucherik, A. O., Bukharov, D. N., & Khudaiberganov, T. A. (2021, December). Digital sovereignty of Russia based on the element base of topological nanostructures on a solid surface induced by laser radiation. In <i>Journal of Physics: Conference Series</i> (Vol. 2131, No. 5, p. 052082). IOP Publishing. Grinblat, G. (2021). Nonlinear dielectric nanoantennas and metasurfaces: frequency conversion and wavefront control. <i>ACS Photonics</i>, 8(12), 3406-3432. Lei, X., Yang, A., Shi, P., Xie, Z., Du, L., Zayats, A. V., & Yuan, X. (2021). Photonic spin lattices: symmetry constraints for skyrmion and meron topologies. <i>Physical Review Letters</i>, 127(23), 237403. 																																												

Weak Signal No.	105	Head Keyword	bamboo scrimber																																										
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Weak Signal No.	108	Head Keyword	ferronickel slag																																										
All Popping Keywords in this Weak Signal	• ferronickel slag powder, iron tailing powder, nickel slag																																												
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Recent Publications	<ul style="list-style-type: none"> • Yang, H. J., Lee, C. H., Shim, S. H., Kim, J. H. J., Lee, H. J., & Park, J. (2021). Performance evaluation of cement paste incorporating ferro-nickel slag powder under elevated temperatures. <i>Case Studies in Construction Materials</i>, 15, e00727. • Wang, C. L., Ren, Z. Z., Huo, Z. K., Zheng, Y. C., Tian, X. P., Zhang, K. F., & Zhao, G. F. (2021). Properties and hydration characteristics of mine cemented paste backfill material containing secondary smelting water-granulated nickel slag. <i>Alexandria Engineering Journal</i>, 60(6), 4961-4971. • Ramadhan, B. D., Oksri-Nelfia, L., & Siregar, P. H. R. (2021, November). The production of geopolymer concrete using GGBFS and nickel slag through ambient curing. In <i>AIP Conference Proceedings</i> (Vol. 2441, No. 1, p. 030008). AIP Publishing LLC. 																																												

Weak Signal No.	124	Head Keyword	silver nanoflowers																																										
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Weak Signal No.	160	Head Keyword	additive manufacturing technologies																																										
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Recent Publications	<ul style="list-style-type: none"> Cui, Z., Mi, Y., Qiu, D., Dong, P., Qin, Z., Gong, D., & Li, W. (2021). Microstructure and mechanical properties of additively manufactured CrMnFeCoNi high-entropy alloys after ultrasonic surface rolling process. <i>Journal of Alloys and Compounds</i>, 887, 161393. Wenjia, X., Yuxiang, X., & Lijun, S. (2021). PHASE-FIELD STUDY ON THE EVOLUTION OF MICROSTRUCTURE OF THE MOLTEN POOL FOR ADDITIVE MANUFACTURING. <i>力学学报</i>, 53, 1-11. Wan, L., Zou, Y., Shi, S., Tao, W., & Ju, Y. (2021). Surface finishing method based on laser re-melting using a cone annular beam for additive manufacturing. <i>Optics Express</i>, 29(25), 42287-42305. 																																												

Weak Signal No.	183	Head Keyword	sonosensitizers																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> nanosensitizer 																																												
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Recent Publications	<ul style="list-style-type: none"> Wang, W., Pan, X., Yang, H., Wang, H., Wu, Q., Zheng, L., ... & Liu, H. (2021). Bioactive Metal–Organic Frameworks with Specific Metal–Nitrogen (M–N) Active Sites for Efficient Sonodynamic Tumor Therapy. <i>ACS nano</i>, 15(12), 20003–20012. Roy, J., Pandey, V., Gupta, I., & Shekhar, H. (2021). Antibacterial sonodynamic therapy: current status and future perspectives. <i>ACS Biomaterials Science & Engineering</i>, 7(12), 5326–5338. Liu, S., Liu, Z., Meng, Q., Chen, C., & Pang, M. (2021). Facile Synthesis of a Cubic Porphyrin–Based Covalent Organic Framework for Combined Breast Cancer Therapy. <i>ACS applied materials & interfaces</i>, 13(48), 56873–56880. 																																												

Weak Signal No.	190	Head Keyword	la-mof																																										
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Weak Signal No.	211	Head Keyword	micro-leds																																										
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Recent Publications	<ul style="list-style-type: none"> Li, S., Chen, X., Wu, H., & Liu, C. (2021). Study on ZnO micron channel length thin film transistors using different metal electrodes. <i>Journal of Alloys and Compounds</i>, 888, 161610. Zhu, L., Wang, G., Yang, Y., Yao, B., Gu, C., & Xu, L. (2021). Six-primary-laser projection display system: demonstration and stereo color gamut measurement. <i>Optics Express</i>, 29(26), 43885–43898. MI, Z., LIU, X., WU, Y., SUN, Y., MALHOTRA, Y., & RA, Y. H. (2020). Toward Ultrahigh Efficiency GaN Nano and Micro Full-Color LEDs. In <i>Proceedings of the International Display Workshops (Web)</i> (Vol. 27, pp. 3–2). 																																												

Weak Signal No.	214	Head Keyword	nifeo																																										
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Weak Signal No.	230	Head Keyword	solid-state electrolytes																																										
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Weak Signal No.	235	Head Keyword	piezoelectric nanogenerators																																										
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Weak Signal No.	274	Head Keyword	sonodynamic therapy																																										
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Weak Signal No.	281	Head Keyword	2d nanomaterials																																										
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Weak Signal No.	311	Head Keyword	mgo nps																																										
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Weak Signal No.	334	Head Keyword	cdots																																										
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Weak Signal No.	362	Head Keyword	self-healing hydrogels																																										
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Weak Signal No.	383	Head Keyword	transition metal sulfides																																										
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Weak Signal No.	388	Head Keyword	nonfullerene acceptors																																										
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Weak Signal No.	394	Head Keyword	biocoagulant																																										
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Recent Publications	<ul style="list-style-type: none"> • Tong, C. Y., Yusuf, F. H. B. C., & Derek, C. J. C. (2021, December). Fish Farm Wastewater Treatment using <i>Moringa oleifera</i> Seed Powder as Natural Coagulant. In IOP Conference Series: Earth and Environmental Science (Vol. 945, No. 1, p. 012070). IOP Publishing. • Bouchareb, R., Derbal, K., Yelfouf, A., Diaf, D. B., Mahfouf Bouchareb, E., & Dizge, N. (2021). Effective treatment of chocolate industry effluent using waste from biocosmetic industry. CLEAN-Soil, Air, Water, 49(12), 2100033. • Saenab, S., Ramadhani, R. Z., Majid, M., & Rahim, I. (2021, November). Decrease levels of total suspended solid in tofu liquid waste using biocoagulant charcoal. In IOP Conference Series: Earth and Environmental Science (Vol. 886, No. 1, p. 012080). IOP Publishing. 																																												

Weak Signal No.	398	Head Keyword	graphdiyne																																										
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Activity	<table border="1"> <caption>Activity Data for graphdiyne (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>1</td></tr> <tr><td>2012</td><td>2</td></tr> <tr><td>2013</td><td>3</td></tr> <tr><td>2014</td><td>2</td></tr> <tr><td>2015</td><td>3</td></tr> <tr><td>2016</td><td>4</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>18</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>30</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	1	2012	2	2013	3	2014	2	2015	3	2016	4	2017	5	2018	10	2019	18	2020	25	2021	30
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Weak Signal No.	429	Head Keyword	biswas–arshed equation																																										
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➤ 3.1.17. Mathematics

Weak Signal No.	31	Head Keyword	fubini polynomials																																										
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Weak Signal No.	54	Head Keyword	conformable derivative																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • fractional-order capacitor, fractional-order neural networks, conformable fractional, conformable fractional integrals, fractional-order memristor, conformable fractional-order 																																												
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Recent Publications	<ul style="list-style-type: none"> • Bataineh, M., Alaroud, M., Al-Omari, S., & Agarwal, P. (2021). Series Representations for Uncertain Fractional IVPs in the Fuzzy Conformable Fractional Sense. <i>Entropy</i>, 23(12), 1646. • El-Deeb, A. A., & Awrejcewicz, J. (2021). Steffensen-Type Inequalities with Weighted Function via (γ, a)-Nabla-Conformable Integral on Time Scales. <i>Mathematics</i>, 9(23), 3046. • Liu, Y., Xue, D., & Yang, Y. (2021). Two types of conformable fractional grey interval models and their applications in regional electricity consumption prediction. <i>Chaos, Solitons & Fractals</i>, 153, 111628. 																																												

Weak Signal No.	102	Head Keyword	tensor complementarity problem																																								
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Recent Publications	<ul style="list-style-type: none"> • Sheng, Z., & Ni, Q. (2021). Computing tensor Z-eigenvalues via shifted inverse power method. <i>Journal of Computational and Applied Mathematics</i>, 398, 113717. • Ke, Y., Ma, C., & Zhang, H. (2021). A modified LM algorithm for tensor complementarity problems over the circular cone. <i>Journal of Computational and Applied Mathematics</i>, 398, 113689. • Xu, Y., & Huang, Z. H. (2021). Bounds of the solution set of the tensor complementarity problem. <i>Optimization Letters</i>, 15(8), 2701–2718. 																																										

Weak Signal No.	238	Head Keyword	ku-algebras																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • bh-algebras • quantum b-algebras 																																												
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Recent Publications	<ul style="list-style-type: none"> • Zhan, Q. (2021). Some operators on quantum B-algebras. <i>Symmetry</i>, 13(8), 1381. • Zhang, X., Aljahdali, S., & Khalil, A. M. (2021). On Soft Quantum B-Algebras and Fuzzy Soft Quantum B-Algebras. <i>Journal of Mathematics</i>, 2021. • Ciungu, L. C. (2021). Monadic classes of quantum B-algebras. <i>Soft Computing</i>, 25(1), 1–14. 																																												

Weak Signal No.	272	Head Keyword	fractional p-laplacian																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • pre-riesz spaces • musielak-orlicz-sobolev spaces 																																												
Activity	<table border="1"> <caption>Activity Data for 'fractional p-laplacian'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>2</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>70</td></tr> <tr><td>2017</td><td>55</td></tr> <tr><td>2018</td><td>60</td></tr> <tr><td>2019</td><td>65</td></tr> <tr><td>2020</td><td>70</td></tr> <tr><td>2021</td><td>75</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	2	2015	10	2016	70	2017	55	2018	60	2019	65	2020	70	2021	75
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Recent Publications	<ul style="list-style-type: none"> • Lou, Q., Qin, Y., & Liu, F. (2021). The existence of constrained minimizers related to fractional p-Laplacian equations. <i>Topological Methods in Nonlinear Analysis</i>, 58(2), 657–676. • Achour, H., & Bensid, S. (2021). On a Fractional p-Laplacian Problem with Discontinuous Nonlinearities. <i>Mediterranean Journal of Mathematics</i>, 18(6), 1–17. • Brasco, L., Lindgren, E., & Strömqvist, M. (2021). Continuity of solutions to a nonlinear fractional diffusion equation. <i>Journal of Evolution Equations</i>, 21(4), 4319–4381. 																																												

Weak Signal No.	299	Head Keyword	s-metric spaces																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • partial b-metric spaces 																																												
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Recent Publications	<ul style="list-style-type: none"> • Tomar, A., Joshi, M., & Bhatt, V. (2021). Fixed point and a Cantilever beam problem in a partial b-metric space. <i>Acta Universitatis Sapientiae, Mathematica</i>, 13(2), 506–518. • Karapinar, E., Chen, C. M., Alghamdi, M. A., & Fulga, A. (2021). Advances on the fixed point results via simulation function involving rational terms. <i>Advances in Difference Equations</i>, 2021(1), 1–20. • Gautam, P., & Verma, S. (2021). Fixed point via implicit contraction mapping on quasi-partial b-metric space. <i>The Journal of Analysis</i>, 29(4), 1251–1263. 																																												

Weak Signal No.	426	Head Keyword	lindley distribution																																										
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➤ 3.1.18. Medicine

Weak Signal No.	3	Head Keyword	neutrophil-lymphocyte ratio																																										
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Recent Publications	<ul style="list-style-type: none"> • Maiti, D. S., Singh, D., Bose, A., Das, S., Prasad, S. N., & Dastidar, A. G. (2021). Role of systemic inflammatory markers (biomarkers) as important prognostic factors for survival in head and neck cancer. <i>Biomedicine</i>, 41(4), 837–844. • Hanafi, A., Soetandyo, N., Jayusman, A. M., Widjaja, L., Dwijayanti, F., & Imelda, P. (2021). Clinical Characteristic of Thoracic Malignancy Patients with Coronavirus Disease 2019 Related to Mitigation Strategy in Dharmas National Cancer Center Hospital, Indonesia. <i>Open Access Macedonian Journal of Medical Sciences</i>, 9(B), 692–697. • Li, S., Liu, Y., Liu, S., Du, G., Wang, Z., & Yin, D. (2021). Predictive Values of Inflammation-Related Markers and Thyroid Function in Pediatric Thyroid Cancer Patients. <i>Frontiers in pediatrics</i>, 9. 																																												

Weak Signal No.	4	Head Keyword	chcc-cca																																										
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Recent Publications	<ul style="list-style-type: none"> • Weinfurter, K., Cho, J., Ackerman, D., Chen, J. X., Woodard, A., Li, W., ... & Gade, T. P. (2021). Variability in biopsy quality informs translational research applications in hepatocellular carcinoma. <i>Scientific reports</i>, 11(1), 1–10. • Juratli, M. A., Struecker, B., Katou, S., Morguel, M. H., & Pascher, A. (2021). Influence of molecular pathology on oncological surgery of liver and bile duct tumors. <i>Der Chirurg; Zeitschrift für Alle Gebiete der Operativen Medizin</i>. • Nasser-Ghods, N., Mara, K., & Watt, K. D. (2021). De Novo Colorectal and Pancreatic Cancer in Liver-Transplant Recipients: Identifying the Higher-Risk Populations. <i>Hepatology</i>, 74(2), 1003–1013. 																																												

Weak Signal No.	10	Head Keyword	ehealth literacy																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> e-health literacy organizational health literacy 																																												
Activity	<table border="1"> <caption>Activity Data for ehealth literacy (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>10</td></tr> <tr><td>2012</td><td>15</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>25</td></tr> <tr><td>2015</td><td>40</td></tr> <tr><td>2016</td><td>30</td></tr> <tr><td>2017</td><td>65</td></tr> <tr><td>2018</td><td>55</td></tr> <tr><td>2019</td><td>65</td></tr> <tr><td>2020</td><td>115</td></tr> <tr><td>2021</td><td>170</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	5	2011	10	2012	15	2013	10	2014	25	2015	40	2016	30	2017	65	2018	55	2019	65	2020	115	2021	170
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2019	65																																												
2020	115																																												
2021	170																																												
Recent Publications	<ul style="list-style-type: none"> Lubasch, J. S., Voigt-Barbarowicz, M., Ernstmann, N., Kowalski, C., Brütt, A. L., & Ansmann, L. (2021). Organizational Health Literacy in a Hospital—Insights on the Patients’ Perspective. <i>International Journal of Environmental Research and Public Health</i>, 18(23), 12646. Baumeister, A., Chakraverty, D., Aldin, A., Seven, Ü. S., Skoetz, N., Kalbe, E., & Woopen, C. (2021). “The system has to be health literate, too”—perspectives among healthcare professionals on health literacy in transcultural treatment settings. <i>BMC health services research</i>, 21(1), 1–16. Henrard, G., Vanmeerbeek, M., Dardenne, N., & Rademakers, J. (2021). The Vienna self-assessment questionnaire: a usable tool towards more health-literate hospitals? Explorative case studies in three hospitals in Belgium. <i>BMC health services research</i>, 21(1), 1–12. 																																												

Weak Signal No.	14	Head Keyword	cabozantinib																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> tislelizumab, sacituzumab govitecan-hziy, risankizumab, daratumumab, entrectinib, siltuximab etc 																																												
Activity	<table border="1"> <caption>Activity Data for cabozantinib (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>10</td></tr> <tr><td>2012</td><td>20</td></tr> <tr><td>2013</td><td>40</td></tr> <tr><td>2014</td><td>50</td></tr> <tr><td>2015</td><td>70</td></tr> <tr><td>2016</td><td>100</td></tr> <tr><td>2017</td><td>130</td></tr> <tr><td>2018</td><td>150</td></tr> <tr><td>2019</td><td>160</td></tr> <tr><td>2020</td><td>210</td></tr> <tr><td>2021</td><td>270</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	10	2012	20	2013	40	2014	50	2015	70	2016	100	2017	130	2018	150	2019	160	2020	210	2021	270
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2021	270																																												
Recent Publications	<ul style="list-style-type: none"> Mycko, M. P. (2020). B cell targeting therapies in MS patients during the SARS-CoV-2 pandemic—when immunosuppression meets infection?. <i>Neurologia i Neurochirurgia Polska</i>, 54(6), 490–501. Butler, M., van Ingen Schenau, D. S., Yu, J., Jenni, S., Dobay, M. P., Hagelaar, R., ... & van Leeuwen, F. N. (2021). BTK inhibition sensitizes Acute Lymphoblastic Leukemia to asparaginase by suppressing the Amino Acid Response pathway. <i>Blood, The Journal of the American Society of Hematology</i>, 138(23), 2383–2395. Scheible, H., Dyroff, M., Seithel-Keuth, A., Harrison-Moench, E., Mammasse, N., Port, A., ... & Mitchell, D. (2021). Evobrutinib, a covalent Bruton’s tyrosine kinase inhibitor: Mass balance, elimination route, and metabolism in healthy participants. <i>Clinical and translational science</i>, 14(6), 2420–2430. 																																												

Weak Signal No.	15	Head Keyword	smartphone addiction																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> excessive smartphone use, problematic social media use, fomo, mobile phone addiction, social media addiction, problematic smartphone use etc 																																												
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Recent Publications	<ul style="list-style-type: none"> Wang, T., Wong, J. Y., Wang, M. P., Li, A. C. Y., Kim, S. S., & Lee, J. J. (2021). Effects of Social Networking Service (SNS) Addiction on Mental Health Status in Chinese University Students: Structural Equation Modeling Approach Using a Cross-sectional Online Survey. <i>Journal of Medical Internet Research</i>, 23(12), e26733. Ruiz, M. J., Sáez, G., Villanueva-Moya, L., & Expósito, F. (2021). Adolescent sexting: the role of body shame, social physique anxiety, and social networking site addiction. <i>Cyberpsychology, Behavior, and Social Networking</i>, 24(12), 799–805. Qahri-Saremi, H., Vaghefi, I., & Turel, O. (2021). Addiction to social networking sites and user responses: Toward a typological theory and its relation to users' personality traits. <i>ACM SIGMIS Database: the DATABASE for Advances in Information Systems</i>, 52(4), 65–91. 																																												

Weak Signal No.	16	Head Keyword	obstetric violence																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> domestic and family violence domestic violence and abuse 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 16</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>2</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>45</td></tr> <tr><td>2020</td><td>55</td></tr> <tr><td>2021</td><td>75</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	2	2016	5	2017	15	2018	25	2019	45	2020	55	2021	75
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Recent Publications	<ul style="list-style-type: none"> Chandan, J. S., Subramanian, A., Chandan, J. K., Gokhale, K. M., Vitoc, A., Taylor, J., ... & Nirantharakumar, K. (2021). The risk of COVID-19 in survivors of domestic violence and abuse. <i>BMC medicine</i>, 19(1), 1–7. Su, Z., McDonnell, D., Roth, S., Li, Q., Šegalo, S., Shi, F., & Wagers, S. (2021). Mental health solutions for domestic violence victims amid COVID-19: a review of the literature. <i>Globalization and health</i>, 17(1), 1–11. Szilassy, E., Barbosa, E. C., Dixon, S., Feder, G., Griffiths, C., Johnson, M., ... & Dowrick, A. (2021). PRimary care rEsponse to domestic violence and abuse in the COvid-19 panDEmic (PRECODE): protocol of a rapid mixed-methods study in the UK. <i>BMC family practice</i>, 22(1), 1–10. 																																												

Weak Signal No.	23	Head Keyword	osteosarcopenia																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • pre-sarcopenia, probable sarcopenia, frailty and sarcopenia, presarcopenia 																																												
Activity	<table border="1"> <caption>Activity Data for Osteosarcopenia (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>2</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>8</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>40</td></tr> <tr><td>2020</td><td>60</td></tr> <tr><td>2021</td><td>85</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	2	2016	5	2017	8	2018	15	2019	40	2020	60	2021	85
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Recent Publications	<ul style="list-style-type: none"> • Lai, J. C., Tandon, P., Bernal, W., Tapper, E. B., Ekong, U., Dasarathy, S., & Carey, E. J. (2021). Malnutrition, frailty, and sarcopenia in patients with cirrhosis: 2021 practice guidance by the American Association for the Study of Liver Diseases. <i>Hepatology</i>, 74(3), 1611–44. • Arai, M. (2021). Evaluating the usefulness of Ninjin'yoeito Kampo medicine in combination with rehabilitation therapy in patients with frailty complicated by intractable dizziness. <i>Neuropeptides</i>, 90, 102189. • Sperlich, E., Fleiner, T., Zijlstra, W., Haussermann, P., & Morat, T. (2021). Sarcopenia in geriatric psychiatry: feasibility of the diagnostic process and estimation of prevalence within a hospital context. <i>Journal of Cachexia, Sarcopenia and Muscle</i>, 12(5), 1153–1160. 																																												

Weak Signal No.	32	Head Keyword	high-flow nasal cannula																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • prone position ventilation, hfot, hfnc, hfno, high-flow nasal oxygen, transnasal humidified rapid-insufflation ventilatory exchange 																																												
Activity	<table border="1"> <caption>Activity Data for High-flow nasal cannula (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>80</td></tr> <tr><td>2019</td><td>120</td></tr> <tr><td>2020</td><td>180</td></tr> <tr><td>2021</td><td>275</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	5	2017	10	2018	80	2019	120	2020	180	2021	275
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Recent Publications	<ul style="list-style-type: none"> • Chao, K. Y., Liu, W. L., Nassef, Y., Tseng, C. W., & Wang, J. S. (2021). Effects of high-flow nasal cannula with oxygen on self-paced exercise performance in COPD: A randomized cross-over trial. <i>Medicine</i>, 100(51). • Kim, J. Y., Bae, J., Lee, K. H., Kang, L., Kim, K. N., & Jeong, M. A. (2021). High-flow nasal cannula application in an infant patient with laryngomalacia during general anesthesia: A case report. <i>Medicine</i>, 100(49). • Wang, Z., He, Y., Zhang, X., & Luo, Z. (2021). Non-Invasive Ventilation Strategies in Children With Acute Lower Respiratory Infection: A Systematic Review and Bayesian Network Meta-Analysis. <i>Frontiers in pediatrics</i>, 9. 																																												

Weak Signal No.	34	Head Keyword	sglt-2 inhibitors																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • beinaglutide, dpp4i, ertugliflozin, semaglutide, once-weekly semaglutide, tirzepatide, dulaglutide, glp-1ra 																																												
Activity	<table border="1"> <caption>Activity Data for sgl-2 inhibitors (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>20</td></tr> <tr><td>2017</td><td>30</td></tr> <tr><td>2018</td><td>120</td></tr> <tr><td>2019</td><td>110</td></tr> <tr><td>2020</td><td>130</td></tr> <tr><td>2021</td><td>200</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	5	2015	10	2016	20	2017	30	2018	120	2019	110	2020	130	2021	200
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Recent Publications	<ul style="list-style-type: none"> • Slomski, A. (2021). Semaglutide's weight-loss benefits were sustained in a 2-year study. <i>JAMA</i>, 326(24), 2464-2464. • Zhuo, C., Lin, C., Zhou, C., Gao, X., Shao, H., Fang, T., ... & Liu, M. (2021). Comparative cardio-renal outcomes of type 2 diabetes patients administered glucagon-like peptide-1 receptor agonists: a network meta-analysis. <i>Frontiers in pharmacology</i>, 3540. • Vijjaratnam, N., & Foltynie, T. (2021). Disease modifying therapies III: Novel targets. <i>Neuropharmacology</i>, 201, 108839. 																																												

Weak Signal No.	35	Head Keyword	robotic pancreatoduodenectomy																																										
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Recent Publications	<ul style="list-style-type: none"> • Marino, M. V., Chiow, A. K. H., Vaccarella, G., Potapov, O., & Komorowski, A. L. Modified Blumgart Anastomosis in Patients Undergoing Robotic Pancreaticoduodenectomy: The Results of a Preliminary Experience. • Nota, C. L., Oor, J. E., Vriens, M. R., & Molenaar, I. Q. (2021). Robotic distal pancreatectomy for a neuroendocrine tumor in an 11-year-old child. <i>Surgical Oncology</i>, 38, 101600. • Dittrich, L., Biebl, M., Malinka, T., Knoop, M., & Pratschke, J. (2021). Minimally invasive pancreatic surgery—will robotic surgery be the future?. <i>European Surgery</i>, 53(4), 158-165. 																																												

Weak Signal No.	39	Head Keyword	pi-rads																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> pi-rads lesions, pirads, pi-rads v2 																																												
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Recent Publications	<ul style="list-style-type: none"> Kim, H., Jung, G., Kim, J. H., Byun, S. S., & Hong, S. K. (2021). Role of prostate health index to predict Gleason score upgrading and high-risk prostate cancer in radical prostatectomy specimens. <i>Scientific Reports</i>, 11(1), 1–6. Sterling, J., Smith, K., Farber, N., Nagaya, N., Jang, T. L., Singer, E. A., ... & Kim, I. Y. (2021). Fourteen-Core Systematic Biopsy That Includes Two Anterior Cores in Men With PI-RADS Lesion ≥ 3 is Comparable With Magnetic Resonance Imaging-ultrasound Fusion Biopsy in Detecting Clinically Significant Prostate Cancer: A Single-institution Experience. <i>Clinical Genitourinary Cancer</i>, 19(4), 275–279. Keck, B., Borkowetz, A., Poellmann, J., Jansen, T., Fischer, M., Fuessel, S., ... & Wach, S. (2021). Serum miRNAs Support the Indication for MRI-Ultrasound Fusion-Guided Biopsy of the Prostate in Patients with Low-PI-RADS Lesions. <i>Cells</i>, 10(6), 1315. 																																												

Weak Signal No.	41	Head Keyword	ceftazidime-avibactam																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> ceftolozane-tazobactam, taniborbactam, ceftolozane, cefiderocol, delafloxacin, lefamulin etc 																																												
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Recent Publications	<ul style="list-style-type: none"> Esposito, S., Pisi, G., Fainardi, V., & Principi, N. (2021). What is the role of <i>Achromobacter</i> species in patients with cystic fibrosis?. <i>Frontiers in Bioscience-Landmark</i>, 26(12), 1613–1620. Girlich, D., Bonnin, R. A., Proust, A., Naas, T., & Dortet, L. (2021). Undetectable Production of the VIM-1 Carbapenemase in an <i>Atlantibacter hermannii</i> Clinical Isolate. <i>Frontiers in microbiology</i>, 12. Yao, J., Wang, J., Chen, M., & Cai, Y. (2021). Cefiderocol: An Overview of Its in-vitro and in-vivo Activity and Underlying Resistant Mechanisms. <i>Frontiers in medicine</i>, 8. 																																												

Weak Signal No.	55	Head Keyword	mrpl13																																										
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Recent Publications	<ul style="list-style-type: none"> • Min, S., Lee, Y. K., Hong, J., Park, T. J., Woo, H. G., Kwon, S. M., & Yoon, G. (2021). MRPS31 loss is a key driver of mitochondrial deregulation and hepatocellular carcinoma aggressiveness. <i>Cell death & disease</i>, 12(11), 1–12. • Liu, Y., Sun, H., Li, X., Liu, Q., Zhao, Y., Li, L., ... & Jin, W. (2021). Identification of a Three-RNA Binding Proteins (RBPs) Signature Predicting Prognosis for Breast Cancer. <i>Frontiers in Oncology</i>, 2150. • Lu, S., Lijuan, R., Tang, Q. H., Liu, Q. L., & Xian-Lan, Z. H. A. N. G. (2021). Bioinformatics Analysis and Identification of Genes and Molecular Pathways Involved in Venous Thromboembolism (VTE). <i>Annals of Vascular Surgery</i>, 74, 389–399. 																																												

Weak Signal No.	58	Head Keyword	eus-gbd																																										
All Popping Keywords in this Weak Signal	• eus-ge																																												
Activity	<table border="1"> <caption>Activity Data for eus-gbd</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>1</td></tr> <tr><td>2011</td><td>1</td></tr> <tr><td>2012</td><td>3</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>3</td></tr> <tr><td>2015</td><td>3</td></tr> <tr><td>2016</td><td>6</td></tr> <tr><td>2017</td><td>6</td></tr> <tr><td>2018</td><td>9</td></tr> <tr><td>2019</td><td>16</td></tr> <tr><td>2020</td><td>16</td></tr> <tr><td>2021</td><td>12</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	1	2011	1	2012	3	2013	0	2014	3	2015	3	2016	6	2017	6	2018	9	2019	16	2020	16	2021	12
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Recent Publications	<ul style="list-style-type: none"> • Teoh, A. Y. B., Kongkam, P., Bapaye, A., Ratanachu, T., Reknimitr, R., Lakthakia, S., ... & Moon, J. H. (2021). Use of a novel lumen apposing metallic stent for drainage of the bile duct and gallbladder: Long term outcomes of a prospective international trial. <i>Digestive Endoscopy</i>, 33(7), 1139–1145. • Saumoy, M., Yang, J., Bhatt, A., Bucobo, J. C., Chandrasekhara, V., Copland, A. P., ... & Lichtenstein, D. R. (2021). Endoscopic therapies for gallbladder drainage. <i>Gastrointestinal endoscopy</i>, 94(4), 671–684. • Yoo, H. W., Moon, J. H., Jo, S. J., Lee, Y. N., Park, J. K., Lee, T. H., ... & Lee, D. H. (2021). A novel electrocautery-enhanced delivery system for one-step endoscopic ultrasound-guided drainage of the gallbladder and bile duct using a lumen-apposing metal stent: a feasibility study. <i>Endoscopy</i>, 53(09), 922–926. 																																												

Weak Signal No.	67	Head Keyword	glycyrrhizae radix et rhizoma																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> psoraleae fructus, epimedii folium, paridis rhizoma, rehmanniae radix praeparata etc 																																												
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Recent Publications	<ul style="list-style-type: none"> Liu, Q., Zhang, J., Han, X., Chen, J., Zhai, Y., Lin, Y., ... & Li, P. (2021). Huiyang Shengji decoction promotes wound healing in diabetic mice by activating the EGFR/PI3K/ATK pathway. <i>Chinese medicine</i>, 16(1), 1–17. Meng, X. L., Liu, X. Q., Ning, C. X., Ma, J. N., Zhang, X. Y., Su, X. J., ... & Zhang, S. S. (2021). Rehmanniae Radix and Rehmanniae Radix Praeparata improve diabetes induced by high-fat diet coupled with streptozotocin in mice through AMPK-mediated NF-κB/NLRP3 signaling pathway. <i>Zhongguo Zhong yao za zhi= Zhongguo Zhongyao Zazhi= China Journal of Chinese Materia Medica</i>, 46(21), 5627–5640. Zhang, J., Lyu, J., Wang, S., Li, M., Liu, J., Zhu, D., ... & Feng, W. (2021). Three New 2, 2'-Difurylketone Derivatives and Two New Chromones from the Rehmanniae Radix Praeparata. <i>Chemistry & Biodiversity</i>, 18(10), e2100237. 																																												

Weak Signal No.	68	Head Keyword	awake prone positioning																																										
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Recent Publications	<ul style="list-style-type: none"> Ehrmann, S., Li, J., Ibarra-Estrada, M., Perez, Y., Pavlov, I., McNicholas, B., ... & Marzouk, M. (2021). Awake prone positioning for COVID-19 acute hypoxaemic respiratory failure: a randomised, controlled, multinational, open-label meta-trial. <i>The Lancet Respiratory Medicine</i>, 9(12), 1387–1395. Qin, Z., Deng, Y., Li, X., & Li, M. (2021). Bone cement implantation syndrome induced by antibiotic-loaded bone cement covering the infected bone surface: A case report. <i>International Journal of Surgery Case Reports</i>, 89, 106627. Kaur, R., Vines, D. L., Mirza, S., Elshafei, A., Jackson, J. A., Harnois, L. J., ... & Li, J. (2021). Early versus late awake prone positioning in non-intubated patients with COVID-19. <i>Critical Care</i>, 25(1), 1–9. 																																												

Weak Signal No.	70	Head Keyword	attr amyloidosis																																										
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Recent Publications	<ul style="list-style-type: none"> • Warner, A. L. (2021). Advances in the treatment of transthyretin cardiac amyloidosis: Current and emerging therapies. <i>Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy</i>, 41(12), 1081–1091. • Quarta, C. C., Zheng, J., Hutt, D., Grigore, S. F., Manwani, R., Sachchithanatham, S., ... & Wechalekar, A. D. (2021). 99mTc-DPD scintigraphy in immunoglobulin light chain (AL) cardiac amyloidosis. <i>European Heart Journal-Cardiovascular Imaging</i>, 22(11), 1304–1311. • Oghina, S., Josse, C., Bézard, M., Kharoubi, M., Delbarre, M. A., Eyharts, D., ... & Damy, T. (2021). Prognostic Value of N-Terminal Pro-Brain Natriuretic Peptide and High-Sensitivity Troponin T Levels in the Natural History of Transthyretin Amyloid Cardiomyopathy and Their Evolution after Tafamidis Treatment. <i>Journal of clinical medicine</i>, 10(21), 4868. 																																												

Weak Signal No.	73	Head Keyword	anti-pd-1 therapy																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • programmed death ligand, pd-1/pd-l1 blocking, pdl1, anti-pd-1/pd-l1 therapy, pd-1/pd-l1 inhibitors 																																												
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Weak Signal No.	77	Head Keyword	roxadustat																																										
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Recent Publications	<ul style="list-style-type: none"> • Bruzzese, L., Lumet, G., Vairo, D., Guiol, C., Guieu, R., & Faure, A. (2021). Hypoxic preconditioning in renal ischaemia-reperfusion injury: a review in pre-clinical models. <i>Clinical Science</i>, 135(23), 2607–2618. • Crugliano, G., Serra, R., Ielapi, N., Battaglia, Y., Coppolino, G., Bolignano, D., ... & Andreucci, M. (2021). Hypoxia-inducible factor stabilizers in end stage kidney disease: “can the promise be kept?”. <i>International Journal of Molecular Sciences</i>, 22(22), 12590. • Wish, J. B., Eckardt, K. U., Kovesdy, C. P., Fishbane, S., Spinowitz, B. S., & Berns, J. S. (2021). Hypoxia-inducible factor stabilization as an emerging therapy for CKD-related anemia: report from a scientific workshop sponsored by the National Kidney Foundation. <i>American Journal of Kidney Diseases</i>, 78(5), 709–718. 																																												

Weak Signal No.	78	Head Keyword	loot boxes																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • loot box 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 78</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>5</td></tr> <tr><td>2019</td><td>15</td></tr> <tr><td>2020</td><td>30</td></tr> <tr><td>2021</td><td>50</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	5	2019	15	2020	30	2021	50
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Recent Publications	<ul style="list-style-type: none"> • Lloyd, J., Nicklin, L. L., Spicer, S. G., Fullwood, C., Uther, M., Hinton, D. P., ... & Close, J. (2021). Development and Validation of the RAFFLE: A Measure of Reasons and Facilitators for Loot Box Engagement. <i>Journal of Clinical Medicine</i>, 10(24), 5949. • Yokomitsu, K., Irie, T., Shinkawa, H., & Tanaka, M. (2021). Characteristics of gamers who purchase loot box: a systematic literature review. <i>Current Addiction Reports</i>, 8(4), 481–493. • Biegun, J., Edgerton, J. D., & Keough, M. T. (2021). Are Some Subtypes of Video Gamer More at Risk for Gambling Issues? A Latent Class Analysis of a Canadian Sample of University Students. <i>Journal of Gambling Issues</i>, 46. 																																												

Weak Signal No.	79	Head Keyword	va-ecmo																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • va-ecls • veno-arterial extracorporeal membrane oxygenation • va ecmo • v-v ecmo 																																												
Activity	<table border="1"> <caption>Activity Data for va-ecmo</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>5</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>80</td></tr> <tr><td>2019</td><td>75</td></tr> <tr><td>2020</td><td>120</td></tr> <tr><td>2021</td><td>220</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	5	2016	10	2017	15	2018	80	2019	75	2020	120	2021	220
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Recent Publications	<ul style="list-style-type: none"> • Tycińska, A., Grygier, M., Biegus, J., Czarnik, T., Dąbrowski, M., Depukat, R., ... & Zymliński, R. (2021). Mechanical circulatory support. An expert opinion of the Association of Intensive Cardiac Care and the Association of Cardiovascular Interventions of the Polish Cardiac Society. <i>Kardiol Pol</i>, 79(12), 1399–1410. • Qi, J., Gao, S., Liu, G., Yan, S., Zhang, M., Yan, W., ... & Ji, B. (2021). An ovine model of awake veno-arterial extracorporeal membrane oxygenation. <i>Frontiers in Veterinary Science</i>, 1512. • Fiorelli, F., & Panoulas, V. (2021). Impella as unloading strategy during VA-ECMO: Systematic review and meta-analysis. <i>Reviews in Cardiovascular Medicine</i>, 22(4), 1503–1511. 																																												

Weak Signal No.	80	Head Keyword	pibrentasvir																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • sofosbuvir, velpatasvir, voxilaprevir 																																												
Activity	<table border="1"> <caption>Activity Data for pibrentasvir</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>45</td></tr> <tr><td>2019</td><td>65</td></tr> <tr><td>2020</td><td>35</td></tr> <tr><td>2021</td><td>30</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	5	2017	15	2018	45	2019	65	2020	35	2021	30
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Weak Signal No.	81	Head Keyword	ti-rads																																										
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Recent Publications	<ul style="list-style-type: none"> • Elsholtz, F. H. J., Erleben, C., Bauknecht, H. C., Dinkelborg, P., Kreutzer, K., Hamm, B., & Niehues, S. M. (2021). Reliability of NI-RADS criteria in the interpretation of contrast-enhanced magnetic resonance imaging considering the potential role of diffusion-weighted imaging. <i>European radiology</i>, 31(8), 6295–6304. • Ashour, M. M., Darwish, E. A. F., Fahiem, R. M., & Abdelaziz, T. T. (2021). MRI posttreatment surveillance for head and neck squamous cell carcinoma: proposed MR NI-RADS criteria. <i>American Journal of Neuroradiology</i>, 42(6), 1123–1129. • Strauss, S. B., Aiken, A. H., Lantos, J. E., & Phillips, C. D. (2021). Best practices: application of NI-RADS for posttreatment surveillance imaging of head and neck cancer. <i>American Journal of Roentgenology</i>, 216(6), 1438–1451. 																																												

Weak Signal No.	87	Head Keyword	orthorexia nervosa																																										
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Recent Publications	<ul style="list-style-type: none"> • Gobin, K. C., Mills, J. S., & McComb, S. E. (2021). The Effects of the COVID-19 Pandemic Lockdown on Eating, Body Image, and Social Media Habits Among Women With and Without Symptoms of Orthorexia Nervosa. <i>Frontiers in Psychology</i>, 12. • Parisi, L., La Grutta, S., Lo Baido, R., Epifanio, M. S., Carotenuto, M., Operto, F. F., ... & Roccella, M. (2021). Bigorexia and orthorexia: An indissoluble relationship?. • Awad, E., Salameh, P., Sacre, H., Malaeb, D., Hallit, S., & Obeid, S. (2021). Association between impulsivity and orthorexia nervosa/healthy orthorexia: any mediating effect of depression, anxiety, and stress?. <i>BMC psychiatry</i>, 21(1), 1–14. 																																												

Weak Signal No.	96	Head Keyword	erenumab																																										
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Weak Signal No.	106	Head Keyword	cgas–sting signaling pathway																																										
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Recent Publications	<ul style="list-style-type: none"> • Bai, J., & Liu, F. (2021). cGAS–STING signaling and function in metabolism and kidney diseases. <i>Journal of molecular cell biology</i>, 13(10), 728–738. • Xiong, Y., Tang, Y. D., & Zheng, C. (2021). The crosstalk between the caspase family and the cGAS–STING signaling pathway. <i>Journal of Molecular Cell Biology</i>, 13(10), 739–747. • Akbari, M., Shanley, D. P., Bohr, V. A., & Rasmussen, L. J. (2021). Cytosolic Self–DNA–A Potential Source of Chronic Inflammation in Aging. <i>Cells</i>, 10(12), 3544. 																																												

Weak Signal No.	113	Head Keyword	daravirine																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • cabotegravir • darunavir-cobicistat 																																												
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Recent Publications	<ul style="list-style-type: none"> • Salama, E., Hill, L., Patel, N., Best, B. M., & Momper, J. D. (2021). Brief Report: Pharmacokinetics of Bictegravir and Tenofovir in Combination With Darunavir/Cobicistat in Treatment-Experienced Persons With HIV. <i>JAIDS Journal of Acquired Immune Deficiency Syndromes</i>, 88(4), 389–392. • Tian, X., Yao, Y., He, G., Jia, Y., Wang, K., & Chen, L. (2021). Systematic analysis of safety profile for darunavir and its boosted agents using data mining in the FDA Adverse Event Reporting System database. <i>Scientific Reports</i>, 11(1), 1–9. • Stader, F., Battegay, M., & Marzolini, C. (2021). Physiologically-based pharmacokinetic modeling to support the clinical management of drug-drug interactions with bictegravir. <i>Clinical Pharmacology & Therapeutics</i>, 110(5), 1231–1239. 																																												

Weak Signal No.	114	Head Keyword	hist1h1e																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • hist1h1b 																																												
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Weak Signal No.	177	Head Keyword	self-perceptions of aging																																										
All Popping Keywords in this Weak Signal	• self-perception of aging																																												
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Weak Signal No.	122	Head Keyword	video consultations																																										
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Recent Publications	<ul style="list-style-type: none"> • Shaw, S. E., Hughes, G., Wherton, J., Moore, L., Rosen, R., Papoutsis, C., ... & Greenhalgh, T. (2021). Achieving spread, scale up and sustainability of video consulting services during the Covid-19 pandemic? Findings from a comparative case study of policy implementation in England, Wales, Scotland and Northern Ireland. <i>Frontiers in Digital Health</i>, 3. • Maehl, N., Bleckwenn, M., Riedel-Heller, S. G., Mehlhorn, S., Lippmann, S., Deutsch, T., & Schimpf, A. (2021). The Impact of the COVID-19 Pandemic on Avoidance of Health Care, Symptom Severity, and Mental Well-Being in Patients with Coronary Artery Disease. <i>Frontiers in medicine</i>, 8. • Licchetta, L., Trivisano, M., Baldin, E., Mohamed, S., Raschi, E., Mostacci, B., ... & Vignatelli, L. (2021). TELEmedicine for EPilepsy Care (TELE-EPIC): protocol of a randomised, open controlled non-inferiority clinical trial. <i>BMJ open</i>, 11(12), e053980. 																																												

Weak Signal No.	126	Head Keyword	favipiravir																																										
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Recent Publications	<ul style="list-style-type: none"> • Deveci, B., & Saba, R. (2021). Prolonged viral positivity induced recurrent coronavirus disease 2019 (COVID-19) pneumonia in patients receiving anti-CD20 monoclonal antibody treatment. <i>Medicine</i>, 100(52). • Huseen, N. H. A. (2020). Docking study of naringin binding with COVID-19 main protease enzyme. <i>Iraqi Journal of Pharmaceutical Sciences (P-ISSN: 1683-3597, E-ISSN: 2521-3512)</i>, 29(2), 231-238. • Xu, L., Zhang, X., Chu, Z., Wang, H., Li, Y., Shen, X., ... & Pan, D. (2021). Temperature-responsive multilayer films based on block copolymer-coated silica nanoparticles for long-term release of favipiravir. <i>ACS Applied Nano Materials</i>, 4(12), 14014-14025. 																																												

Weak Signal No.	131	Head Keyword	elexacaftor-tezacaftor-ivacaftor																																										
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Weak Signal No.	133	Head Keyword	enasidenib																																										
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Weak Signal No.	137	Head Keyword	radiomics signature																																										
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Weak Signal No.	141	Head Keyword	one-anastomosis gastric bypass																																										
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Weak Signal No.	142	Head Keyword	lIn metastasis																																										
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Weak Signal No.	149	Head Keyword	long-covid																																										
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Weak Signal No.	162	Head Keyword	prognostic nutritional index																																										
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Weak Signal No.	164	Head Keyword	mirna-lncrna																																										
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Weak Signal No.	173	Head Keyword	serum hbv rna																																										
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Recent Publications	<ul style="list-style-type: none"> • Erken, R., Zaaijer, H. L., Willemse, S. B., Bakker, E., Takkenberg, B. B., Reesink, H. W., & Kootstra, N. A. (2021). Hepatitis B core related antigen in relation to intrahepatic and circulating viral markers, before and after combination therapy. <i>Annals of Hepatology</i>, 26, 100540. • Ghany, M. G., King, W. C., Lisker-Melman, M., Lok, A. S., Terrault, N., Janssen, H. L., ... & Sterling, R. K. (2021). Comparison of HBV RNA and hepatitis B core related antigen with conventional HBV markers among untreated adults with chronic hepatitis B in North America. <i>Hepatology</i>, 74(5), 2395-2409. • Lu, D. J., Zheng, H. L., Xi, J. Y., Zhang, T., Chen, X. M., & Lu, F. M. (2021). The mechanisms of the translation of polymerase from HBV pregenomic RNA. <i>Zhonghua gan Zang Bing za zhi= Zhonghua Ganzangbing Zazhi= Chinese Journal of Hepatology</i>, 29(10), 1035-1040. 																																												

Weak Signal No.	180	Head Keyword	isavuconazole																																										
All Popping Keywords in this Weak Signal	• rezafungin																																												
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Weak Signal No.	187	Head Keyword	medical cannabis																																										
All Popping Keywords in this Weak Signal	• medicinal cannabis																																												
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Recent Publications	<ul style="list-style-type: none"> • Gilligan, M., & Widdess-Walsh, P. Prescribing Patterns of Medicinal Cannabis for Epilepsy. • QC, F. A. (2021). Children as voices and images for medicinal cannabis law reform. <i>Monash Bioethics Review</i>, 1–22. • Ellison, G. L., Alejandro Salicrup, L., Freedman, A. N., Fu, Y., Ross, S., Johnson, R. L., ... & White, J. D. (2021). The National Cancer Institute and Cannabis and Cannabinoids Research. <i>JNCI Monographs</i>, 2021(58), 35–38. 																																												

Weak Signal No.	188	Head Keyword	siponimod																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> ozanimod 																																												
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Recent Publications	<ul style="list-style-type: none"> Zhao, Z., Lv, Y., Gu, Z. C., Ma, C. L., & Zhong, M. K. (2021). Risk for Cardiovascular Adverse Events Associated With Sphingosine-1-Phosphate Receptor Modulators in Patients With Multiple Sclerosis: Insights From a Pooled Analysis of 15 Randomised Controlled Trials. <i>Frontiers in immunology</i>, 12. Carotenuto, A., Costabile, T., Moccia, M., Falco, F., Petracca, M., Satelliti, B., ... & Morra, V. B. (2021). Interplay Between Cognitive and Bowel/Bladder Function in Multiple Sclerosis. <i>International Neurology Journal</i>, 25(4), 310. Ianniello, A., & Pozzilli, C. (2021). Ponesimod to treat multiple sclerosis. <i>Drugs of Today (Barcelona, Spain: 1998)</i>, 57(12), 745-758. 																																												

Weak Signal No.	189	Head Keyword	virtual visits																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> video telehealth video visits 																																												
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Recent Publications	<ul style="list-style-type: none"> Gentry, M. T., Puspitasari, A. J., McKean, A. J., Williams, M. D., Breiting, S., Geske, J. R., ... & Hilty, D. M. (2021). Clinician satisfaction with rapid adoption and implementation of telehealth services during the COVID-19 pandemic. <i>Telemedicine and e-Health</i>, 27(12), 1385-1392. Kurlander, J. E., Kullgren, J. T., Adams, M. A., Malani, P. N., Kirch, M., Solway, E., ... & Saini, S. D. (2021). Interest in and concerns about telehealth among adults aged 50 to 80 years. <i>The American Journal of Managed Care</i>, 27(10), 415-422. Brei, B. K., Neches, S., Gray, M. M., Handley, S., Castera, M., Hedstrom, A., ... & Umoren, R. (2021). Telehealth training during the COVID-19 pandemic: a feasibility study of large group multiplatform telesimulation training. <i>Telemedicine and e-Health</i>, 27(10), 1166-1173. 																																												

Weak Signal No.	192	Head Keyword	digital contact tracing																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • contact tracing apps 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 192</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>0</td></tr> <tr><td>2020</td><td>70</td></tr> <tr><td>2021</td><td>160</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	0	2020	70	2021	160
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Recent Publications	<ul style="list-style-type: none"> • Dave, R., & Gupta, R. (2021). Data Quality and Network Considerations for Mobile Contact Tracing and Health Monitoring. <i>Frontiers in Digital Health</i>, 191. • Song, W., Nokhbeh Zaeem, R., Liao, D., Chang, K. C., Lamison, M. R., Khalil, M. M., & Barber, K. S. (2021, December). Self-Sovereign Identity and User Control for Privacy-Preserving Contact Tracing. In <i>IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology</i> (pp. 438-445). • Prakash, A. V., Das, S., & Pillai, K. R. (2021). Understanding digital contact tracing app continuance: Insights from India. <i>Health Policy and Technology</i>, 10(4), 100573. 																																												

Weak Signal No.	196	Head Keyword	emicizumab																																										
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Weak Signal No.	199	Head Keyword	anti-mda5																																										
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Weak Signal No.	202	Head Keyword	teneligliptin																																										
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Weak Signal No.	209	Head Keyword	professional burnout																																										
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Recent Publications	<ul style="list-style-type: none"> • Hämmig, O., & Vetsch, A. (2021). Stress-Buffering and Health-Protective Effect of Job Autonomy, Good Working Climate, and Social Support at Work Among Health Care Workers in Switzerland. <i>Journal of Occupational and Environmental Medicine</i>, 63(12), e918. • Alameddine, M., Clinton, M., Bou-Karroum, K., Richa, N., & Doumit, M. A. (2021). Factors associated with the resilience of nurses during the covid-19 pandemic. <i>Worldviews on Evidence-Based Nursing</i>, 18(6), 320-331. • Tsai, F. J., Chen, R. Y., & Chen, H. J. (2021). Individual and family preferences of job qualities matter: association between face needs, locked-in job status, and burnout among high-tech workers in Taiwan. <i>BMC Public Health</i>, 21(1), 1-10. 																																												

Weak Signal No.	217	Head Keyword	rotavac																																										
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Recent Publications	<ul style="list-style-type: none"> • Burke, R. M., Tate, J. E., & Parashar, U. D. (2021). Global Experience With Rotavirus Vaccines. <i>The Journal of Infectious Diseases</i>, 224(Supplement_7), S792-S800. • Ghapoutsas, R. N., Boda, M., Gautam, R., Ndze, V. N., Mugyia, A. E., Etoa, F. X., ... & Esona, M. D. (2021). Detection of diarrhoea associated rotavirus and co-infection with diarrhoeagenic pathogens in the Littoral region of Cameroon using ELISA, RT-PCR and Luminex xTAG GPP assays. <i>BMC Infectious Diseases</i>, 21(1), 1-7. • Villanueva-Uy, M. E. T., Lam, H. Y., Aldaba, J. G., Uy, T. M. Z., Valverde, H. A., Silva, M. W. T., ... & Pecenka, C. (2021). Cost-effectiveness of rotavirus vaccination in the Philippines: A modeling study. <i>Vaccine</i>, 39(48), 7091-7100. 																																												

Weak Signal No.	220	Head Keyword	ra-ild																																										
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Recent Publications	<ul style="list-style-type: none"> • Santhanam, S., Patil, P., Goyal, M., Mithun, C. B., Das, P., Mohanasundaram, K., ... & Kumar, S. (2021). Connective tissue disease-associated interstitial lung disease- A multicenter observational study from India. <i>Indian Journal of Rheumatology</i>, 16(5), 10. • García-Moreno, C., Gómara, M. J., Castellanos-Moreira, R., Sanmartí, R., & Haro, I. (2021). Peptides Bearing Multiple Post-Translational Modifications as Antigenic Targets for Severe Rheumatoid Arthritis Patients. <i>International journal of molecular sciences</i>, 22(24), 13290. • Zhang, C., Wang, S., Lau, J., Roden, A. C., Matteson, E. L., Sun, J., ... & Vassallo, R. (2021). IL-23 amplifies the epithelial-mesenchymal transition of mechanically conditioned alveolar epithelial cells in rheumatoid arthritis-associated interstitial lung disease through mTOR/S6 signaling. <i>American Journal of Physiology-Lung Cellular and Molecular Physiology</i>, 321(6), L1006-L1022. 																																												

Weak Signal No.	223	Head Keyword	precise-dapt score																																										
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Weak Signal No.	227	Head Keyword	lemborexant																																										
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Weak Signal No.	231	Head Keyword	netarsudil																																										
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Weak Signal No.	242	Head Keyword	pre-frailty																																										
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Recent Publications	<ul style="list-style-type: none"> Alqahtani, B. A. (2021). Association between Physical Frailty and Sleep Quality among Saudi Older Adults: A Community–Based, Cross–Sectional Study. <i>International Journal of Environmental Research and Public Health</i>, 18(23), 12741. Huang, C. H., Okada, K., Matsushita, E., Uno, C., Satake, S., Martins, B. A., & Kuzuya, M. (2021). The association of social frailty with intrinsic capacity in community–dwelling older adults: a prospective cohort study. <i>BMC geriatrics</i>, 21(1), 1–11. Takayanagi, N., Sudo, M., Yamashiro, Y., Chiba, I., Lee, S., Niki, Y., & Shimada, H. (2021). Screening prefrailty in Japanese community–dwelling older adults with daily gait speed and number of steps via tri–axial accelerometers. <i>Scientific Reports</i>, 11(1), 1–8. 																																												

Weak Signal No.	244	Head Keyword	alcohol-related liver disease																																										
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Recent Publications	<ul style="list-style-type: none"> Parrish, A., Srivastava, A., Juskeviciute, E., Hoek, J. B., & Vadigepalli, R. (2021). Dysregulation of miR-21-associated miRNA regulatory networks by chronic ethanol consumption impairs liver regeneration. <i>Physiological Genomics</i>, 53(12), 546-555. Maccioni, L., Leclercq, I. A., Schnabl, B., & Stärkel, P. (2021). Host factors in dysregulation of the gut barrier function during alcohol-associated liver disease. <i>International Journal of Molecular Sciences</i>, 22(23), 12687. Shavelle, R. M., Saur, R. C., Kwak, J. H., Brooks, J. C., & Hameed, B. (2021). Life expectancy after liver transplantation for alcoholic cirrhosis. <i>Progress in Transplantation</i>, 31(4), 345-356. 																																												

Weak Signal No.	246	Head Keyword	hyperprogression																																										
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Recent Publications	<ul style="list-style-type: none"> Johannessen, K., Berntsen, E. M., Johansen, H., Solheim, T. S., Karlberg, A., & Eikenes, L. (2021). 18 F-FACBC PET/MRI in the evaluation of human brain metastases: a case report. <i>European Journal of Hybrid Imaging</i>, 5(1), 1-12. Lopci, E. (2021). Immunotherapy monitoring with immune checkpoint inhibitors based on [18F] FDG PET/CT in metastatic melanomas and lung cancer. <i>Journal of Clinical Medicine</i>, 10(21), 5160. Takai, E., Omata, W., Totoki, Y., Nakamura, H., Shiba, S., Takahashi, A., ... & Yachida, S. (2021). Clonal dynamics of circulating tumor DNA during immune checkpoint blockade therapy for melanoma. <i>Cancer science</i>, 112(11), 4748. 																																												

Weak Signal No.	250	Head Keyword	child marriage																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> child marriages 																																												
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Recent Publications	<ul style="list-style-type: none"> Marphatia, A. A., Saville, N. M., Manandhar, D. S., Cortina-Borja, M., Wells, J. C., & Reid, A. M. (2021). Quantifying the association of natal household wealth with women’s early marriage in Nepal. <i>PeerJ</i>, 9, e12324. Hunersen, K., Attal, B., Jeffery, A., Metzler, J., Alkibsi, T., Elnakib, S., & Robinson, W. C. (2021). Child marriage in Yemen: a mixed methods study in ongoing conflict and displacement. <i>Journal of Refugee Studies</i>, 34(4), 4551–4571. Handebo, S., Kassie, A., & Nigusie, A. (2021). Help-seeking behaviour and associated factors among women who experienced physical and sexual violence in Ethiopia: evidence from the 2016 Ethiopia Demographic and Health Survey. <i>BMC Women’s Health</i>, 21(1), 1–8. 																																												

Weak Signal No.	251	Head Keyword	aqp4-igg																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> mog-ab mog-igg 																																												
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Recent Publications	<ul style="list-style-type: none"> Valencia-Sanchez, C., & Flanagan, E. P. (2021). Uncommon inflammatory/immune-related myelopathies. <i>Journal of neuroimmunology</i>, 361, 577750. Amin, M., Mays, M., Polston, D., Flanagan, E. P., Prayson, R., & Kunchok, A. (2021). Myelin oligodendrocyte glycoprotein (MOG) antibodies in a patient with glioblastoma: Red flags for false positivity. <i>Journal of neuroimmunology</i>, 361, 577743. Nagireddy, R. B. R., Kumar, A., Singh, V. K., Prasad, R., Pathak, A., Chaurasia, R. N., ... & Joshi, D. (2021). Clinicoradiological comparative study of Aquaporin-4-IgG seropositive neuromyelitis optica spectrum disorder (NMOSD) and MOG antibody associated disease (MOGAD): A prospective observational study and review of literature. <i>Journal of Neuroimmunology</i>, 361, 577742. 																																												

Weak Signal No.	259	Head Keyword	mpflr																																										
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Weak Signal No.	263	Head Keyword	sacubitril/valsartan																																										
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Recent Publications	<ul style="list-style-type: none"> • Inampudi, C., Silverman, D., Simon, M. A., Leary, P. J., Sharma, K., Houston, B. A., ... & Tedford, R. J. (2021). Pulmonary Hypertension in the Context of Heart Failure With Preserved Ejection Fraction. <i>Chest</i>, 160(6), 2232–2246. • Gibert-Ramos, A., Sanfeliu-Redondo, D., Aristu-Zabalza, P., Martínez-Alcocer, A., Gracia-Sancho, J., Guixé-Muntet, S., & Fernández-Iglesias, A. (2021). The hepatic sinusoid in chronic liver disease: the optimal milieu for cancer. <i>Cancers</i>, 13(22), 5719. • Chrysant, S. G. (2021). A novel approach for the treatment of hypertension with the soluble guanylate cyclase stimulating drug. <i>Expert Opinion on Drug Safety</i>, 20(6), 635–640. 																																												

Weak Signal No.	266	Head Keyword	dnlr																																										
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Weak Signal No.	268	Head Keyword	cognitive fatigability																																										
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Recent Publications	<ul style="list-style-type: none"> • Walker, C. S., Berard, J. A., & Walker, L. A. (2021). Validation of Discrete and Regression-Based Performance and Cognitive Fatigability Normative Data for the Paced Auditory Serial Addition Test in Multiple Sclerosis. <i>Frontiers in Neuroscience</i>, 15. • Dettmers, C., Marchione, S., Weimer-Jaekel, A., Godde, B., & Joebges, M. (2021). Cognitive Fatigability, not Fatigue predicts employment status in patients with MS three months after rehabilitation. <i>Multiple Sclerosis and Related Disorders</i>, 56, 103215. • Agyemang, C., Berard, J. A., & Walker, L. A. (2021). Cognitive fatigability in multiple sclerosis: How does performance decline over time on the Paced Auditory Serial Addition Test?. <i>Multiple Sclerosis and Related Disorders</i>, 54, 103130. 																																												

Weak Signal No.	276	Head Keyword	shmt2																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • mthfd2 																																												
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Recent Publications	<ul style="list-style-type: none"> • Lee, J., Chen, X., Wang, Y., Nishimura, T., Li, M., Ishikawa, S., ... & Gotoh, N. (2021). A novel oral inhibitor for one-carbon metabolism and checkpoint kinase 1 inhibitor as a rational combination treatment for breast cancer. <i>Biochemical and Biophysical Research Communications</i>, 584, 7–14. • Soto-Moreno, E. J., Balboula, A., Spinka, C., & Rivera, R. M. (2021). Serum supplementation during bovine embryo culture affects their development and proliferation through macroautophagy and endoplasmic reticulum stress regulation. <i>Plos one</i>, 16(12), e0260123. • Liu, X., Liu, S., Piao, C., Zhang, Z., Zhang, X., Jiang, Y., & Kong, C. (2021). Non-metabolic function of MTHFD2 activates CDK2 in bladder cancer. <i>Cancer Science</i>, 112(12), 4909. 																																												

Weak Signal No.	280	Head Keyword	slc35a2																																										
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Weak Signal No.	283	Head Keyword	allohct																																										
All Popping Keywords in this Weak Signal	• autohct																																												
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Recent Publications	<ul style="list-style-type: none"> • Teh, B. W., Leung, V. K., Mordant, F. L., Sullivan, S. G., Joyce, T., Harrison, S. J., ... & Worth, L. J. (2021). A randomized trial of two 2-Dose influenza vaccination strategies for patients following autologous hematopoietic stem cell transplantation. <i>Clinical Infectious Diseases</i>, 73(11), e4269–e4277. • Riedell, P. A., Hamadani, M., Ahn, K. W., Litovich, C., Brunstein, C. G., Cashen, A. F., ... & Smith, S. M. (2021). Effect of time to relapse on overall survival in patients with mantle cell lymphoma following autologous haematopoietic cell transplantation. <i>British journal of haematology</i>, 195(5), 757–763. • Davis, L., Yao, Y., Jin, Z., Moscoso, S., Neunert, C., Broglie, L., ... & Satwani, P. (2021). Length of Stay and Health Care Utilization Among Pediatric Autologous Hematopoietic Cell Transplantation Recipients. <i>Transplantation and Cellular Therapy</i>, 27(7), 613–e1. 																																												

Weak Signal No.	284	Head Keyword	dd-cfdna																																										
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Activity	<table border="1"> <caption>Activity Data for Weak Signal 284 (dd-cfdna)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>1</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>1</td></tr> <tr><td>2017</td><td>3</td></tr> <tr><td>2018</td><td>1</td></tr> <tr><td>2019</td><td>8</td></tr> <tr><td>2020</td><td>15</td></tr> <tr><td>2021</td><td>30</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	1	2014	0	2015	0	2016	1	2017	3	2018	1	2019	8	2020	15	2021	30
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Recent Publications	<ul style="list-style-type: none"> • Cheng, D., Liu, F., Xie, K., Zeng, C., Li, X., Ni, X., ... & Chen, J. (2021). Donor-derived cell-free DNA: An independent biomarker in kidney transplant patients with antibody-mediated rejection. <i>Transplant Immunology</i>, 69, 101404. • Shen, J., Guo, L., Lei, W., Liu, S., Yan, P., Liu, H., ... & Wang, R. (2021). Urinary donor-derived cell-free DNA as a non-invasive biomarker for BK polyomavirus-associated nephropathy. <i>Journal of Zhejiang University-SCIENCE B</i>, 22(11), 917–928. • Zhou, Q., Liu, F., Guo, L., Chen, R., Yuan, X., Li, C., ... & Jiang, T. (2021). A novel urine cell-free DNA preservation solution and its application in kidney transplantation. <i>Nephrology</i>, 26(8), 684–691. 																																												

Weak Signal No.	285	Head Keyword	cariprazine																																										
All Popping Keywords in this Weak Signal	• brexpiprazole																																												
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Weak Signal No.	287	Head Keyword	clonal hematopoiesis																																										
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Recent Publications	<ul style="list-style-type: none"> • Ehlert, C. A., & Hilgendorf, I. (2021). A Vicious Circle of Clonal Haematopoiesis of Indeterminate Potential and Cardiovascular Disease. <i>Hämostaseologie</i>, 41(06), 443–446. • Solís-Moruno, M., Mensa-Vilaró, A., Batlle-Masó, L., Lobón, I., Bonet, N., Marquès-Bonet, T., ... & Casals, F. (2021). Assessment of the gene mosaicism burden in blood and its implications for immune disorders. <i>Scientific reports</i>, 11(1), 1–11. • Kennedy, V. E., & Olin, R. L. (2021). Haematopoietic stem-cell transplantation in older adults: geriatric assessment, donor considerations, and optimisation of care. <i>The Lancet Haematology</i>, 8(11), e853–e861. 																																												

Weak Signal No.	302	Head Keyword	brcam																																										
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Recent Publications	<ul style="list-style-type: none"> • Hodgson, D., Lai, Z., Dearden, S., Barrett, J. C., Harrington, E. A., Timms, K., ... & Robson, M. (2021). Analysis of mutation status and homologous recombination deficiency in tumors of patients with germline BRCA1 or BRCA2 mutations and metastatic breast cancer: OlympiAD. <i>Annals of Oncology</i>, 32(12), 1582–1589. • Turner, N. C., Balmaña, J., Poncet, C., Goulioti, T., Tryfonidis, K., Honkoop, A. H., ... & Cameron, D. A. (2021). Niraparib for Advanced Breast Cancer with Germline BRCA1 and BRCA2 Mutations: the EORTC 1307-BCG/BIG5-13/TESARO PR-30-50-10-C BRAVO Study. <i>Clinical Cancer Research</i>, 27(20), 5482–5491. • McCrea, C., Hettle, R., Gulati, P., Taneja, A., & Rajora, P. (2021). Indirect treatment comparison of olaparib and talazoparib in germline BRCA-mutated HER2-negative metastatic breast cancer. <i>Journal of Comparative Effectiveness Research</i>, 10(13), 1021–1030. 																																												

Weak Signal No.	304	Head Keyword	circulating nrg4																																										
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Recent Publications	<ul style="list-style-type: none"> • Farshidi, H., Naderi, N., Montazerghaem, H., Farshidi, N., & Rahimzadeh, M. (2021). Negative Correlation between Neuregulin-4 and IL-9 Serum Levels in Patients with Coronary Artery Disease. <i>Endocrine, Metabolic & Immune Disorders-Drug Targets (Formerly Current Drug Targets-Immune, Endocrine & Metabolic Disorders)</i>, 21(11), 2068–2074. • Guo, D., Liu, J., Zhang, P., Yang, X., Liu, D., Lin, J., ... & Zhang, H. (2021). Adiposity measurements and metabolic syndrome are linked through circulating neuregulin 4 and adiponin levels in obese adults. <i>Frontiers in physiology</i>, 560. • Rahimzadeh, M., Farshidi, N., Naderi, N., Farshidi, H., & Montazerghaem, H. (2020). Clinical significance of serum concentrations of neuregulin-4, in acute coronary syndrome. <i>Scientific Reports</i>, 10(1), 1–8. 																																												

Weak Signal No.	309	Head Keyword	nigrosome																																										
All Popping Keywords in this Weak Signal	• nigrosome-1																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 309 (nigrosome)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>1</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>1</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>1</td></tr> <tr><td>2014</td><td>2</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>2</td></tr> <tr><td>2017</td><td>7</td></tr> <tr><td>2018</td><td>6</td></tr> <tr><td>2019</td><td>4</td></tr> <tr><td>2020</td><td>12</td></tr> <tr><td>2021</td><td>18</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	1	2007	0	2008	1	2009	0	2010	0	2011	0	2012	0	2013	1	2014	2	2015	1	2016	2	2017	7	2018	6	2019	4	2020	12	2021	18
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Recent Publications	<ul style="list-style-type: none"> • Lee, H., Cho, H., Lee, M. J., Kim, T. H., Roh, J., & Lee, J. H. (2021). Differential Effect of Iron and Myelin on Susceptibility MRI in the Substantia Nigra. <i>Radiology</i>. • Cho, S. J., Bae, Y. J., Kim, J. M., Kim, H. J., Baik, S. H., Sunwoo, L., ... & Kim, J. H. (2021). Iron-sensitive magnetic resonance imaging in Parkinson's disease: a systematic review and meta-analysis. <i>Journal of Neurology</i>, 268(12), 4721-4736. • Friedrich, I., Reimann, K., Jankuhn, S., Kirilina, E., Stieler, J., Sonntag, M., ... & Morawski, M. (2021). Cell specific quantitative iron mapping on brain slices by immuno-μPIXE in healthy elderly and Parkinson's disease. <i>Acta Neuropathologica Communications</i>, 9(1), 1-17. 																																												

Weak Signal No.	310	Head Keyword	inpwt																																										
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Recent Publications	<ul style="list-style-type: none"> • Chan, P. K., Fung, W. C., Lam, K. H., Chan, W., Chan, V. W. K., Fu, H., ... & Chiu, K. Y. (2021). The application of close incisional negative pressure wound therapy in revision arthroplasty among asian patients: a comparative study. <i>Arthroplasty</i>, 3(1), 1-10. • Seaman, A. P., Sarac, B. A., ElHawary, H., & Janis, J. E. (2021). The effect of negative pressure wound therapy on surgical site occurrences in closed incision abdominal wall reconstructions: a retrospective single surgeon and institution study. <i>Hernia</i>, 25(6), 1549-1555. • Doman, D. M., Young, A. M., Buller, L. T., Deckard, E. R., & Meneghini, R. M. (2021). Comparison of surgical site complications with negative pressure wound therapy vs silver impregnated dressing in high-risk total knee arthroplasty patients: a matched cohort study. <i>The Journal of Arthroplasty</i>, 36(10), 3437-3442. 																																												

Weak Signal No.	312	Head Keyword	lateral lumbar interbody fusion																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • olif • endoscopic lumbar 																																												
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Weak Signal No.	314	Head Keyword	smartphone dependency																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • mobile phone dependency 																																												
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Recent Publications	<ul style="list-style-type: none"> • Shen, L., Wu, X., Zhen, R., & Zhou, X. (2021). Post-Traumatic Stress Disorder, Mobile Phone Dependence, and Academic Boredom in Adolescents During the COVID-19 Pandemic. <i>Frontiers in Psychology</i>, 5090. • Chen, Y., Gao, Y., Li, H., Deng, Q., Sun, C., & Gao, F. (2021). Shyness and mobile phone dependency among adolescents: A moderated mediation model of basic psychological needs and family cohesion. <i>Children and Youth Services Review</i>, 130, 106239. • Kim, S., & Han, Y. (2021). Associations between parental maltreatment and online behavior among young adolescents. <i>Journal of child and family studies</i>, 30(11), 2782–2791. 																																												

Weak Signal No.	315	Head Keyword	neoantigen																																										
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Weak Signal No.	316	Head Keyword	idylla																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • idylla™ 																																												
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Weak Signal No.	317	Head Keyword	cdk4/6 inhibitors																																										
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Recent Publications	<ul style="list-style-type: none"> • Thoma, O. M., Neurath, M. F., & Waldner, M. J. (2021). Cyclin-Dependent Kinase Inhibitors and Their Therapeutic Potential in Colorectal Cancer Treatment. <i>Frontiers in Pharmacology</i>, 12. • Wang, Y., Yuan, X., Li, J., Liu, Z., Li, X., Wang, Z., ... & Wang, X. (2021). The Synergistic effects of SHR6390 combined with pyrotinib on HER2+/HR+ breast cancer. <i>Frontiers in Cell and Developmental Biology</i>, 3290. • Burstein, H. J., Somerfield, M. R., Barton, D. L., Dorris, A., Fallowfield, L. J., Jain, D., ... & Rugo, H. S. (2021). Endocrine treatment and targeted therapy for hormone receptor-positive, human epidermal growth factor receptor 2-negative metastatic breast cancer: ASCO guideline update. <i>Journal of Clinical Oncology</i>, 39(35), 3959–3977. 																																												

Weak Signal No.	321	Head Keyword	re-positive																																										
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Recent Publications	<ul style="list-style-type: none"> • Abrokwa, S. K., Müller, S. A., Méndez-Brito, A., Hanefeld, J., & El Bcheraoui, C. (2021). Recurrent SARS-CoV-2 infections and their potential risk to public health –a systematic review. <i>Plos one</i>, 16(12), e0261221. • Zhao, H., Zhang, C., Chen, X. X., Zhu, Q., Huang, W. X., Zeng, Y. L., ... & Wang, G. Q. (2021). The relationship between SARS-COV-2 RNA positive duration and the risk of recurrent positive. <i>Infectious diseases of poverty</i>, 10(1), 1–10. • Li, Y., Jiang, Y., Zhang, Y., Li, N., Yin, Q., Liu, L., ... & Liang, M. (2021). Abnormal upregulation of cardiovascular disease biomarker PLA2G7 induced by proinflammatory macrophages in COVID-19 patients. <i>Scientific reports</i>, 11(1), 1–11. 																																												

Weak Signal No.	335	Head Keyword	hiv prep																																										
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Weak Signal No.	340	Head Keyword	ca-aki																																										
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Recent Publications	<ul style="list-style-type: none"> • Lun, Z., Mai, Z., Liu, L., Chen, G., Li, H., Ying, M., ... & Liu, Y. (2021). Hypertension as a risk factor for contrast-associated acute kidney injury: a meta-analysis including 2,830,338 patients. <i>Kidney and Blood Pressure Research</i>, 46(6), 670–692. • Liu, J., Li, Q., Lai, D., Chen, G., Wang, B., Liu, L., ... & Chen, S. (2021). Trends in incidence and long-term prognosis of acute kidney injury following coronary angiography in Chinese cohort with 11,943 patients from 2013 to 2017: an observational study. <i>BMC nephrology</i>, 22(1), 1–8. • Shah, A., Bazemore, T., Wolf, H., Yang, H., Liu, Y., & Stouffer, G. A. (2021). Length of Preprocedure Fasting Was Associated With Contrast Associated–Acute Kidney Injury in High–Risk Patients Undergoing Coronary Angiography. <i>The American Journal of Cardiology</i>, 159, 1–7. 																																												

Weak Signal No.	344	Head Keyword	dating apps																																										
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Recent Publications	<ul style="list-style-type: none"> • Sobieraj, S., & Humphreys, L. (2021). Forced Empowerment and the Paradox of Mobile Dating Apps. <i>Social Media+ Society</i>, 7(4), 20563051211068130. • Hsiung, H. (2021). From Harmony to eHarmony: Charles Fourier, Social Science, and the Management of Love. <i>Isis</i>, 112(4), 786–794. • Kumar, N., Forastiere, L., Janmohamed, K., Zhang, T. P., Sha, Y., Yu, F., ... & Alexander, M. (2021). Blocking and being blocked on gay dating apps among MSM attending a sexual health clinic: an observational study. <i>BMC public health</i>, 21(1), 1–8. 																																												

Weak Signal No.	354	Head Keyword	depdc1																																										
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Weak Signal No.	355	Head Keyword	spd-1																																										
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Weak Signal No.	358	Head Keyword	h2fpef score																																										
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Weak Signal No.	360	Head Keyword	artemisiae argyi folium																																										
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Recent Publications	<ul style="list-style-type: none"> Hou, M. Z., Chen, L. L., Chang, C., Zan, J. F., & Du, S. M. (2021). Pharmacokinetic and tissue distribution study of eight volatile constituents in rats orally administrated with the essential oil of <i>Artemisiae argyi Folium</i> by GC-MS/MS. <i>Journal of Chromatography B</i>, 1181, 122904. Yang, C. M., Chien, M. Y., Chao, P. C., Huang, C. M., & Chen, C. H. (2021). Investigation of toxic heavy metals content and estimation of potential health risks in Chinese herbal medicine. <i>Journal of Hazardous Materials</i>, 412, 125142. Zhang, D., Yao, L., Chang, Y., Yang, G., Xue, Z., Wang, L., ... & Guo, L. (2021). Evaluation and comparison of bioactive constituents of <i>Artemisiae argyi Folium</i> collected at different developmental stages. <i>Journal of AOAC International</i>, 104(2), 515–525. 																																												

Weak Signal No.	361	Head Keyword	social jetlag																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> social jet lag 																																												
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Recent Publications	<ul style="list-style-type: none"> Gruber, R., Gauthier-Gagne, G., Voutou, D., Somerville, G., Saha, S., & Boursier, J. (2021). Pre-pandemic sleep behavior and adolescents' stress during Covid-19: a prospective longitudinal study. <i>Child and Adolescent Psychiatry and Mental Health</i>, 15(1), 1–13. LeMay-Russell, S., Schvey, N. A., Kelly, N. R., Parker, M. N., Ramirez, E., Shank, L. M., ... & Yanovski, J. A. (2021). Longitudinal associations between facets of sleep and adiposity in youth. <i>Obesity</i>, 29(11), 1760–1769. Arrona-Palacios, A., Díaz-Morales, J. F., Parra-Robledo, Z., & Adan, A. (2021). Sleep and Depressive Symptoms in the Morningness/Eveningness–Suicidal Ideation Relationship Depend on School Shift in Mexican Adolescents. <i>Journal of Clinical Medicine</i>, 10(20), 4681. 																																												

Weak Signal No.	366	Head Keyword	juul																																										
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Weak Signal No.	369	Head Keyword	locomotive syndrome																																										
All Popping Keywords in this Weak Signal	• locomotive syndrome risk																																												
Activity	<table border="1"> <caption>Activity Data for 'locomotive syndrome' (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>5</td></tr> <tr><td>2012</td><td>25</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>15</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>30</td></tr> <tr><td>2017</td><td>35</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>60</td></tr> <tr><td>2020</td><td>45</td></tr> <tr><td>2021</td><td>100</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	5	2012	25	2013	10	2014	15	2015	10	2016	30	2017	35	2018	25	2019	60	2020	45	2021	100
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Recent Publications	<ul style="list-style-type: none"> • Terai, H., Hori, Y., Takahashi, S., Tamai, K., Iwamae, M., Hoshino, M., ... & Nakamura, H. (2021). Impact of the COVID-19 pandemic on the development of locomotive syndrome. <i>Journal of Orthopaedic Surgery</i>, 29(3), 23094990211060967. • Yamada, T., Yamato, Y., Hasegawa, T., Yoshida, G., Banno, T., Arima, H., ... & Matsuyama, Y. (2021). Prevalence of Locomotive Dysfunction Exacerbating Systolic Blood Pressure and Abdominal Circumference: A Longitudinal Cohort Analysis. <i>Metabolic Syndrome and Related Disorders</i>, 19(10), 562–566. • Yamada, K., Yamaguchi, S., Ito, Y. M., & Ohe, T. (2021). Factors associated with mobility decrease leading to disability: a cross-sectional nationwide study in Japan, with results from 8681 adults aged 20–89 years. <i>BMC geriatrics</i>, 21(1), 1–10. 																																												

Weak Signal No.	372	Head Keyword	maflid																																										
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Recent Publications	<ul style="list-style-type: none"> Fouqueray, P., Bolze, S., Dubourg, J., Hallakou-Bozec, S., Theurey, P., Grouin, J. M., ... & Cusi, K. (2021). Pharmacodynamic effects of direct AMP kinase activation in humans with insulin resistance and non-alcoholic fatty liver disease: A phase 1b study. <i>Cell Reports Medicine</i>, 2(12), 100474. Zhang, N., & Qin, B. (2021). Research progress of sodium butyrate in metabolic-associated fatty liver disease. <i>Zhonghua gan Zang Bing za zhi= Zhonghua Ganzangbing Zazhi= Chinese Journal of Hepatology</i>, 29(12), 1229-1232. Torre, P., Motta, B. M., Sciorio, R., Masarone, M., & Persico, M. (2021). Inflammation and Fibrogenesis in MAFLD: Role of the Hepatic Immune System. <i>Frontiers in Medicine</i>, 8. 																																												

Weak Signal No.	374	Head Keyword	access to mental healthcare																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> tele-mental health 																																												
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Weak Signal No.	375	Head Keyword	crossfit																																										
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Recent Publications	<ul style="list-style-type: none"> • Drobnic, F., Storsve, A. B., Burri, L., Ding, Y., Banquells, M., Riera, J., ... & Domingo, J. C. (2021). Krill-Oil-Dependent Increases in HS-Omega-3 Index, Plasma Choline and Antioxidant Capacity in Well-Conditioned Power Training Athletes. <i>Nutrients</i>, 13(12), 4237. • Klier, K., Dörr, S., & Schmidt, A. (2021). High sleep quality can increase the performance of CrossFit® athletes in highly technical-and cognitive-demanding categories. <i>BMC Sports Science, Medicine and Rehabilitation</i>, 13(1), 1–10. • Martínez-Gómez, R., Valenzuela, P. L., Moral-González, S., Lucia, A., & Barranco-Gil, D. (2021). Effects of an injury prevention program in crossfit athletes: a pilot randomized controlled trial. <i>International journal of sports medicine</i>, 42(14), 1281–1286. 																																												

Weak Signal No.	382	Head Keyword	arhgap30																																										
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Weak Signal No.	387	Head Keyword	hispanic/latinx																																										
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Recent Publications	<ul style="list-style-type: none"> Pitasi, M. A., Beer, L., Cha, S., Lyons, S. J., Hernandez, A. L., Prejean, J., ... & Hall, H. I. (2021). Vital Signs: HIV infection, diagnosis, treatment, and prevention among gay, bisexual, and other men who have sex with men—United States, 2010–2019. <i>Morbidity and Mortality Weekly Report</i>, 70(48), 1669. Crim, S. M., Tie, Y., Beer, L., Weiser, J., & Dasgupta, S. (2020). Barriers to antiretroviral therapy adherence among HIV-positive Hispanic and Latino men who have sex with men—United States, 2015–2019. <i>Morbidity and Mortality Weekly Report</i>, 69(40), 1437. Olansky, E., Mansergh, G., Pitts, N., Mimiaga, M. J., Denson, D. J., Landers, S., ... & Herbst, J. H. (2020). PrEP awareness in the context of HIV/AIDS conspiracy beliefs among Black/African American and Hispanic/Latino MSM in three urban US cities. <i>Journal of Homosexuality</i>, 67(6), 833–843. 																																												

Weak Signal No.	389	Head Keyword	perinatal anxiety																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> prenatal distress 																																												
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Recent Publications	<ul style="list-style-type: none"> Romero-Gonzalez, B., Puertas-Gonzalez, J. A., Gonzalez-Perez, R., Davila, M., & Peralta-Ramirez, M. I. (2021). Hair cortisol levels in pregnancy as a possible determinant of fetal sex: a longitudinal study. <i>Journal of Developmental Origins of Health and Disease</i>, 12(6), 902–907. Demers, C. H., Bagonis, M. M., Al-Ali, K., Garcia, S. E., Styner, M. A., Gilmore, J. H., ... & Davis, E. P. (2021). Exposure to prenatal maternal distress and infant white matter neurodevelopment. <i>Development and psychopathology</i>, 33(5), 1526–1538. Garcia-Silva, J., Caracuel, A., Lozano-Ruiz, A., Alderdice, F., Lobel, M., Perra, O., & Caparros-Gonzalez, R. A. (2021). Pandemic-related pregnancy stress among pregnant women during the COVID-19 pandemic in Spain. <i>Midwifery</i>, 103, 103163. 																																												

Weak Signal No.	390	Head Keyword	pgt-a																																										
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Recent Publications	<ul style="list-style-type: none"> • Sialakouma, A., Karakasiliotis, I., Ntala, V., Nikolettos, N., & Asimakopoulos, B. (2021). Embryonic cell-free DNA in spent culture medium: a non-invasive tool for aneuploidy screening of the corresponding embryos. <i>in vivo</i>, 35(6), 3449–3457. • Kulmann, M. I. R., Riboldi, M., Martello, C., Bos-Mikich, A., Frantz, G., Dutra, C., ... & Frantz, N. (2022). First Baby Born in Brazil after Simultaneous Diagnosis through Non-Invasive and Conventional PGT-A. <i>Revista Brasileira de Ginecologia e Obstetrícia</i>, 43, 878–882. • Rogers, A., Menezes, M., Kane, S. C., Zander-Fox, D., & Hardy, T. (2021). Preimplantation Genetic Testing for Monogenic Conditions: Is Cell-Free DNA Testing the Next Step?. <i>Molecular Diagnosis & Therapy</i>, 25(6), 683–690. 																																												

Weak Signal No.	391	Head Keyword	impella cp																																										
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Activity	<table border="1"> <caption>Activity Data for impella cp</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>1</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>18</td></tr> <tr><td>2020</td><td>38</td></tr> <tr><td>2021</td><td>38</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	1	2017	5	2018	10	2019	18	2020	38	2021	38
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Recent Publications	<ul style="list-style-type: none"> • Montonati, C., Fovino, L. N., Fabris, T., Masiero, G., Napodano, M., Fraccaro, C., & Tarantini, G. (2021). Rivascolarizzazione coronarica ad alto rischio con dispositivo di supporto emodinamico otto anni dopo l'impianto transcateretere di bioprotesi aortica. <i>G Ital Cardiol</i>, 22(12 Suppl 2), 37S–41S. • Oezkur, M., Reda, S., Rühl, H., Theuerkauf, N., Kreyer, S., Duerr, G. D., ... & Treede, H. (2021). Role of acquired von Willebrand syndrome in the development of bleeding complications in patients treated with Impella RP devices. <i>Scientific Reports</i>, 11(1), 1–7. • Ebert, D., Mungard, N., Mensch, A., Homeister, L., Willsch, J., Ibe, R., ... & Noutsias, M. (2021). Cardiogenic shock with highly complicated course after influenza A virus infection treated with vva-ECMO and Impella CP (ECMELLA): a case report. <i>BMC Cardiovascular Disorders</i>, 21(1), 1–7. 																																												

Weak Signal No.	393	Head Keyword	abaloparatide																																										
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Recent Publications	<ul style="list-style-type: none"> Bonaccorsi, G., Rizzati, M., Salani, L., & Giganti, M. (2021). Postmenopausal osteoporosis: risk evaluation and treatment options. <i>Minerva Obstetrics and Gynecology</i>, 73(6), 714–729. Turin, C. G., Joeng, K. S., Kallish, S., Raper, A., Asher, S., Campeau, P. M., ... & Al Mukaddam, M. (2021). Heterozygous variant in WNT1 gene in two brothers with early onset osteoporosis. <i>Bone Reports</i>, 15, 101118. Cromer, S. J., & Yu, E. W. (2021). Challenges and opportunities for osteoporosis care during the COVID-19 pandemic. <i>The Journal of Clinical Endocrinology & Metabolism</i>, 106(12), e4795–e4808. 																																												

Weak Signal No.	399	Head Keyword	apalutamide																																										
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Weak Signal No.	401	Head Keyword	li-rads																																										
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Recent Publications	<ul style="list-style-type: none"> • Moctezuma-Velázquez, C., Lewis, S., Lee, K., Amodeo, S., Llovet, J. M., Schwartz, M., ... & Villanueva, A. (2021). Non-invasive imaging criteria for the diagnosis of hepatocellular carcinoma in non-cirrhotic patients with chronic hepatitis B. <i>JHEP Reports</i>, 3(6), 100364. • Wang, P., Nie, F., Dong, T., Yang, D., Liu, T., & Wang, G. (2021). Diagnostic Value of CEUS LI-RADS Version 2017 in Differentiating AFP-Negative Hepatocellular Carcinoma from Other Primary Malignancies of the Liver. <i>Diagnostics</i>, 11(12), 2250. • Granata, V., Grassi, R., Fusco, R., Setola, S. V., Belli, A., Ottaiano, A., ... & Izzo, F. (2021). Intrahepatic cholangiocarcinoma and its differential diagnosis at MRI: How radiologist should assess MR features. <i>La radiologia medica</i>, 126(12), 1584-1600. 																																												

Weak Signal No.	403	Head Keyword	rtcgm																																										
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Recent Publications	<ul style="list-style-type: none"> • Styles, S., Wheeler, B., Boucsein, A., Crocket, H., de Lange, M., Signal, D., ... & Jefferies, C. (2021). A comparison of FreeStyle Libre 2 to self-monitoring of blood glucose in children with type 1 diabetes and sub-optimal glycaemic control: a 12-week randomised controlled trial protocol. <i>Journal of Diabetes & Metabolic Disorders</i>, 20(2), 2093-2101. • Secher, A. L., Pedersen-Bjergaard, U., Svendsen, O. L., Gade-Rasmussen, B., Almdal, T., Raimond, L., ... & Nørgaard, K. (2021). Flash glucose monitoring and automated bolus calculation in type 1 diabetes treated with multiple daily insulin injections: a 26 week randomised, controlled, multicentre trial. <i>Diabetologia</i>, 64(12), 2713-2724. • Li, S. Y., Guo, H., Zhang, Y., Li, P., Zhou, P., Sun, L. R., ... & Chen, L. M. (2021). Effects of intermittently scanned continuous glucose monitoring on blood glucose control and the production of urinary ketone bodies in pregestational diabetes mellitus. <i>Diabetology & Metabolic Syndrome</i>, 13(1), 1-7. 																																												

Weak Signal No.	404	Head Keyword	kras g12c																																										
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Weak Signal No.	407	Head Keyword	tyg index																																										
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Weak Signal No.	409	Head Keyword	fib-4 index																																										
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Weak Signal No.	410	Head Keyword	mhealth apps																																										
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Weak Signal No.	411	Head Keyword	u-nets																																										
All Popping Keywords in this Weak Signal	• v-net																																												
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Weak Signal No.	412	Head Keyword	promis®																																										
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Weak Signal No.	419	Head Keyword	ici-pneumonitis																																										
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Recent Publications	<ul style="list-style-type: none"> Hindocha, S., Campbell, D., Ahmed, M., Giorgakoudi, K., Sharma, B., Yousaf, N., ... & Lee, R. W. (2021). Immune Checkpoint Inhibitor and Radiotherapy-Related Pneumonitis: An Informatics Approach to Determine Real-World Incidence, Severity, Management & Resource Implications. <i>Frontiers in medicine</i>, 2039. Rapoport, B. L., Shannon, V. R., Cooksley, T., Johnson, D. B., Anderson, L., Blidner, A. G., ... & Anderson, R. (2021). Pulmonary toxicities associated with the use of immune checkpoint inhibitors: An update from the Immuno-Oncology Subgroup of the Neutropenia, Infection & Myelosuppression Study Group of the Multinational Association for Supportive Care in Cancer. <i>Frontiers in Pharmacology</i>, 12, 743582. Ando, H., Suzuki, K., & Yanagihara, T. (2021). Insights into potential pathogenesis and treatment options for immune-checkpoint inhibitor-related pneumonitis. <i>Biomedicines</i>, 9(10), 1484. 																																												

Weak Signal No.	420	Head Keyword	reboa																																										
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Recent Publications	<ul style="list-style-type: none"> Conner, J., Lammers, D., Holtstaul, T., Jones, I., Kuckelman, J., Letson, H., ... & Bingham, J. (2021). Combatting ischemia reperfusion injury from resuscitative endovascular balloon occlusion of the aorta using adenosine, lidocaine and magnesium: A pilot study. <i>Journal of Trauma and Acute Care Surgery</i>, 91(6), 995-1001. Yajima, K., Matsumoto, S., & Hiroe, N. (2021). Inflation alert: How much inflation is actually necessary in resuscitative endovascular balloon occlusion of the aorta?. <i>Journal of Trauma and Acute Care Surgery</i>, 91(6), e157-e158. Ordoñez, C. A., Khan, M., Cotton, B., Perreira, B., Brenner, M., Ferrada, P., ... & Duchesne, J. (2021). The colombian experience in resuscitative endovascular balloon occlusion of the aorta (REBOA): The progression from a large caliber to a low-profile device at a level I trauma center. <i>Shock: Injury, Inflammation, and Sepsis: Laboratory and Clinical Approaches</i>, 56(1), 42-45. 																																												

Weak Signal No.	421	Head Keyword	atrial cardiomyopathy																																										
All Popping Keywords in this Weak Signal	• atrial cardiopathy																																												
Activity	<table border="1"> <caption>Activity Data for Atrial Cardiopathy (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>1</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>1</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>1</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>8</td></tr> <tr><td>2019</td><td>22</td></tr> <tr><td>2020</td><td>22</td></tr> <tr><td>2021</td><td>50</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	1	2005	0	2006	0	2007	0	2008	1	2009	0	2010	0	2011	0	2012	0	2013	1	2014	0	2015	0	2016	0	2017	10	2018	8	2019	22	2020	22	2021	50
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Recent Publications	<ul style="list-style-type: none"> Ibeh, C., & Elkind, M. S. (2021). Stroke Prevention After Cryptogenic Stroke. <i>Current Cardiology Reports</i>, 23(12), 1–12. Kamtchum-Tatuene, J., Nomani, A. Z., Falcione, S., Munsterman, D., Sykes, G., Joy, T., ... & Jickling, G. C. (2021). Non-stenotic carotid plaques in embolic stroke of unknown source. <i>Frontiers in neurology</i>, 1692. Lee, Y. K., Gwak, B. C., Yoon, B. A., Kim, D. H., & Cha, J. K. (2021). Atrial cardiopathy biomarkers and MRI-based infarct patterns in patients with embolic strokes of undetermined source. <i>Journal of Stroke and Cerebrovascular Diseases</i>, 30(8), 105933. 																																												

Weak Signal No.	423	Head Keyword	intracavitary electrocardiogram																																										
All Popping Keywords in this Weak Signal	• intracavitary electrocardiography																																												
Activity	<table border="1"> <caption>Activity Data for Intracavitary Electrocardiogram (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>1</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>3</td></tr> <tr><td>2019</td><td>13</td></tr> <tr><td>2020</td><td>8</td></tr> <tr><td>2021</td><td>20</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	1	2014	0	2015	1	2016	0	2017	5	2018	3	2019	13	2020	8	2021	20
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Recent Publications	<ul style="list-style-type: none"> Ostroff, M. D., Goldberg, D., Bauhman, G., & Korb, A. C. (2021). Venous catheter at alternate exit site in a 2-year-old requiring long-term antibiotics for osteomyelitis: A case report. <i>The Journal of Vascular Access</i>, 22(6), 1013–1016. Wang, X., Yang, Y., Dong, J., Zheng, Y., Chen, J., Shen, Y., & Wang, H. (2021). A comparative study on the tip position of peripherally inserted central catheter inserted at two forward P-wave amplitudes by intracavitary electrocardiogram in cancer patients. <i>Annals of Palliative Medicine</i>. Jheengut, Y., & Fan, B. (2021). Intraoperative identification of persistent left superior vena cava with intracavitary electrocardiogram during venous port insertion: a report of eight cases. <i>The Journal of Vascular Access</i>, 22(5), 834–839. 																																												

Weak Signal No.	439	Head Keyword	intracavitary electrocardiogram																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> ruxolitinib cream, coronaphobia, neurocovid, covid-19 main protease, meplazumab, penpulimab, new coronary pneumonia, bup-xr etc 																																												
Activity	<table border="1"> <caption>Activity Data (Estimated)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>10</td></tr> <tr><td>2020</td><td>50</td></tr> <tr><td>2021</td><td>650</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	10	2020	50	2021	650
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Recent Publications	<ul style="list-style-type: none"> Nestor, M. S., Ablon, G., Gade, A., Han, H., & Fischer, D. L. (2021). Treatment options for androgenetic alopecia: Efficacy, side effects, compliance, financial considerations, and ethics. <i>Journal of Cosmetic Dermatology</i>, 20(12), 3759–3781. Santhosh, P., & George, M. (2021). Clascoterone: a new topical anti-androgen for acne management. <i>International Journal of Dermatology</i>, 60(12), 1561–1565. Tian, Q., Quan, P., Fang, L., Xu, H., & Liu, C. (2021). A molecular mechanism investigation of the transdermal/topical absorption classification system on the basis of drug skin permeation and skin retention. <i>International Journal of Pharmaceutics</i>, 608, 121082. 																																												

➤ 3.1.19. Nursing

Weak Signal No.	320	Head Keyword	missed nursing care																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> unfinished nursing care 																																												
Activity	<table border="1"> <caption>Activity Data for Missed Nursing Care (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>2</td></tr> <tr><td>2010</td><td>2</td></tr> <tr><td>2011</td><td>2</td></tr> <tr><td>2012</td><td>8</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>18</td></tr> <tr><td>2016</td><td>8</td></tr> <tr><td>2017</td><td>18</td></tr> <tr><td>2018</td><td>32</td></tr> <tr><td>2019</td><td>32</td></tr> <tr><td>2020</td><td>90</td></tr> <tr><td>2021</td><td>80</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	2	2010	2	2011	2	2012	8	2013	2	2014	5	2015	18	2016	8	2017	18	2018	32	2019	32	2020	90	2021	80
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Recent Publications	<ul style="list-style-type: none"> Kalisch, B., McLaughlin, M., Marsh, V., Nguyen, L., & Talsma, A. (2021). The Development and Testing of the MISSCARE Survey OR. <i>Journal of Nursing Measurement</i>. Albsoul, R. A., Fitzgerald, G., Hughes, J. A., & Ahmed Alshyyab, M. (2021). Missed nursing care and complexity theory: a conceptual paper. <i>Journal of Research in Nursing</i>, 26(8), 809–823. MacArthur, J. (2021). Commentary: Missed nursing care and complexity theory: a conceptual paper. <i>Journal of Research in Nursing</i>, 26(8), 824–825. 																																												

Weak Signal No.	405	Head Keyword	nutrition literacy																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> food and nutrition literacy 																																												
Activity	<table border="1"> <caption>Activity Data for Nutrition Literacy (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>8</td></tr> <tr><td>2016</td><td>8</td></tr> <tr><td>2017</td><td>18</td></tr> <tr><td>2018</td><td>12</td></tr> <tr><td>2019</td><td>28</td></tr> <tr><td>2020</td><td>48</td></tr> <tr><td>2021</td><td>52</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	5	2013	5	2014	0	2015	8	2016	8	2017	18	2018	12	2019	28	2020	48	2021	52
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Recent Publications	<ul style="list-style-type: none"> Ong, R. H. S., Chow, W. L., Cheong, M., Lim, G. H., Xie, W., Baggs, G., ... & Chew, S. T. H. (2021). Associations between Socio-demographics, nutrition knowledge, nutrition competencies and attitudes in community-dwelling healthy older adults in Singapore: Findings from the Shield Study. <i>Journal of Health, Population and Nutrition</i>, 40(1), 1–15. Tal, A. (2021). Wanting More, Seeing Less: Hunger Reduces Calorie Evaluations. <i>International Journal of Environmental Research and Public Health</i>, 18(23), 12270. Natour, N., Al-Tell, M., & Ikhdour, O. (2021). Nutrition literacy is associated with income and place of residence but not with diet behavior and food security in the Palestinian society. <i>BMC nutrition</i>, 7(1), 1–8. 																																												

➤ 3.1.20. Pharmacology, Toxicology and Pharmaceutics

Weak Signal No.	19	Head Keyword	transferon																																										
All Popping Keywords in this Weak Signal	• transferon®																																												
Activity	<table border="1"> <caption>Activity Data (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>1</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>1</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>1</td></tr> <tr><td>2014</td><td>1</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>1</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>2</td></tr> <tr><td>2019</td><td>2</td></tr> <tr><td>2020</td><td>2</td></tr> <tr><td>2021</td><td>2</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	1	2010	0	2011	1	2012	0	2013	1	2014	1	2015	1	2016	1	2017	2	2018	2	2019	2	2020	2	2021	2
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Recent Publications	<ul style="list-style-type: none"> • Franco-Molina, M. A., Santana-Krímskaya, S. E., Zarate-Triviño, D. G., Zapata-Benavides, P., Hernández-Martínez, S. P., Cervantes-Wong, F., & Rodríguez-Padilla, C. (2021). Bovine Dialyzable Leukocyte Extract IMMUNEPOTENT CRP: Evaluation of Biological Activity of the Modified Product. <i>Applied Sciences</i>, 11(8), 3505. • Herbert-Pucheta, J. E., López-Morales, C. A., Medina-Rivero, E., Estrada-Parra, S., Pérez-Tapia, S. M., & Zepeda-Vallejo, L. G. (2021). Consistency of a dialyzable leucocyte extract manufactured at GMP facilities by nuclear magnetic resonance spectroscopy. <i>Journal of Pharmaceutical and Biomedical Analysis</i>, 196, 113940. • Vallejo-Castillo, L., Favari, L., Vázquez-Leyva, S., Mellado-Sánchez, G., Macías-Palacios, Z., López-Juárez, L. E., ... & Pérez-Tapia, S. M. (2020). Sequencing analysis and identification of the primary peptide component of the dialyzable leukocyte extract "Transferon Oral": The starting point to understand its mechanism of action. <i>Frontiers in pharmacology</i>, 11, 569039. 																																												

Weak Signal No.	44	Head Keyword	polyphyllin vii																																										
All Popping Keywords in this Weak Signal	• polyphyllin vi, polyphyllin ii																																												
Activity	<table border="1"> <caption>Activity Data (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>1</td></tr> <tr><td>2013</td><td>4</td></tr> <tr><td>2014</td><td>2</td></tr> <tr><td>2015</td><td>2</td></tr> <tr><td>2016</td><td>8</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>11</td></tr> <tr><td>2020</td><td>10</td></tr> <tr><td>2021</td><td>18</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	1	2013	4	2014	2	2015	2	2016	8	2017	5	2018	0	2019	11	2020	10	2021	18
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Recent Publications	<ul style="list-style-type: none"> • Zhang, C., Li, Q., Qin, G., Zhang, Y., Li, C., Han, L., ... & He, C. (2021). Anti-angiogenesis and anti-metastasis effects of Polyphyllin VII on Hepatocellular carcinoma cells in vitro and in vivo. <i>Chinese medicine</i>, 16(1), 1-12. • Zhang, Y. Y., Jin, L., Wu, Y. Y., Li, R., Wang, K. L., & Li, H. F. (2021). Chemical constituents of steroidal saponins in rhizome of <i>Paris polyphylla</i> var. <i>yunnanensis</i> cultured in vitro. <i>Zhongguo Zhong yao za zhi= Zhongguo Zhongyao Zazhi= China Journal of Chinese Materia Medica</i>, 46(19), 4936-4944. • Kumar, D., Joshi, R., Sharma, A., Nadda, G., & Kumar, D. (2021). A Comprehensive Search of the Primary and Secondary Metabolites and Radical Scavenging Potential of <i>Trillium govanianum</i> Wall. ex D. Don. <i>Chemistry & Biodiversity</i>, 18(10), e2100300. 																																												

➤ 3.1.21. Physics and Astronomy

Weak Signal No.	5	Head Keyword	c2n monolayer																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • gep monolayer, monolayer gese, c2n monolayer, gese monolayer, snse monolayer, inn monolayer 																																												
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Weak Signal No.	25	Head Keyword	creative thinking skills																																										
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Weak Signal No.	28	Head Keyword	mathematical disposition																																										
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Weak Signal No.	118	Head Keyword	hybrid nanofluids																																										
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Recent Publications	<ul style="list-style-type: none"> Hasen, H. M., & Abdulmajeed, B. A. (2021, December). Theoretical investigation of the density and the heat capacity of [EMIM][BF4] and its MWCNTs ionanofluids: Effect of temperature and MWCNTs concentration. In <i>Journal of Physics: Conference Series</i> (Vol. 2114, No. 1, p. 012036). IOP Publishing. Hasečić, A., Almutairi, J. H., Bikić, S., & Džaferović, E. (2021). Numerical Analysis of Heat Transfer Performances of Ionic Liquid and Ionanofluids with Temperature-Dependent Thermophysical Properties. <i>Energies</i>, 14(24), 8420. Das, L., Rubbi, F., Habib, K., Saidur, R., Islam, N., Saha, B. B., ... & Irshad, K. (2021). Hydrothermal performance improvement of an inserted double pipe heat exchanger with Ionanofluid. <i>Case Studies in Thermal Engineering</i>, 28, 101533. 																																												

Weak Signal No.	144	Head Keyword	magnetic skyrmions																																										
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Weak Signal No.	175	Head Keyword	7e learning cycle																																										
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Weak Signal No.	182	Head Keyword	metalens																																										
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Recent Publications	<ul style="list-style-type: none"> • Ehmcke, T., Galeski, S., Gorbunov, D., Zherlitsyn, S., Wosnitza, J., Gooth, J., & Meng, T. (2021). Propagation of longitudinal acoustic phonons in ZrTe 5 exposed to a quantizing magnetic field. <i>Physical Review B</i>, 104(24), 245117. • You, L., Zhang, Z. Y., & Wang, Y. X. (2021). Magneto-optic signatures in the gapped Dirac semimetal with mixed linear and parabolic dispersions of ZrTe5. <i>New Journal of Physics</i>, 23(12), 123033. • Wang, J., Jiang, Y., Zhao, T., Dun, Z., Miettinen, A. L., Wu, X., ... & Jiang, Z. (2021). Magneto-transport evidence for strong topological insulator phase in ZrTe5. <i>Nature communications</i>, 12(1), 1-7. 																																												

Weak Signal No.	290	Head Keyword	rfi-qkd																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> rfi-mdi-qkd berry curvature dipole 																																												
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Recent Publications	<ul style="list-style-type: none"> Sun, Z., Han, Y., Dou, T., Wang, J., Li, Z., Zhou, F., ... & Ma, H. (2021). Reference-frame-independent quantum key distribution of wavelength division multiplexing with multiple quantum channels. <i>Chinese Physics B</i>, 30(11), 110303. Feng, B., Zhao, Z., Yang, S., Dou, T., Li, Z., Wang, J., ... & Ma, H. (2021). Four-state reference-frame-independent quantum key distribution using heralded pair-coherent sources with source flaws. <i>Optoelectronics Letters</i>, 17(10), 636-640. Sun, S. (2021). Security of reference-frame-independent quantum key distribution with source flaws. <i>Physical Review A</i>, 104(2), 022423. 																																												

Weak Signal No.	323	Head Keyword	berry curvature																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> berry curvature dipole 																																												
Activity	<table border="1"> <caption>Activity Data for berry curvature</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>0</td></tr> <tr><td>2020</td><td>0</td></tr> <tr><td>2021</td><td>0</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	0	2020	0	2021	0
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Recent Publications	<ul style="list-style-type: none"> Wang, C., Gao, Y., & Xiao, D. (2021). Intrinsic nonlinear Hall effect in antiferromagnetic tetragonal CuMnAs. <i>Physical Review Letters</i>, 127(27), 277201. Arora, A., Kong, J. F., & Song, J. C. (2021). Strain-induced large injection current in twisted bilayer graphene. <i>Physical Review B</i>, 104(24), L241404. He, P., Isobe, H., Zhu, D., Hsu, C. H., Fu, L., & Yang, H. (2021). Quantum frequency doubling in the topological insulator Bi₂Se₃. <i>Nature communications</i>, 12(1), 1-7. 																																												

Weak Signal No.	408	Head Keyword	agrivoltaic																																										
All Popping Keywords in this Weak Signal	• agrivoltaics																																												
Activity	<table border="1"> <caption>Activity Data (Estimated from Graph)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>1</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>2</td></tr> <tr><td>2017</td><td>3</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>5</td></tr> <tr><td>2020</td><td>15</td></tr> <tr><td>2021</td><td>55</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	1	2012	0	2013	5	2014	0	2015	1	2016	2	2017	3	2018	10	2019	5	2020	15	2021	55
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Recent Publications	<ul style="list-style-type: none"> • Keil, J., Liu, Y., Kortshagen, U., & Ferry, V. E. (2021). Bilayer Luminescent Solar Concentrators with Enhanced Absorption and Efficiency for Agrivoltaic Applications. <i>ACS Applied Energy Materials</i>, 4(12), 14102–14110. • Hernandez Velasco, M. (2021). Enabling Year-round Cultivation in the Nordics–Agrivoltaics and Adaptive LED Lighting Control of Daily Light Integral. <i>Agriculture</i>, 11(12), 1255. • Mabindisa, R., Tambwe, K., Mciteka, L., & Ross, N. (2021). Organic nanostructured materials for sustainable application in next generation solar cells. <i>Applied Sciences</i>, 11(23), 11324. 																																												

➤ 3.1.22. Psychology

Weak Signal No.	62	Head Keyword	polyvictimization																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> cyber abuse, digital dating abuse, polyvictimization, cyberbullying victimization, cyber-violence, cyber dating violence, school bullying victimization, cyber dating abuse, cyberhate, cyber violence 																																												
Activity	<table border="1"> <caption>Activity Data for polyvictimization (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>5</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>15</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>25</td></tr> <tr><td>2017</td><td>40</td></tr> <tr><td>2018</td><td>35</td></tr> <tr><td>2019</td><td>50</td></tr> <tr><td>2020</td><td>40</td></tr> <tr><td>2021</td><td>130</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	5	2012	10	2013	10	2014	15	2015	10	2016	25	2017	40	2018	35	2019	50	2020	40	2021	130
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Recent Publications	<ul style="list-style-type: none"> Zhang, J., & Li, Z. (2021). The Influence of Chinese University Students' Reinforcement Sensitivity on Cyber Violence. <i>Humanities and Social Sciences Letters</i>, 9(4), 341–350. Gandhi, A., Bhojani, P., Balkawade, N., Goswami, S., Kotecha Munde, B., & Chugh, A. (2021). Analysis of Survey on Violence Against Women and Early Marriage: Gyneacologists' Perspective. <i>The Journal of Obstetrics and Gynecology of India</i>, 71(2), 76–83. Laurie-ann, M. H., Crespi, I., Hendry, B., & Fermani, A. (2021). Extending the Current Theorization on Cyberbullying: Importance of Including Socio-Psychological Perspectives. <i>Italian Journal of Sociology of Education</i>, 13(3). 																																												

Weak Signal No.	82	Head Keyword	dispositional mindfulness																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> psychological inflexibility, dispositional mindfulness, emotion-related impulsivity, interpersonal emotion regulation, interpersonal mindfulness 																																												
Activity	<table border="1"> <caption>Activity Data for dispositional mindfulness (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>10</td></tr> <tr><td>2012</td><td>15</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>25</td></tr> <tr><td>2015</td><td>45</td></tr> <tr><td>2016</td><td>55</td></tr> <tr><td>2017</td><td>60</td></tr> <tr><td>2018</td><td>75</td></tr> <tr><td>2019</td><td>120</td></tr> <tr><td>2020</td><td>130</td></tr> <tr><td>2021</td><td>140</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	5	2011	10	2012	15	2013	10	2014	25	2015	45	2016	55	2017	60	2018	75	2019	120	2020	130	2021	140
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Weak Signal No.	148	Head Keyword	fear of happiness																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> valuing happiness 																																												
Activity	<table border="1"> <caption>Activity Data for 'fear of happiness'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>1</td></tr> <tr><td>2014</td><td>3</td></tr> <tr><td>2015</td><td>1</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>2</td></tr> <tr><td>2019</td><td>9</td></tr> <tr><td>2020</td><td>2</td></tr> <tr><td>2021</td><td>11</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	1	2014	3	2015	1	2016	0	2017	2	2018	2	2019	9	2020	2	2021	11
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Recent Publications	<ul style="list-style-type: none"> Blasco-Belled, A., Rogoza, R., Alsinet, C., & Torrelles-Nadal, C. (2021). Fear of happiness through the prism of the dual continua model of mental health. <i>Journal of Clinical Psychology</i>, 77(10), 2245–2261. Collins, A. C., Lass, A. N., Jordan, D. G., & Winer, E. S. (2021). Examining rumination, devaluation of positivity, and depressive symptoms via community-based network analysis. <i>Journal of Clinical Psychology</i>, 77(10), 2228–2244. Jordan, D. G., Collins, A. C., Dunaway, M. G., Kilgore, J., & Winer, E. S. (2021). Negative affect interference and fear of happiness are independently associated with depressive symptoms. <i>Journal of clinical psychology</i>, 77(3), 646–660. 																																												

Weak Signal No.	151	Head Keyword	conspiracy theory																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> conspiracy beliefs conspiracy thinking conspiracy mentality 																																												
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Recent Publications	<ul style="list-style-type: none"> Jamieson, K. H., Romer, D., Jamieson, P. E., Winneg, K. M., & Pasek, J. (2021). The role of non-COVID-specific and COVID-specific factors in predicting a shift in willingness to vaccinate: A panel study. <i>Proceedings of the National Academy of Sciences</i>, 118(52), e21112266118. Spasovski, O., Demuthova, S., & Kuzmanovic, V. (2021). Anxiety, illusory pattern perception and conspiracy beliefs during the COVID-19 pandemic. <i>Teorija in Praksa</i>, 58(4), 1133–1159. Volkert, J., Taubner, S., Berning, A., Kling, L., Wießner, H., Georg, A. K., & Holl, J. (2021). Transdiagnostic Mechanisms of Mental Health During the COVID-19 Pandemic on Adults and Families in Germany: Study Protocol of a Cross-Sectional and 1-Year Longitudinal Study. <i>Frontiers in psychology</i>, 12. 																																												

Weak Signal No.	153	Head Keyword	autistic people																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • autistic adults 																																												
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Recent Publications	<ul style="list-style-type: none"> • Zhang, H., & Yan, S. (2021). "Bodyreath": An Interactive VR Installation to Experience and Understand People with Autism. In SIGGRAPH Asia 2021 XR (pp. 1-2). • Haydon, C., Doherty, M., & Davidson, I. A. (2021). Autism: making reasonable adjustments in healthcare. <i>British Journal of Hospital Medicine</i>, 82(12), 1-11. • Black, M. E. (2021, October). Designing a program to build, support and harvest a smart aeroponic vertical indoor garden (SAVInG) with students with disabilities at a special education school. In XV International People Plant Symposium and II International Symposium on Horticultural Therapies: the Role of Horticulture in 1330 (pp. 99-114). 																																												

Weak Signal No.	308	Head Keyword	ethnic-racial socialization																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • ethnic-racial discrimination 																																												
Activity	<table border="1"> <caption>Activity Data for 'ethnic-racial socialization'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>0</td></tr> <tr><td>2020</td><td>0</td></tr> <tr><td>2021</td><td>30</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	0	2020	0	2021	30
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Recent Publications	<ul style="list-style-type: none"> • Kcomt, L., Evans-Polce, R. J., Engstrom, C. W., West, B. T., Boyd, C. J., & McCabe, S. E. (2021). Moderate-to-severe tobacco use disorder and discrimination among US sexual minority older adults. <i>The Journals of Gerontology: Series B</i>, 76(7), 1400-1407. • Cano, M., Portillo, A. G. P., Figuereo, V., Rahman, A., Reyes-Martinez, J., Rosales, R., ... & Takeuchi, D. T. (2021). Experiences of ethnic discrimination among US Hispanics: Intersections of language, heritage, and discrimination setting. <i>International Journal of Intercultural Relations</i>, 84, 233-250. • Lozada, F. T., Seaton, E. K., Williams, C. D., & Tynes, B. M. (2021). Exploration of bidirectionality in African American and Latinx adolescents' offline and online ethnic-racial discrimination. <i>Cultural Diversity and Ethnic Minority Psychology</i>, 27(3), 386. 																																												

Weak Signal No.	397	Head Keyword	mindful parenting																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • overparenting 																																												
Activity	<table border="1"> <caption>Activity Data (Estimated)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>2</td></tr> <tr><td>2003</td><td>2</td></tr> <tr><td>2004</td><td>2</td></tr> <tr><td>2005</td><td>2</td></tr> <tr><td>2006</td><td>2</td></tr> <tr><td>2007</td><td>3</td></tr> <tr><td>2008</td><td>3</td></tr> <tr><td>2009</td><td>3</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>3</td></tr> <tr><td>2012</td><td>3</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>15</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>15</td></tr> <tr><td>2019</td><td>35</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>85</td></tr> </tbody> </table>			Year	Activity	2002	2	2003	2	2004	2	2005	2	2006	2	2007	3	2008	3	2009	3	2010	5	2011	3	2012	3	2013	2	2014	5	2015	10	2016	15	2017	10	2018	15	2019	35	2020	25	2021	85
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Recent Publications	<ul style="list-style-type: none"> • Bögels, S. M., Oort, F. J., Potharst, E., van Roosmalen, R., Williams, J. M. G., & de Bruin, E. I. (2021). Family mindfulness training for childhood ADHD: Short-and long-term effects on children, fathers and mothers. <i>Mindfulness</i>, 12(12), 3011–3025. • Kim, J. J., & Gonzales, N. A. (2021). Who's Influencing Who? Adolescent Symptomatology and Caregiver Mindful Parenting. <i>Journal of Research on Adolescence</i>, 31(4), 1172–1187. • Nobre-Trindade, C., Caçador, M. I., Canavarro, M. C., & Moreira, H. (2021). Mothers' psychopathology symptoms and mindful parenting in the postpartum period: The role of parental reflective functioning. <i>Infant mental health journal</i>, 42(6), 784–795. 																																												

➤ 3.1.23. Social Sciences

Weak Signal No.	7	Head Keyword	ideological and political course																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> educational informatization, ideological and political courses, flipped classrooms, talent training, ideological and political course, college english classroom teaching, ideological and political education, college english online teaching, physical education teaching, flipped classroom, english teaching mode, blended teaching, oral english teaching, mooc instructors, online-teaching, online lectures, education informatization, google classroom, curriculum ideology and politics, physical education in colleges and universities, piano teaching 																																												
Activity	<table border="1"> <caption>Activity Data (Estimated)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>50</td></tr> <tr><td>2012</td><td>50</td></tr> <tr><td>2013</td><td>50</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>50</td></tr> <tr><td>2016</td><td>50</td></tr> <tr><td>2017</td><td>50</td></tr> <tr><td>2018</td><td>50</td></tr> <tr><td>2019</td><td>100</td></tr> <tr><td>2020</td><td>200</td></tr> <tr><td>2021</td><td>450</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	50	2012	50	2013	50	2014	0	2015	50	2016	50	2017	50	2018	50	2019	100	2020	200	2021	450
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2021	450																																												
Recent Publications	<ul style="list-style-type: none"> Ružbarská, B., Antala, B., Gombár, M., & Tlučáková, L. (2021). The Gender and Education of Parents as Factors That Influence Their Views on Physical Education. <i>Sustainability</i>, 13(24), 13708. Lee, Y. H., Richards, K. A. R., & Washburn, N. (2021). Mindfulness, resilience, emotional exhaustion, and turnover intention in secondary physical education teaching. <i>European Review of Applied Psychology</i>, 71(6), 100625. Hou, Y., & Liu, S. (2020). Research on green physical education teaching method from the perspective of ecological civilization. <i>Fresenius Environmental Bulletin</i>, 29(11), 9821–9829. 																																												

Weak Signal No.	11	Head Keyword	ride-sharing																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> ride-hailing, car hailing, ridesourcing, app-based ride-hailing, e-hailing, dockless bike sharing, online car-hailing, shared bicycle, dockless bikeshare, ridehailing, bicycle-sharing, bike sharing, bike-sharing, ride sharing, shared-bicycle, bike-share, rideshare, ride-hailing drivers, ride hailing, shared bicycles, ride-sourcing, electric carsharing, bikesharing, car-hailing, ride-hail, ridesourcing service, bikeshare, bike-sharing system, bike share, ride-sharing 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 11 (ride-sharing)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>10</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>10</td></tr> <tr><td>2014</td><td>20</td></tr> <tr><td>2015</td><td>50</td></tr> <tr><td>2016</td><td>60</td></tr> <tr><td>2017</td><td>100</td></tr> <tr><td>2018</td><td>150</td></tr> <tr><td>2019</td><td>200</td></tr> <tr><td>2020</td><td>220</td></tr> <tr><td>2021</td><td>200</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	10	2012	10	2013	10	2014	20	2015	50	2016	60	2017	100	2018	150	2019	200	2020	220	2021	200
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2021	200																																												
Recent Publications	<ul style="list-style-type: none"> Xiongtao, H., Wenzhu, L., Haibin, L., & Shanshi, L. (2021). How Gig Worker Responds to Negative Customer Treatment: The Effects of Work Meaningfulness and Traits of Psychological Resilience. <i>Frontiers in Psychology</i>, 12. Yan, M., & Luo, X. (2021, December). BERT-Based Detection of Sexual Harassment in Dialogues. In <i>2021 5th International Conference on Computer Science and Artificial Intelligence</i> (pp. 359-364). Bao, Q., Tang, H., & Shen, Y. (2021). Driving behavior based relative risk evaluation using a nonparametric optimization method. <i>International journal of environmental research and public health</i>, 18(23), 12452. 																																												

Weak Signal No.	20	Head Keyword	smart tourism																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> gastronomic tourism, overtourism, gastronomy tourism, smart tourism destinations, creative tourism, over-tourism, smart tourism, senior tourism, edu-tourism 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 20 (smart tourism)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>10</td></tr> <tr><td>2016</td><td>40</td></tr> <tr><td>2017</td><td>80</td></tr> <tr><td>2018</td><td>40</td></tr> <tr><td>2019</td><td>150</td></tr> <tr><td>2020</td><td>180</td></tr> <tr><td>2021</td><td>230</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	10	2016	40	2017	80	2018	40	2019	150	2020	180	2021	230
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Recent Publications	<ul style="list-style-type: none"> Baixinho, A., Santos, C., Couto, G., Albergaria, I. S. D., Silva, L. S. D., Medeiros, P. D., & Simas, R. M. N. (2021). Islands and Sustainable Creative Tourism: A Conceptual Framework and Guidelines for Best Practices. <i>Land</i>, 10(12), 1302. Li, P. Q., & Kovacs, J. F. (2021). Creative tourism and creative spectacles in China. <i>Journal of Hospitality and Tourism Management</i>, 49, 34-43. Chang, J., Okumus, B., Wang, C. H., & Chiu, C. Y. (2020). Food tourism: cooking holiday experiences in East Asia. <i>Tourism Review</i>. 																																												

Weak Signal No.	21	Head Keyword	online harassment																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> gendered harassment, sex-based harassment, online hate 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 21</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>5</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>5</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>10</td></tr> <tr><td>2012</td><td>15</td></tr> <tr><td>2013</td><td>15</td></tr> <tr><td>2014</td><td>10</td></tr> <tr><td>2015</td><td>15</td></tr> <tr><td>2016</td><td>35</td></tr> <tr><td>2017</td><td>40</td></tr> <tr><td>2018</td><td>50</td></tr> <tr><td>2019</td><td>45</td></tr> <tr><td>2020</td><td>60</td></tr> <tr><td>2021</td><td>90</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	5	2008	0	2009	5	2010	5	2011	10	2012	15	2013	15	2014	10	2015	15	2016	35	2017	40	2018	50	2019	45	2020	60	2021	90
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Recent Publications	<ul style="list-style-type: none"> Newman, C., Nayebare, A., Neema, S., Agaba, A., & Akello, L. P. (2021). Uganda’s response to sexual harassment in the public health sector: from “Dying Silently” to gender-transformational HRH policy. <i>Human resources for health</i>, 19(1), 1–19. Saguy, A. C., & Rees, M. E. (2021). Gender, power, and harassment: Sociology in the# MeToo era. <i>Annual Review of Sociology</i>, 47, 417–435. Richards, T. N., Holland, K., Kafonek, K., & Navarro, J. (2021). Sex-Based Harassment in the United States’ K–12 Schools: Rates and Predictors of Allegations, Student Reporting, and Student Discipline. <i>Journal of school violence</i>, 20(4), 402–416. 																																												

Weak Signal No.	24	Head Keyword	pearl river delta urban agglomeration																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> chengdu-chongqing urban agglomeration 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 24</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>5</td></tr> <tr><td>2019</td><td>10</td></tr> <tr><td>2020</td><td>25</td></tr> <tr><td>2021</td><td>40</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	2	2018	5	2019	10	2020	25	2021	40
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Recent Publications	<ul style="list-style-type: none"> Zhou, Z., Cao, L., Zhao, K., Li, D., & Ding, C. (2021). Spatio–Temporal Effects of Multi–Dimensional Urbanization on Carbon Emission Efficiency: Analysis Based on Panel Data of 283 Cities in China. <i>International Journal of Environmental Research and Public Health</i>, 18(23), 12712. Wan, J., Li, Y., Ma, C., Jiang, T., Su, Y., Zhang, L., ... & Yang, J. (2021). Measurement of Coupling Coordination Degree and Spatio–Temporal Characteristics of the Social Economy and Ecological Environment in the Chengdu–Chongqing Urban Agglomeration under High–Quality Development. <i>International journal of environmental research and public health</i>, 18(21), 11629. Zhang, T., Shen, N., Zhao, X., Wang, X., & Zhao, W. (2021). Spatiotemporal variation characteristics of ozone and its population exposure risk assessment in Chengdu–Chongqing urban agglomeration during 2015 to 2019. <i>Acta Sci. Circumstantiae</i>, 41, 4188–4199. 																																												

Weak Signal No.	48	Head Keyword	lgbtq+																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> lgbtq people, lgbtiq+, lgbtqi+, lgbtq communities, lgbtq+, 2slgbtq+, lgbtqi, sexual and gender minorities, lgbtqiqa+, lgbtq2+ 																																												
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Recent Publications	<ul style="list-style-type: none"> Lopes Gomes Pinto Ferreira, G. (2021). 'Once You Say the Word Gender, People Become Afraid': The Consequences of the Gender Backlash in Education in Brasil. <i>International Journal for Crime, Justice and Social Democracy</i>, 10(3), 1–16. Vernay, J. F. (2021). <i>Neurocognitive Interpretations of Australian Literature: Criticism in the Age of Neuroawareness</i>. Routledge. Lopes Gomes Pinto Ferreira, G. (2021). 'Once You Say the Word Gender, People Become Afraid': The Consequences of the Gender Backlash in Education in Brasil. <i>International Journal for Crime, Justice and Social Democracy</i>, 10(3), 1–16. 																																												

Weak Signal No.	60	Head Keyword	physician wellness																																										
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Recent Publications	<ul style="list-style-type: none"> Astik, G. J., Kulkarni, N., Cyrus, R. M., Yeh, C., & O'Leary, K. J. (2021). Implementation of a triage nurse role and the effect on hospitalist workload. <i>Hospital Practice</i>, 49(5), 336–340. Harbell, M. W., & Methangkool, E. (2021). Patient safety education in anesthesia: current state and future directions. <i>Current Opinion in Anaesthesiology</i>, 34(6), 720–725. Mir, H., Downes, K., Chen, A. F., Grewal, R., Kelly, D. M., Lee, M. J., ... & Dulai, S. K. (2021). Physician wellness in orthopaedic surgery: a multinational survey study. <i>Bone & Joint Open</i>, 2(11), 932–939. 																																												

Weak Signal No.	63	Head Keyword	populist parties																																										
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Recent Publications	<ul style="list-style-type: none"> Rivas-de-Roca, R. (2021). A study of political and media discourses in the 2020 Galician regional elections. <i>Doxa Comunicacion</i>, 121–135. Neshkovska, S. (2020). Impoliteness on the political stage: The case of the 2019 final Macedonian presidential debate. <i>Lodz Papers in Pragmatics</i>, 16(2), 285–304. Cordoba-Cabus, A., Hidalgo-Arjona, M., & Lopez-Martin, A. (2021). Coverage of the 2021 Madrid regional election campaign by the main Spanish newspapers on Twitter: natural language processing and machine learning algorithms. <i>PROFESIONAL DE LA INFORMACION</i>, 30(6). 																																												

Weak Signal No.	90	Head Keyword	makerspaces																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> makerspace 																																												
Activity	<table border="1"> <caption>Activity Data for 'makerspaces'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>5</td></tr> <tr><td>2014</td><td>15</td></tr> <tr><td>2015</td><td>35</td></tr> <tr><td>2016</td><td>55</td></tr> <tr><td>2017</td><td>85</td></tr> <tr><td>2018</td><td>100</td></tr> <tr><td>2019</td><td>145</td></tr> <tr><td>2020</td><td>165</td></tr> <tr><td>2021</td><td>175</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	5	2014	15	2015	35	2016	55	2017	85	2018	100	2019	145	2020	165	2021	175
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Weak Signal No.	91	Head Keyword	remunicipalization																																										
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Recent Publications	<ul style="list-style-type: none"> Kusiak, J. (2021). Trespassing on the Law: Critical legal engineering as a strategy for action research. <i>Area</i>, 53(4), 603–610. Albalate, D., Bel, G., Gradus, R., & Reeves, E. (2021). Re-municipalization of local public services: incidence, causes and prospects. <i>International Review of Administrative Sciences</i>, 87(3), 419–424. Albalate, D., Bel, G., & Reeves, E. (2021). Government choice between contract termination and contract expiration in re-municipalization: A case of historical recurrence?. <i>International Review of Administrative Sciences</i>, 87(3), 461–479. 																																												

Weak Signal No.	94	Head Keyword	suhi																																										
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Recent Publications	<ul style="list-style-type: none"> Chen, C., Li, D., & Keenan, T. F. (2021). Enhanced surface urban heat islands due to divergent urban-rural greening trends. <i>Environmental Research Letters</i>, 16(12), 124071. Siddiqui, A., Kushwaha, G., Nikam, B., Srivastav, S. K., Shelar, A., & Kumar, P. (2021). Analysing the day/night seasonal and annual changes and trends in land surface temperature and surface urban heat island intensity (SUHII) for Indian cities. <i>Sustainable Cities and Society</i>, 75, 103374. Liu, Y., Li, H., Li, C., Zhong, C., & Chen, X. (2021). An Investigation on Shenzhen Urban Green Space Changes and Their Effect on Local Eco-Environment in Recent Decades. <i>Sustainability</i>, 13(22), 12549. 																																												

Weak Signal No.	107	Head Keyword	coworking																																										
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Weak Signal No.	112	Head Keyword	research-based learning																																										
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Recent Publications	<ul style="list-style-type: none"> • Cimen, M., & Ozevin, B. (2021). Turkish Folk Music Lessons with Phenomenon-Based Learning: Preliminary Lessons and Results. <i>IAFOR Journal of Education</i>, 9(6), 71–88. • Hongyim, K., & Brunsell, E. (2021, July). Identifying teacher understanding of phenomena-based learning after professional development. In <i>Journal of Physics: Conference Series</i> (Vol. 1957, No. 1, p. 012039). IOP Publishing. • Puspita, E., & Rosjanuardi, R. (2021, March). Transposition of a sphere's volume based on didactic phenomena. In <i>Journal of Physics: Conference Series</i> (Vol. 1806, No. 1, p. 012057). IOP Publishing. 																																												

Weak Signal No.	140	Head Keyword	urban vitality																																										
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Weak Signal No.	197	Head Keyword	creative mindset																																										
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Recent Publications	<ul style="list-style-type: none"> • Puente-Díaz, R., & Cavazos-Arroyo, J. (2021). Creative Personal Identity and Creative Mindsets, and Their Implications for Creative Potential and Metacognition: A Latent Variable and a Latent Class Approach. <i>Creativity. Theories-Research-Applications</i>, 8(2), 20-31. • KONG, S. C., OGATA, H., SHIH, J. L., & BISWAS, G. (2021, November). The role of Artificial Intelligence in STEM education. In <i>Proceedings of 29th International Conference on Computers in Education Conference</i> (pp. 774-776). Asia-Pacific Society for Computers in Education. • Yodchai, N., Ly, P. T. M., & Tran, L. T. T. (2021). When Creative Mindset Helps Entrepreneurial Innovation in Tourism: An Examination on Demographics. <i>ABAC Journal</i>, 41(4), 108-125. 																																												

Weak Signal No.	215	Head Keyword	touristification																																										
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Recent Publications	<ul style="list-style-type: none"> • Jolivet, V., & Alba-Carmichael, M. (2021). Reinvesting in Havana: Housing Commodification and Gentrification in the Central Neighbourhoods of a Socialist City in the Global South. <i>International Journal of Cuban Studies</i>, 13(2), 248–274. • Aschenbrand, E., & Michler, T. (2021). Why Do UNESCO Biosphere Reserves Get Less Recognition than National Parks? A Landscape Research Perspective on Protected Area Narratives in Germany. <i>Sustainability</i>, 13(24), 13647. • BRIONES ORELLANA, A. D. R. I. A. N. A., HERAS OLALLA, J. E. S. S. I. C. A., & HERAS BARROS, V. E. R. Ó. N. I. C. A. (2021). SOCIAL AND URBAN TRANSFORMATIONS OF THE SURROUNDINGS OF STREET MARKETS LOCATED IN THE HISTORIC HUB OF CUENCA: "9 DE OCTUBRE" AND "10 DE AGOSTO" MARKETSO. <i>Urbano</i>, 24(44). 																																												

Weak Signal No.	216	Head Keyword	pesantren																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • santri 																																												
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Weak Signal No.	221	Head Keyword	gun violence																																										
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Weak Signal No.	233	Head Keyword	placemaking																																										
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Weak Signal No.	252	Head Keyword	microaggressions																																										
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Weak Signal No.	255	Head Keyword	microaffirmations																																										
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Weak Signal No.	261	Head Keyword	news literacy																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> news media literacy 																																												
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Recent Publications	<ul style="list-style-type: none"> Domgaard, S., & Park, M. (2021). Combating misinformation: The effects of infographics in verifying false vaccine news. <i>Health Education Journal</i>, 80(8), 974–986. Feucht, F. C., Michaelson, K., Hany, S. L., Maziarz, L. N., & Ziegler, N. E. (2021). Is the Earth Crying Wolf? Exploring Knowledge Source and Certainty in High School Students’ Analysis of Global Warming News. <i>Sustainability</i>, 13(22), 12899. Scheibenzuber, C., Hofer, S., & Nistor, N. (2021). Designing for fake news literacy training: A problem-based undergraduate online-course. <i>Computers in Human Behavior</i>, 121, 106796. 																																												

Weak Signal No.	269	Head Keyword	kahoot																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> quizizz edmodo 																																												
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Recent Publications	<ul style="list-style-type: none"> Wang, Y., Qiao, Y., & Wang, X. (2021, October). Effects of Gamified Learning Platforms on Students’ Learning Outcomes: A Meta-analysis Taking Kahoot and Quizizz as Examples. In 2021 13th International Conference on Education Technology and Computers (pp. 105–110). Magadán-Díaz, M., & Rivas-García, J. I. (2022). Graduate students’ perceptions of classroom gamification with Quizizz. <i>Texto Livre</i>, 15. Wulandari, B. L., & Hartono, M. (2021, September). The Effectiveness of Using Quizizz and Quizalize Media on Mathematics Learning Outcomes of Grade IV Students. In 2021 7th International Conference on Education and Technology (ICET) (pp. 320–325). IEEE. 																																												

Weak Signal No.	295	Head Keyword	teacher well-being																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> social-emotional learning 																																												
Activity	<table border="1"> <caption>Activity Data for 'teacher well-being'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>1</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>2</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>2</td></tr> <tr><td>2014</td><td>2</td></tr> <tr><td>2015</td><td>5</td></tr> <tr><td>2016</td><td>4</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>15</td></tr> <tr><td>2020</td><td>10</td></tr> <tr><td>2021</td><td>52</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	1	2006	0	2007	0	2008	0	2009	0	2010	0	2011	2	2012	5	2013	2	2014	2	2015	5	2016	4	2017	2	2018	10	2019	15	2020	10	2021	52
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Recent Publications	<ul style="list-style-type: none"> Hassani, S., & Schwab, S. (2021). Social-Emotional Learning Interventions for Students With Special Educational Needs: A Systematic Literature Review. <i>Front. Educ.</i> 6: 808566. doi: 10.3389/educ. Frydenberg, E. (2021). Social Emotional Learning in the Early Years: Innovation and Applications. <i>Journal of Psychologists and Counsellors in Schools</i>, 31(2), 184–194. Hennessey, A., Qualter, P., & Humphrey, N. (2021). The Impact of Promoting Alternative Thinking Strategies (PATHS) on Loneliness in Primary School Children: Results From a Randomized Controlled Trial in England. In <i>Frontiers in Education</i> (p. 510). Frontiers. 																																												

Weak Signal No.	326	Head Keyword	platformization																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> platformisation 																																												
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Recent Publications	<ul style="list-style-type: none"> Ferreira, D., Vale, M., & Carmo, R. M. (2021). The Cyberdivisions Produced by the Design of VGI under the Platform Economy: The Case of the Restaurant Sector in TripAdvisor. <i>ISPRS International Journal of Geo-Information</i>, 10(11), 717. Madon, S., & Schoemaker, E. (2021). Digital identity as a platform for improving refugee management. <i>Information Systems Journal</i>, 31(6), 929–953. d’Haenens, L. (2021). Reclaiming the public square in times of post-truth and platformisation: A crucial mission for public service media. <i>European Journal of Communication</i>, 36(5), 450–453. 																																												

Weak Signal No.	328	Head Keyword	steam education																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • maker education 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 328 (steam education)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>20</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>25</td></tr> <tr><td>2020</td><td>40</td></tr> <tr><td>2021</td><td>140</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	5	2017	20	2018	10	2019	25	2020	40	2021	140
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Recent Publications	<ul style="list-style-type: none"> • Blanco, T. F., González-Roel, V., Diego-Mantecón, J. M., & Ortiz-Laso, Z. (2021). Analysis of the art-mathematics connexion in elementary school textbooks. <i>Educación matemática</i>, 33(3), 67–93. • Greca, I. M., Ortiz-Revilla, J., & Arriasecq, I. (2021). Design and evaluation of a STEAM teaching-learning sequence for primary education. <i>Revista Eureka</i>, 18(1), 1–19. • Phanichraksaphong, V., & Tsai, W. H. (2021). Automatic Evaluation of Piano Performances for STEAM Education. <i>Applied Sciences</i>, 11(24), 11783. 																																												

Weak Signal No.	329	Head Keyword	growth mindset																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> • academic boredom 																																												
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Recent Publications	<ul style="list-style-type: none"> • Jie, Z., Roslan, S., Muhamad, M. M., Khambari, M. N. M., & Zaremohzzabieh, Z. (2021). Mitigating Academic Boredom and Increasing Well-Being Among Chinese College Students Based on a Positive Education Approach. <i>Journal of Educational and Social Research</i>, 11(6), 91–91. • Shen, L., Wu, X., Zhen, R., & Zhou, X. (2021). Post-Traumatic Stress Disorder, Mobile Phone Dependence, and Academic Boredom in Adolescents During the COVID-19 Pandemic. <i>Frontiers in Psychology</i>, 5090. • Yuan, M., Zeng, J., Wang, A., & Shang, J. (2021). Would it be better if instructors technically adjust their image or voice in online courses? Impact of the way of instructor presence on online learning. <i>Frontiers in Psychology</i>, 4090. 																																												

Weak Signal No.	338	Head Keyword	indonesian language																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> javanese language 																																												
Activity	<table border="1"> <caption>Activity Data for 'indonesian language'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>5</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>5</td></tr> <tr><td>2011</td><td>10</td></tr> <tr><td>2012</td><td>5</td></tr> <tr><td>2013</td><td>15</td></tr> <tr><td>2014</td><td>5</td></tr> <tr><td>2015</td><td>35</td></tr> <tr><td>2016</td><td>35</td></tr> <tr><td>2017</td><td>65</td></tr> <tr><td>2018</td><td>60</td></tr> <tr><td>2019</td><td>160</td></tr> <tr><td>2020</td><td>130</td></tr> <tr><td>2021</td><td>130</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	5	2008	0	2009	0	2010	5	2011	10	2012	5	2013	15	2014	5	2015	35	2016	35	2017	65	2018	60	2019	160	2020	130	2021	130
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Weak Signal No.	349	Head Keyword	incidental news exposure																																										
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Activity	<table border="1"> <caption>Activity Data for 'incidental news exposure'</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>1</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>2</td></tr> <tr><td>2018</td><td>4</td></tr> <tr><td>2019</td><td>7</td></tr> <tr><td>2020</td><td>14</td></tr> <tr><td>2021</td><td>13</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	1	2014	0	2015	0	2016	0	2017	2	2018	4	2019	7	2020	14	2021	13
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Weak Signal No.	377	Head Keyword	teacher noticing																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> language teacher identity 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 377</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>5</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>15</td></tr> <tr><td>2018</td><td>25</td></tr> <tr><td>2019</td><td>15</td></tr> <tr><td>2020</td><td>35</td></tr> <tr><td>2021</td><td>60</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	5	2016	10	2017	15	2018	25	2019	15	2020	35	2021	60
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2021	60																																												
Recent Publications	<ul style="list-style-type: none"> Magiera, M. T., & Zambak, V. S. (2021). Prospective K-8 teachers' noticing of student justifications and generalizations in the context of analyzing written artifacts and video-records. <i>International Journal of STEM Education</i>, 8(1), 1-21. Tyminski, A. M., Simpson, A. J., Land, T. J., Drake, C., & Dede, E. (2021). Prospective elementary mathematics teachers' noticing of childrens' mathematics: A focus on extending moves. <i>Journal of Mathematics Teacher Education</i>, 24(6), 533-561. Luna, M., & Selmer, S. (2021). Examining the responding component of teacher noticing: A case of one teacher's pedagogical responses to students' thinking in classroom artifacts. <i>Journal of Teacher Education</i>, 72(5), 579-593. 																																												

Weak Signal No.	385	Head Keyword	last-mile delivery																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> last mile delivery 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 385</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>15</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>35</td></tr> <tr><td>2019</td><td>65</td></tr> <tr><td>2020</td><td>110</td></tr> <tr><td>2021</td><td>175</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	15	2017	10	2018	35	2019	65	2020	110	2021	175
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Recent Publications	<ul style="list-style-type: none"> Chen, L., Chen, Y., & Langevin, A. (2021). An inverse optimization approach for a capacitated vehicle routing problem. <i>European Journal of Operational Research</i>, 295(3), 1087-1098. Tsykunov, E., Fedoseev, A., Dorzhieva, E., Agishev, R., Ibrahimov, R., Vasquez, D., ... & Tsetserukou, D. (2021). DroneStick: Flying Joystick as a Novel Type of Interface. In <i>SIGGRAPH Asia 2021 Emerging Technologies</i> (pp. 1-2). Pinotti, C. M. (2021). Cooperative Truck-Drone Scheduling Approach for Last-Mile Deliveries. 																																												

Weak Signal No.	413	Head Keyword	e-bike																																										
All Popping Keywords in this Weak Signal	• e-bikes																																												
Activity	<table border="1"> <caption>Activity of e-bikes (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>20</td></tr> <tr><td>2019</td><td>35</td></tr> <tr><td>2020</td><td>55</td></tr> <tr><td>2021</td><td>160</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	5	2017	10	2018	20	2019	35	2020	55	2021	160
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2021	160																																												
Recent Publications	<ul style="list-style-type: none"> • Gitelman, V., & Korchatov, A. Exploring safety-related behaviours of e-cyclists on urban streets; an observational study. • Yang, B. I. A. N., Jia-xia, Y. A. N. G., Xiao-hua, Z. H. A. O., Xiao-long, Z. H. A. N. G., & Tang-shan, H. A. N. (2021). Research on Influencing Factors of Reverse Riding Risk Behavior of Shared E-bike Based on Trajectory Data. <i>China Journal of Highway and Transport</i>, 34(12), 262. • Kwiatkowski, M. A. (2021). Metropolitan bicycle-sharing system in the Polish context of various needs of cities, towns, and villages. <i>Bulletin of Geography. Socio-economic Series</i>, 54(54), 97–111. 																																												

Weak Signal No.	415	Head Keyword	crowdshipping																																										
All Popping Keywords in this Weak Signal	• crowd-shipping																																												
Activity	<table border="1"> <caption>Activity of crowdshipping (2002-2021)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>1</td></tr> <tr><td>2017</td><td>5</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>15</td></tr> <tr><td>2020</td><td>20</td></tr> <tr><td>2021</td><td>25</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	1	2017	5	2018	10	2019	15	2020	20	2021	25
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Recent Publications	<ul style="list-style-type: none"> • Ermagun, A., & Stathopoulos, A. (2021). Crowd-shipping delivery performance from bidding to delivering. <i>Research in Transportation Business & Management</i>, 41, 100614. • Silva, M., Pedroso, J. P., Viana, A., & Klimentova, X. (2021). A Branch-Price-And-Cut Algorithm for Stochastic Crowd Shipping Last-Mile Delivery with Correlated Marginals. In <i>21st Symposium on Algorithmic Approaches for Transportation Modelling, Optimization, and Systems (ATMOS 2021)</i>. Schloss Dagstuhl-Leibniz-Zentrum für Informatik. • Hou, S., & Wang, C. (2021, August). Matching Models for Crowd-Shipping Considering Shipper's Acceptance Uncertainty. In <i>2021 IEEE International Conference on Autonomous Systems (ICAS)</i> (pp. 1–6). IEEE. 																																												

Weak Signal No.	425	Head Keyword	retracted papers																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> retracted publications 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 425</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>4</td></tr> <tr><td>2018</td><td>8</td></tr> <tr><td>2019</td><td>12</td></tr> <tr><td>2020</td><td>14</td></tr> <tr><td>2021</td><td>14</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	4	2018	8	2019	12	2020	14	2021	14
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Recent Publications	<ul style="list-style-type: none"> Sharma, K. (2021). Team size and retracted citations reveal the patterns of retractions from 1981 to 2020. <i>Scientometrics</i>, 126(10), 8363–8374. Ghorbi, A., Fazeli-Varzaneh, M., Ghaderi-Azad, E., Ausloos, M., & Kozak, M. (2021). Retracted papers by Iranian authors: causes, journals, time lags, affiliations, collaborations. <i>Scientometrics</i>, 126(9), 7351–7371. Bordewijk, E. M., Li, W., Gurrin, L. C., Thornton, J. G., van Wel, M., & Mol, B. W. (2021). An investigation of seven other publications by the first author of a retracted paper due to doubts about data integrity. <i>European Journal of Obstetrics & Gynecology and Reproductive Biology</i>, 261, 236–241. 																																												

Weak Signal No.	431	Head Keyword	feminitives																																										
All Popping Keywords in this Weak Signal	<ul style="list-style-type: none"> tweetorials 																																												
Activity	<table border="1"> <caption>Activity Data for Weak Signal 431</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>0</td></tr> <tr><td>2009</td><td>0</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>0</td></tr> <tr><td>2012</td><td>0</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>0</td></tr> <tr><td>2015</td><td>0</td></tr> <tr><td>2016</td><td>0</td></tr> <tr><td>2017</td><td>0</td></tr> <tr><td>2018</td><td>0</td></tr> <tr><td>2019</td><td>5</td></tr> <tr><td>2020</td><td>5</td></tr> <tr><td>2021</td><td>7</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	0	2009	0	2010	0	2011	0	2012	0	2013	0	2014	0	2015	0	2016	0	2017	0	2018	0	2019	5	2020	5	2021	7
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Recent Publications	<ul style="list-style-type: none"> Albin, C., & Berkowitz, A. L. (2021). # NeuroTwitter 101: a tweetorial on creating tweetorials. <i>Practical Neurology</i>, 21(6), 539–540. Ernst, M., & Badkshian, S. (2021). # UroStream101: Social Media as a Medium for Mentorship in Urology. <i>Urology</i>, 158, 39–44. Gero, K. I., Liu, V., Huang, S., Lee, J., & Chilton, L. B. (2021). What Makes Tweetorials Tick: How Experts Communicate Complex Topics on Twitter. <i>Proceedings of the ACM on Human-Computer Interaction</i>, 5(CSCW2), 1–26. 																																												

➤ 3.1.24. Veterinary

Weak Signal No.	262	Head Keyword	prrsv-1																																										
All Popping Keywords in this Weak Signal	• prrsv-1 and prrsv-2																																												
Activity	<table border="1"> <caption>Activity Data (Estimated)</caption> <thead> <tr> <th>Year</th> <th>Activity</th> </tr> </thead> <tbody> <tr><td>2002</td><td>0</td></tr> <tr><td>2003</td><td>0</td></tr> <tr><td>2004</td><td>0</td></tr> <tr><td>2005</td><td>0</td></tr> <tr><td>2006</td><td>0</td></tr> <tr><td>2007</td><td>0</td></tr> <tr><td>2008</td><td>1</td></tr> <tr><td>2009</td><td>1</td></tr> <tr><td>2010</td><td>0</td></tr> <tr><td>2011</td><td>1</td></tr> <tr><td>2012</td><td>1</td></tr> <tr><td>2013</td><td>0</td></tr> <tr><td>2014</td><td>2</td></tr> <tr><td>2015</td><td>4</td></tr> <tr><td>2016</td><td>5</td></tr> <tr><td>2017</td><td>10</td></tr> <tr><td>2018</td><td>19</td></tr> <tr><td>2019</td><td>24</td></tr> <tr><td>2020</td><td>17</td></tr> <tr><td>2021</td><td>17</td></tr> </tbody> </table>			Year	Activity	2002	0	2003	0	2004	0	2005	0	2006	0	2007	0	2008	1	2009	1	2010	0	2011	1	2012	1	2013	0	2014	2	2015	4	2016	5	2017	10	2018	19	2019	24	2020	17	2021	17
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Recent Publications	<ul style="list-style-type: none"> • Ruedas-Torres, I., Gómez-Laguna, J., Sánchez-Carvajal, J. M., Larenas-Muñoz, F., Barranco, I., Pallarés, F. J., ... & Rodríguez-Gómez, I. M. (2021). Activation of T-bet, FOXP3, and EOMES in Target Organs From Piglets Infected With the Virulent PRRSV-1 Lena Strain. <i>Frontiers in Immunology</i>, 12. • Xu, W., Du, S., Li, T., Wu, S., Jin, N., Ren, L., & Li, C. (2021). Generation and evaluation of recombinant baculovirus coexpressing Gp5 and M proteins of porcine reproductive and respiratory syndrome virus Type 1. <i>Viral Immunology</i>, 34(10), 697-707. • Vandebussche, F., Mathijs, E., Tignon, M., Vandersmissen, T., & Cay, A. B. (2021). WGS-versus ORF5-Based Typing of PRRSV: A Belgian Case Study. <i>Viruses</i>, 13(12), 2419. 																																												

3.2.

**List of Newborn and Changed
Weak Signals**

3.2. List of Newborn and Changed Weak Signals

➤ 3.2.1. Agricultural and Biological Sciences

> Newborn Weak Signals

No.	Head Keyword
53	sulfoxaflor
69	marine litter
89	fluopyram
258	meat analogues
296	landsenses ecology
336	livestock and poultry manure

> Changed Weak Signals

No.	Head Keyword	Type
125	marine plastic pollution	AC Environmental Science → Agricultural and Biological Sciences

➤ 3.2.2. Arts and Humanities

> Newborn Weak Signals

No.	Head Keyword
115	russian sign language
333	epistemic injustice

➤ 3.2.3. Biochemistry, Genetics and Molecular Biology

> Newborn Weak Signals

No.	Head Keyword
86	gpx4
95	cf-mtdna
123	cas13
136	cavin1
174	usp47
228	zdhhc5

No.	Head Keyword
271	tmprss11d
282	fam111a
292	crotonylation
301	adropin
337	b4galnt1
370	stem cell-derived extracellular vesicles
430	alphafold2

> Changed Weak Signals

No.	Head Keyword	Changes
42	marine plastic pollution	NK ----- msc-sev; hucmsc-exosomes; asc-evs; adsc-exos
83	kmt2d	NK ----- arid2
203	mpro	NK ----- mpro; nsp16-nsp10; nsp16; 3clpro
437	tptep1	NK ----- mkln1-as; circakt3; pimreg

➤ 3.2.4. Business, Management and Accounting

> Newborn Weak Signals

No.	Head Keyword
98	influencer marketing
219	gig economy

> Changed Weak Signals

No.	Head Keyword	Type
2	job crafting	MG ----- weak signals in Business, Management and Accounting + Psychology
17	entrepreneurial ecosystem	NK ----- digital servitization; mass entrepreneurship and innovation
165	brand love	NK ----- experiential loyalty
181	leader humility	NK ----- communal narcissism

➤ 3.2.5. Chemical Engineering

> Newborn Weak Signals

No.	Head Keyword
213	coal gasification fine slag
350	hemoadsorption

➤ 3.2.6. Chemistry

> Newborn Weak Signals

No.	Head Keyword
51	ag2o nps
72	conductive hydrogel
260	5f-mdmb-pica
417	ssz-13 zeolite
434	darobactin

> Changed Weak Signals

No.	Head Keyword	Type
26	mil-53 fe	NK co/zif-8; pcn-222; cofe2o4/c; nh2-mil-101 al; fe-mil-88nh2; fe-mof; nife2o4/rgo; nh2-mil-125; ce-mof; znfe2o4/rgo; mil-101 fe; nh2-uio-66
103	n-gqds	NK p-cqds; g-cqds; bnqds; cnqds
172	micro/nanomotors	AC and NK Materials Science → Chemistry with micro-nanorobots

➤ 3.2.7. Computer Science

> Newborn Weak Signals

No.	Head Keyword
40	web scraping
46	vgg19
59	space-air-ground integrated network
75	internet of thing

No.	Head Keyword
84	chat bot
111	credit card fraud detection
128	voice assistants
157	vr technology
163	dark web
167	computational drug repositioning
179	darknet
185	live streaming platforms
186	micro-video
205	uav swarm
226	person re-id
241	caption generation
247	micro-lecture
257	ufmc
270	smart glasses
286	micro-expression
288	internet celebrity
289	speaker embeddings
303	smart home devices
327	smart mobility
351	iot gateway
367	jupyter notebooks
371	employee attrition
392	todim
395	video anomaly detection
400	digital wallet
418	network public opinion
424	sigfox
428	phishing detection
432	autoai
436	stylegan
438	tinymml

> Changed Weak Signals

No.	Head Keyword	Type
6	hesitant fuzzy linguistic preference relation	MG and NK weak signals in Computer Science with neutrosophic hypersoft; q-rung picture fuzzy; n-refined neutrosophic; complex pythagorean fuzzy; linguistic q-rung orthopair fuzzy; fermatean fuzzy sets; mbj-neutrosophic; spherical fuzzy
8	p2p lending	AC and NK Business, Management and Accounting → Computer Science digital inclusive finance; fintech lending
9	connected vehicle	MG and NK weak signal in Computer Science + Engineering with internet-of-vehicles; intelligent connected vehicles
27	zero-shot learning	MG and NK weak signals in Computer Science with graph representation learning
49	e-commerce platform	MG and NK weak signals in Business, Management and Account + Computer Science with cross-border e-commerce logistics; e-commerce platform; e-commerce logistics
57	digital currency	NK cryptocurrency wallets; crypto currency; cashless transaction; crypto assets
65	ransomware attacks	NK apt malware
66	visual question answering	NK knowledge graph question answering; stereo image super-resolution; multi-label image recognition; panoptic segmentation; pointnet
119	sequential recommendation	NK conversational ai; conversational search; conversational recommendation; explainable recommendations

No.	Head Keyword	Type
145	hate speech detection	NK abusive language; hateful speech; hate speech and offensive language
147	serverless	NK fog/edge computing; fpga virtualization; cloud-native; fog-computing
166	document embedding	NK polyphone disambiguation
168	monocular depth estimation	NK v-slam; multi-person pose estimation;

➤ 3.2.8. Dentistry

> Newborn Weak Signals

No.	Head Keyword
222	teledentistry

➤ 3.2.9. Earth and Planetary Sciences

> Newborn Weak Signals

No.	Head Keyword
74	broken coal
100	coal-based graphite
322	islands and reefs
356	burnt rock

➤ 3.2.10. Economics, Econometrics and Finance

> Newborn Weak Signals

No.	Head Keyword
294	single-cell omics
306	uncertainty shocks
376	investor attention
396	share pledging

➤ 3.2.11. Energy

> Newborn Weak Signals

No.	Head Keyword
22	solar power plants
76	prelithiation
152	park-level integrated energy system
177	lithium plating
198	crowd logistics
237	clean energy consumption
267	electricity transaction

> Changed Weak Signals

No.	Head Keyword	Type
97	sspcms	NK ----- ss-pcms
212	agricultural carbon emissions	NK ----- agricultural eco-efficiency; tourism eco-efficiency;

➤ 3.2.12. Engineering

> Newborn Weak Signals

No.	Head Keyword
134	charging piles
139	cold chain logistics
161	capsule network
201	coding metasurface
207	refractory high entropy alloys
210	more-electric aircraft
224	4d bim
239	series arc fault
248	underground pipe gallery
264	ehmi
293	uav-bs
331	pointer meter
416	synchronous condenser

> Changed Weak Signals

No.	Head Keyword	Type
13	rubberized concrete	NK 3d printable concrete; 3d printed concrete; coral concrete; coral aggregate concrete; desert sand concrete
30	jaya algorithm	NK lion swarm optimization; butterfly optimization algorithm; whale algorithm
37	multi-microgrid	NK ac-dc hybrid distribution network; multi-energy storage; flexible dc grid
88	collaborative robots	NK cobots
99	virtual inertia control	NK grid-forming control
120	bio-asphalt	NK pu modified asphalt; composite-modified asphalt; high viscosity modified asphalt; sbs modified asphalt binders
156	unmanned surface vehicles	NK unmanned sailboat
204	multiscale permutation entropy	NK weighted-permutation entropy

➤ 3.2.13. Environmental Science

> Newborn Weak Signals

No.	Head Keyword
18	marine tourism
132	kampung
143	green finance
150	engineered biochar
191	gowa regency
305	tofu wastewater
325	sustainable development of territories
352	housing and communal services
386	cw-mfc
427	agro-industrial complex

> Changed Weak Signals

No.	Head Keyword	Type
43	nanoplastics	NK polyethylene microplastics; pe microplastics; microplastics pollution
50	cuo nps	AC and NK Chemistry → Environmental Science with s-agmps
129	ecological conservation redline	NK ecological water conservancy; farmland water conservancy

➤ 3.2.14. Health Professions

> Newborn Weak Signals

No.	Head Keyword
254	trail running

➤ 3.2.15. Immunology and Microbiology

> Newborn Weak Signals

No.	Head Keyword
234	m-mdscs

> Changed Weak Signals

No.	Head Keyword	Type
56	soil microbiome	AC Agricultural and Biological Science → Immunology and Microbiology
85	alistipes	NK christensenellaceae; erysipelotrichaceae
138	mcr-3	AC and NK Medicine → Immunology and Microbiology with mcr-8; mcr-10
195	mlkl	AC and NK Biochemistry, Genetics and Molecular Biology → Immunology and Microbiology with gasdermin-d; gasdermins
307	tfh cells	NK cd4+cd25 ⁻ foxp3 ⁺ ; cd19+cd24 ^{hi} cd27 ⁺

➤ 3.2.16. Materials Science

> Newborn Weak Signals

No.	Head Keyword
33	brick waste
92	topological photonics
211	micro-leds
214	nifeo
235	piezoelectric nanogenerators
243	wte2
274	sonodynamic therapy
281	2d nanomaterials
339	γ -cd-mof
353	la2o3 nps
362	self-healing hydrogels
388	nonfullerene acceptors
394	biocoagulant
429	biswas-arshed equation

> Changed Weak Signals

No.	Head Keyword	Type
12	perovskite quantum dots	NK ruddlesden-popper perovskites; tin perovskite; perovskite single-crystal
29	ti3c2 mxene	AC and NK Chemistry → Materials Science with bi2o2se nanosheets; v2c mxene; mof nanosheets
45	borophene	NK doped phosphorene; violet phosphorene; phosphorene nanoflakes
47	cellulose aerogel	MG and NK weak signals in Material Science with nanocellulose-based hydrogels; cellulose nanomaterials
64	cubi2o4	MG and NK weak signals in Chemistry with single-atom photocatalysts; s-doped g-c3n4; direct z-scheme photocatalysts; bi-based photocatalysts; cds/g-c; porous g-c3n4

No.	Head Keyword	Type
108	ferronickel slag	NK ferronickel slag powder; iron tailing powder
160	additive manufacturing technologies	NK friction stir additive manufacturing; microscale additive manufacturing
311	mgo nps	AC Chemistry → Materials Science

➤ 3.2.17. Mathematics

> Newborn Weak Signals

No.	Head Keyword
31	fubini polynomials
272	fractional p-laplacian
299	s-metric spaces

> Changed Weak Signals

No.	Head Keyword	Type
54	conformable derivative	MG and NK weak signals in Computer Science + weak signals in Mathematics with fractional-order capacitor; fractional-order memristor
238	ku-algebras	NK bh-algebras; quantum b-algebras

➤ 3.2.18. Medicine

> Newborn Weak Signals

No.	Head Keyword	No.	Head Keyword
4	chcc-cca	284	dd-cfdna
55	mrpl13	302	brcam
58	eus-gbd	304	circulating nrg4

No.	Head Keyword	No.	Head Keyword
68	awake prone positioning	304	circulating mir-155
70	attr amyloidosis	309	nigrosome
80	pibrentasvir	312	lateral lumbar interbody fusion
106	cgas-sting signaling pathway	315	neoantigen
114	hist1h1e	317	cdk4/6 inhibitors
131	elexacaftor-tezacaftor-ivacaftor	321	re-positive
137	radiomics signature	335	hiv prep
142	lln metastasis	340	ca-aki
149	long-covid	344	dating apps
162	prognostic nutritional index	355	spd-11
164	mirna-lncrna	358	h2fpef score
189	virtual visits	360	artemisiae argyi folium
192	digital contact tracing	366	juul
199	anti-mda5	369	locomotive syndrome
209	professional burnout	372	mafld
217	rotavac	374	access to mental healthcare
220	ra-ild	382	arhgap30
231	netarsudil	387	hispanic/latinx
244	alcohol-related liver disease	389	perinatal anxiety
246	hyperprogression	390	pgt-a
250	child marriage	407	tyg index
259	mpflr	411	u-nets
268	cognitive fatigability	419	ici-pneumonitis
280	slc35a2	423	intracavitary electrocardiogram
283	allohct		

> Changed Weak Signals

No.251	Head Keyword	Type
3	neutrophil-lymphocyte ratio	NK c-reactive protein-to-albumin ratio; lactate/albumin ratio
14	cabozantinib	MG and NK weak signals in Medicine with sacituzumab govitecan-hzyi; selitrectinib; pembrolizumab-axitinib; taletrectinib; surufatinib; orelabrutinib; envafolimab; rilzabrutinib; pralsetinib; tomivosertib; almonertinib

No.251	Head Keyword	Type
34	sglt-2 inhibitors	NK beinaglutide; tirzepatide
41	ceftazidime-avibactam	NK taniborbactam
67	glycyrrhizae radix et rhizoma	NK aucklandiae radix; saposhnikoviae radix; chaenomelis fructus; farfarae flos; amomi fructus
77	roxadustat	MG and NK weak signals in Pharmacology, Toxicology and Pharmaceutics + weak signals in Medicine with molidustat; daprodustat
79	va-ecmo	NK v-v ecmo
81	ti-rads	NK k-tirads; ni-rads; vi-rads
96	erenumab	NK rimegepant
126	favipiravir	NK molnupiravir
173	serum hbv rna	NK hbv pgna
251	aqp4-igg	NK mog-ab
439	fear of covid-19	MG and NK weak signals in Medicine + weak signals in Chemistry with neurocovid; covid-19 main protease; new coronary pneumonia; pims-ts; covid-19-associated pulmonary aspergillosis; covaxin; ncov-2019; post-covid syndrome; long covid; covid-19 infodemic; clascoterone; dostarlimab

➤ 3.2.19. Nursing

> Newborn Weak Signals

No.	Head Keyword
320	missed nursing care
405	nutrition literacy

➤ 3.2.20. Pharmacology, Toxicology and Pharmaceutics

> Newborn Weak Signals

No.	Head Keyword
19	transferon
44	polyphyllin vii

➤ 3.2.21. Physics and Astronomy

> Newborn Weak Signals

No.	Head Keyword
5	c2n monolayer
28	mathematical disposition
175	7e learning cycle
278	cri3
290	rfi-qkd
323	berry curvature
408	agrivoltaic

> Changed Weak Signals

No.	Head Keyword	Type
25	creative thinking skills	NK
		metacognition skills; computational thinking skills; 21st-century skills
118	hybrid nanofluids	NK
		bio-nanofluid

➤ 3.2.22. Psychology

> Newborn Weak Signals

No.	Head Keyword
82	dispositional mindfulness
148	fear of happiness
153	autistic people
397	mindful parenting

> Changed Weak Signals

No.	Head Keyword	Type
25	polyvictimization	AC and NK Medicine → Psychology with digital dating abuse; cyber dating violence; cyber dating abuse
151	conspiracy theory	NK conspiracy mentality

➤ 3.2.23. Social Sciences

> Newborn Weak Signals

No.	Head Keyword
63	populist parties
140	urban vitality
216	pesantren
221	gun violence
255	microaffirmations
269	kahoot
295	teacher well-being
328	steam education
329	growth mindset
377	teacher noticing
385	last-mile delivery
425	retracted papers
431	feminitives

> Changed Weak Signals

No.	Head Keyword	Type
7	talent training	MG and NK weak signals in Physics and Astronomy, in Health Professions and in Social Sciences with curriculum ideology and politics; google classroom; college english online teaching
11	ridesharing	NK app-based ride-hailing; ride-hailing drivers

No.	Head Keyword	Type
48	lgbtq+	NK 2slgbtq+; lgbtqia+
112	research-based learning	MG and NK stem-based learning; phenomenon-based learning
215	touristification	NK tourism gentrification

➤ 3.2.24. Veterinary

> Newborn Weak Signals

No.	Head Keyword
262	prsv-1

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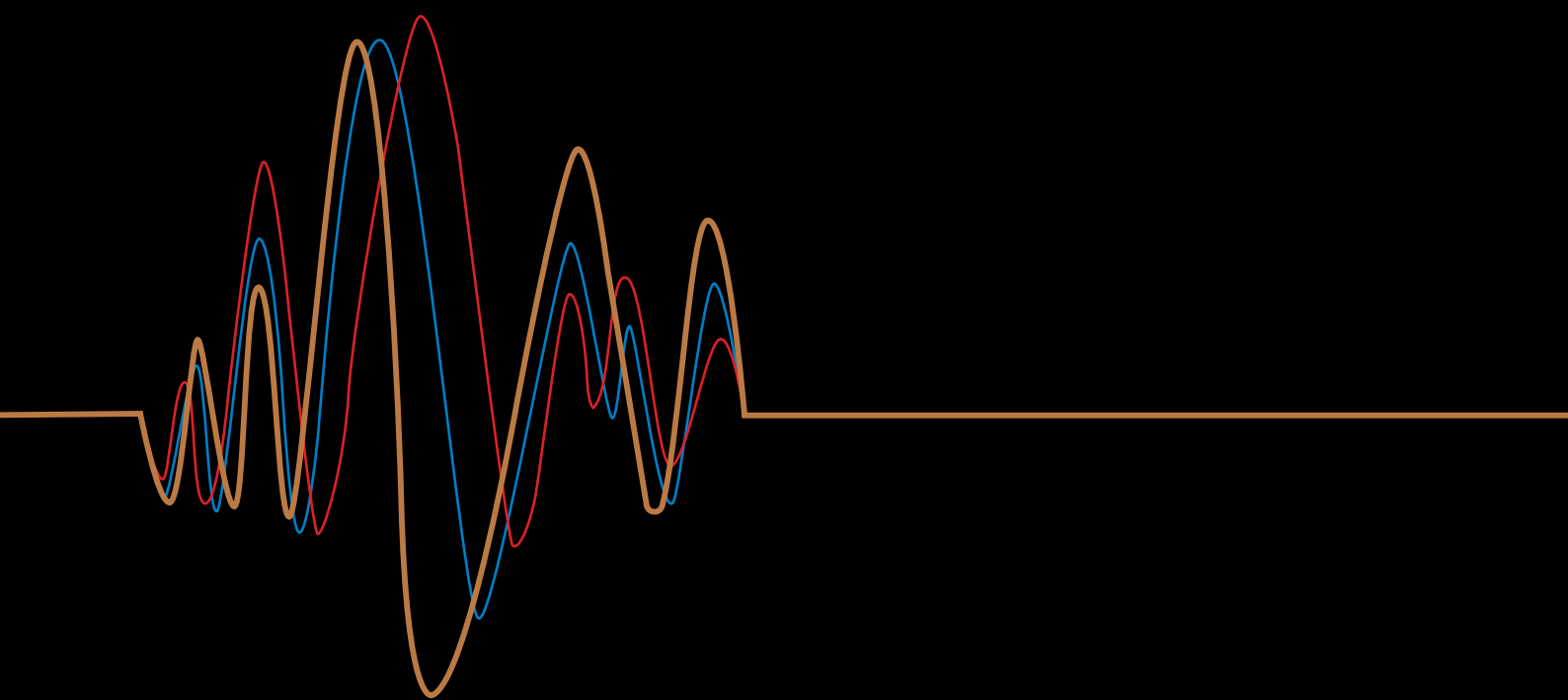
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