



There's an App for That

Citation Network Based Research Discovery Using Inciteful: A Smart Approach to Literature Exploration

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Abstract

In the era of exponential scholarly publications, traditional keyword-based search methodologies often failed to provide a comprehensive, interconnected search of the literature. A citation-based literature search is more precise and effective in identifying relevant and influential studies, as demonstrated in prior research on citation chaining, citation mapping, and network-based literature discovery. This paper investigates Inciteful, a free, open-access literature discovery platform that uses citation networks to

explore scholarly literature. Leveraging open scholarly data from sources like OpenAlex, Semantic Scholar, and Crossref, Inciteful builds dynamic, user-defined citation graphs that reveal relationships among papers, authors, institutions, and research themes. The platform's visual analytics (including similarity clusters and structural citation paths) highlight significant articles and conceptual bridges that conventional keyword-based search methods may overlook. By integrating features such as Zotero connector and an open bibliographic infrastructure, Inciteful enhances research efficiency, supports interdisciplinary inquiry, and facilitates informed decision-making in scholarly communication. As open science advances, tools like Inciteful are poised to play a crucial role in network-based scholarly discovery.

Keywords: Inciteful; literature mapping; research discovery; citation search; citation network

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Introduction

In the rapidly evolving landscape of academic research, finding relevant literature is more crucial than ever. Traditional keyword-based search tools often struggle to keep up with the increasing volume and complexity of scholarly publications (Khalid et al., 2025). Inciteful (<https://inciteful.xyz>), a free and open-access research platform, addresses this issue by leveraging citation networks to enhance literature discovery. Analyzing citing and cited relationships supports more effective literature discovery by focusing on foundational studies, mapping the evolution of research themes, and identifying influential works through citation linkages, thereby complementing traditional keyword-based retrieval methods. Inciteful transforms how researchers access and analyze scholarly information by providing advanced tools grounded upon open bibliographic data and network analysis. Researchers use these tools to explore new topics, tracing the progression of ideas and identifying influential works and authors. This article illustrates how citation-network tools can support literature discovery for diverse academic users.

About Inciteful

Inciteful, launched in 2020 by Michael Weishuhn, is an independently developed platform that has emerged as a significant tool for intelligent literature exploration and mapping. Most major citation databases (e.g., Google Scholar, Scopus, and Web of Science) primarily rely on keyword-based retrieval and citation counts, while offering limited support for exploring the structural relationships and network-level connections among cited and citing documents. In contrast to these databases, citation network based tools such as Inciteful, Connected Papers, and Litmaps explicitly visualize relationships among publications to support exploratory literature discovery.

Inciteful takes a different approach by placing citations at the core of its search process (Weishuhn, 2025). By building a custom citation network around selected papers, it analyzes them to highlight important and similar works using link prediction algorithms, tracing recent research. Additionally, Inciteful offers a flexible SQL interface for users who wish to explore the raw data directly. It relies on various open scholarly infrastructure projects for its data and inspiration. Key data sources of Inciteful include: OpenAlex (<https://openalex.org/>), Semantic Scholar (<https://www.semanticscholar.org/>), Crossref (<https://www.crossref.org/>), and OpenCitations (<https://opencitations.net/>).

OpenAlex is a comprehensive open catalog of scholarly works, authors, institutions, and citation relationships designed to support large-scale bibliometric research. Semantic Scholar, developed by the Allen Institute for AI, employs artificial intelligence to enhance scholarly search and provide enriched metadata, including influential citations. Crossref is a nonprofit registration agency that assigns Digital Object Identifiers (DOIs) and facilitates persistent linking and metadata exchange across scholarly publications. OpenCitations is an open-access infrastructure organization dedicated to publishing structured citation data to promote transparency and reproducibility in scholarly communication. Inciteful facilitates the identification of historically significant references through features such as citation network visualization, analysis of highly cited papers, and co-citation analysis, which help reveal foundational studies that have shaped a research field (Weishuhn, 2025).

Accessing Inciteful

Inciteful distinguishes itself through its free access model, integration of multiple open citation data sources, and provision of analytical features that support citation-network-based literature exploration without subscription barriers. The platform generates a network of scholarly articles based on user-selected ‘seed papers’, which are initial or highly relevant publications chosen by the researcher to initiate the citation search process and identify related studies through citation linkages. Seed papers are typically seminal, highly relevant, or representative works in a research area and function as anchor points for expanding the literature network. Unlike other academic search engines, Inciteful places citations at the core of its discovery process. The growing availability of open citation data has significantly advanced computational approaches to literature mapping and scholarly network analysis. Inciteful offers two powerful tools: “Paper Discovery” and the “Literature Connector.” “Paper Discovery” supports broad exploratory searching; the “Literature Connector” is particularly useful for understanding intellectual relationships and knowledge flow between specific studies. The platform’s citation exploration can assist researchers in systematically identifying relevant studies and can offer librarians a tool to support research consultations.

Literature Exploration in Inciteful

Inciteful provides a guided tour; this guided tour was consulted prior to conducting the literature exploration to understand the platform’s features. The following section outlines the methodological workflow adopted for literature exploration in Inciteful,

describing each stage from seed paper selection to citation network generation and analysis. After initiating a search with the seed paper, users can explore various interface components. The interactive citation network provides a visual representation of scholarly relationships, the related papers list expands the literature set through citation-based similarity, and filtering options allow refinement of results. These features enable researchers to efficiently track research developments, identify influential contributions, and identify underexplored areas. The workflow adopted in this study is described below.

Accelerate Your Research

Build a network of academic papers and we'll analyze the citations to help you **discover the most relevant literature**.

or Import BibTeX file

- Find similar papers
- Discover key authors
- Explore citation networks
- Export to Zotero

Figure 1. Inciteful Search Interface

The Inciteful landing page in Figure 1 features a search interface that lets users initiate literature exploration by entering a paper title, DOI, PubMed URL, or arXiv link, or by importing a BibTeX file. Following submission, the system constructs a citation network that visually and analytically maps relationships among publications. This enables researchers to locate similar papers, examine citation pathways, identify prominent contributors, and export bibliographic data to reference management software. Such functionalities support a systematic approach to citation-based scholarly discovery. Inciteful supports efficient literature discovery by automatically generating citation networks, identifying related publications through citation linkages, and highlighting influential studies. These features enable researchers to systematically explore scholarly connections and search literature more effectively.

Did you know you can search directly from Zotero? Check out our new [Zotero plugin](#) and see the [Twitter thread](#) on how to use it.

The Impact of Climate Change on Agriculture in Asia

Robert Mendelsohn

Journal of Integrative Agriculture | 10.1016/s2095-3119(13)60701-7

208 Cited By	21 Citing	2014 Published	Yes Open Access	23,691 Papers in Graph	157,033 Citations in Graph	2 Graph Depth
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Links: [Publisher](#) | [Full Text from LibKey](#)

Paper Filters

Keywords

Min Distance Max Distance Min Year Max Year **Filter**

Add Papers to the Graph

Paper Title or DOI

or [Import BibTeX file](#)

Figure 2. Inciteful Citation Overview

The Inciteful citation overview presents citation relationships (Figure 2), a visual graph displaying the structure of the citation network (Figure 3), the Similar Papers section identifying related studies through citation patterns (Figure 4), and the Important Papers view highlighting influential publications within the network (Figure 5). The Similar Papers section surfaces related studies based on citation linkages, including overlapping references and co-citation relationships, enabling researchers to broaden the scope of their literature discovery. Complementing this, the Important Papers view highlights publications with strong citation presence within the network, helping researchers identify influential works that have significantly contributed to the development of the research area.



Figure 3. Citation network visualization generated in Inciteful

The visual graph shown in Figure 3 maps literature connections, with deeper colors indicating more recent publications, proximity reflecting correlation to the seed paper, and circle size representing citation magnitude. Graph structures comprise nodes and edges, where nodes represent individual units and edges represent relationships

between them. In citation networks, academic papers serve as nodes, and citations between them form the edges that define the scholarly network.

Similar Papers

These papers cite the same papers as your selected paper. They tend to bias towards newer papers in the field.

	published_year	similarity	num_cited_by
<p>The Use of Cross-Sectional Analysis to Measure Climate Impacts on Agriculture: Theory and Evidence</p> <p>Robert Mendelsohn, Emanuele Massetti <i>Review of Environmental Economics and Policy</i></p>	2017	2.215862	53
<p>A Ricardian Analysis of the Impact of Climate Change on European Agriculture</p> <p>Steven Van Passel, ... Robert Mendelsohn <i>Environmental and Resource Economics</i></p>	2016	1.288653	55
<p>Climate Change, Risk and Grain Yields in China</p> <p>Rainer Holst, ... Carola Grün <i>Journal of Integrative Agriculture</i></p>	2013	1.268686	73
<p>Climate Change, Risk and Productivity: Analyses of Chinese Agriculture</p> <p>Rainer Holst</p>	2013	1.223832	0
<p>The effects of climate change on cereals yield of production and food security in Gambia</p> <p>Alieu Loum, Csaba Fogarassy <i>Applied Studies in Agribusiness and Commerce</i></p>	2015	1.178815	12
<p>Climate change impacts on farmland value in Bangladesh</p> <p>Md Shakhawat Hossain, ... M. Golam Mahboob <i>Ecological Indicators</i></p>	2020	1.157078	13
<p>The impact of climate change on permanent crops in an Alpine region: A Ricardian analysis</p> <p>Maria De Salvo, ... Riccarda Moser <i>Agricultural Systems</i></p>	2013	1.156755	38

Figure 4. Similar Papers section displaying citation-based related articles with similarity scores and bibliometric details

The Similar Papers feature (Figure 4) relates articles using algorithmic measures of similarity based on shared references, co-citation patterns, and citation linkages. Themes are not explicitly generated. Instead, thematic relationships emerge from clusters of closely connected publications within the citation network, which researchers interpret during the literature exploration process. Thus, thematic clustering reflects citation-based relatedness rather than keyword-driven subject categorization.

Most Important Papers

These are the "Most Important" papers as ranked by PageRank. These tend to be the older papers in the field.

	published_year	num_cited_by	page_rank
Deleted Work	1955	4145	215.089353
On the Principles of Political Economy, and Taxation David Ricardo	2014	2219	193.02681
Climate Change 2013 – The Physical Science Basis Cambridge University Press eBooks	2014	2130	120.568469
Climate change 2007: impacts, adaptation and vulnerability Martin L. Parry, ... Clair Hanson Cambridge University Press eBooks	2007	2373	92.9904
Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental	2007	424	77.991516

Review Papers

These papers cite the most papers present in the graph. As a result, there is a high likelihood that these papers are review papers.

	num_citing	published_year	num_cited_by
CO2 capture and storage: A way forward for sustainable environment Muhammad Naveed Anwar ... Abdul-Sattar Nizami Journal of Environmental Management	131	2018	243
Sustainable development and pollution: the effects of CO2 emission on population growth, food production, economic development, and energy consumption in Pakistan Abdul Rehman, ... Recep Ulucak Environmental Science and Pollution Research	95	2021	191

Figure 5. Most Important and Review Papers sections highlighting influential and highly cited publications within the citation network

The ranking of Most Important Papers and Review Papers in Figure 5 provides a curated list of high-impact review papers, enabling targeted, summarized readings for foundational knowledge. While most important papers are identified based on citation influence within the network, review papers represent a publication type that synthesizes existing research; the two categories may overlap when review articles achieve high citation impact. Deleted work typically refers to publications that have been removed or are no longer actively indexed in the database.

Recent Papers by the Top 100 Authors

	adamic_adar	num_cited_by	published_year
Addition of longer wavelength absorbing chlorophylls into crops could increase their photosynthetic productivity by 26% Yu Wang, ... Stephen P. Long Nature Communications	0.322867	0	2025
Climate Change 2022: Impacts, Adaptation and Vulnerability James J. McCarthy, ... Kasey S. White Climate Change and Law Collection	0	348	2025
Climate Change 2023 Synthesis Report Robert T. Watson, ... David Zhou Climate Change and Law	0	61	2024

The Most Important Recent Papers

	published_year	page_rank	num_cited_by
Climate Change 2022: Impacts, Adaptation and Vulnerability James J. McCarthy, ... Kasey S. White Climate Change and Law Collection	2025	11.204586	348
Climate Change 2023 Synthesis Report Robert T. Watson, ... David Zhou Climate Change and Law Collection	2024	1.715937	61
A comprehensive review of the impacts of climate change on agriculture in Thailand Muhammad Waqas, ... Sarfraz Hashim Farming System	2024	1.050414	27

Figure 6. Recent Papers by Top Authors and Most Important Recent Papers highlighting influential contemporary publications in the citation network

Figure 6 highlights Inciteful's capability to provide macro-level insights into research networks, showcasing ranked lists of recent and important papers, enabling the identification of cutting-edge trends. It presents ranked lists of recent papers by publication date and identifies influential works using citation-based metrics, as reflected in the platform. This feature helps researchers prioritize literature that has demonstrated scholarly impact within the citation network.

Top Authors

This section tries to identify the top authors in the network.

	total_page_rank	num_papers
David Ricardo	193.02681	1
Osvaldo Canziani	61.434486	6
Robert Mendelsohn	60.640754	218
Heinz D. Kurz	39.663307	9
Neri Salvadori	39.652682	9
Martin L. Parry	22.844164	16
William D. Nordhaus	20.321298	12
Susan L. Solomon	19.024289	2
David B. Lobell	17.697954	44
Cynthia Rosenzweig	17.117872	42

Upcoming Authors

This section tries to identify the upcoming authors in the network.

	num_papers	total_page_rank
Toby R. Ault	3	7.204036
Marcus Richter	1	6.771469
Yingjie Wang	1	6.762527
Andrei A. Ivanov	1	6.758296
François Rebaudo	1	6.756515
Aqsa Fayyaz	2	6.622965
Sana Ullah	3	5.084052
Waleed M. Sweileh	6	4.674759
Yuansheng Jiang	25	3.176167
Jan de Vries	19	2.85

Figure 7. Top and Upcoming Authors identified based on publication output and network prominence

The listing in Figure 7 highlights both established prolific authors and emerging researchers in the domain, for identifying experts or potential collaborators.

Institutions

This section tries to identify the top institutions in the network.

	total_page_rank	num_papers
Stanford University	113.594866	126
Yale University	104.826491	202
University of Illinois Urbana-Champaign	86.974835	151
Columbia University	86.630148	103
University of East Anglia	83.249526	102
Potsdam Institute for Climate Impact Research	82.148791	161
International Institute for Applied Systems Analysis	81.012289	114
University of Oxford	79.917652	158
Wageningen University & Research	78.761624	245
Chinese Academy of Sciences	78.155825	288

Top Journals

This section tries to identify the most relevant journals for this research area

	num_papers	total_page_rank
<i>Global Environmental Change</i>	167	131.602613
<i>Climatic Change</i>	316	126.425283
<i>Science</i>	84	117.506322
<i>Environmental Science and Pollution Research</i>	272	92.078473
<i>Proceedings of the National Academy of Sciences</i>	124	91.849943
<i>Nature</i>	90	86.90734
<i>Nature Climate Change</i>	193	85.728051
<i>Agriculture Ecosystems & Environment</i>	128	69.914235
<i>Journal of Cleaner Production</i>	183	67.486825

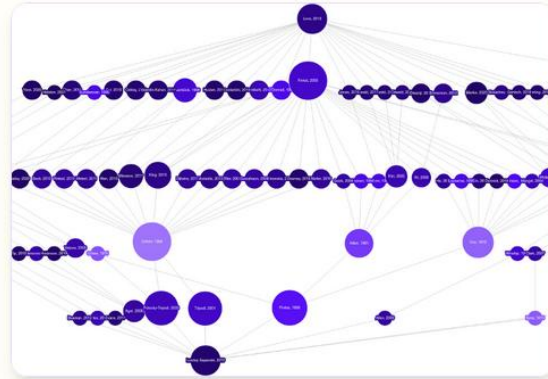
Figure 8. Leading institutions and journals identified within the citation network

The institutional performance metrics in Figure 8 present the leading contributors by total citations and number of papers, offering a broader view of scholarly impact.

Literature Connector

Interested in interdisciplinary studies? Discover how two bodies of literature connect to one another through citations.

Enter two papers and we'll show you the shortest paths between them, let you interact with the graph, and search through the connecting papers. Then send those papers to our Discovery tool to find more relevant literature.



FROM TO

Figure 9. Literature Connector interface illustrating citation pathways between two selected publications

The Literature Connector feature (shown in Figure 9) determines the shortest citation path between two publications by analyzing citation relationships and identifying intermediary papers that link them. This feature shows how knowledge flows between studies, helping researchers trace conceptual development, recognize bridging contributions, and discover relevant literature connecting distinct research areas.

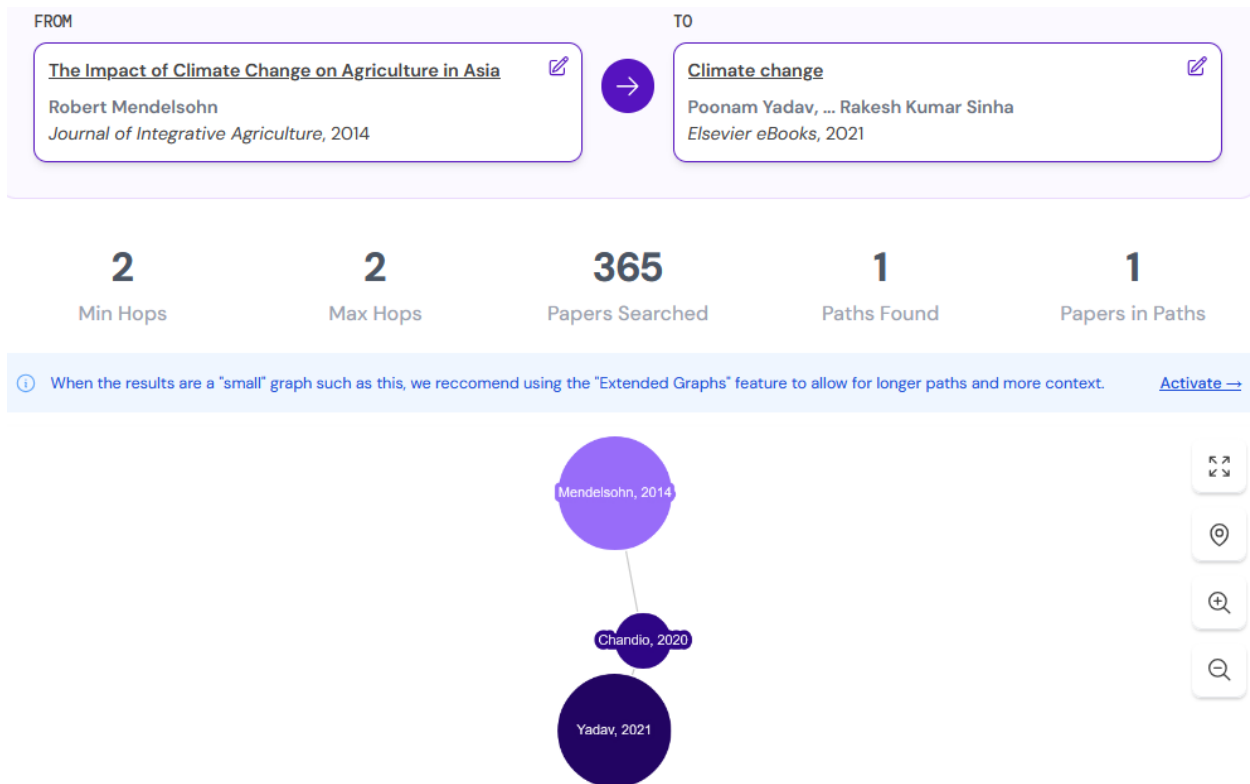


Figure 10. Citation path visualization showing intermediary publications linking two selected papers in the Literature Connector

Figure 10 presents a citation path visualization that maps the connections between two articles, selected for their relevance to the research topic and their potential to illustrate how the Literature Connector identifies citation pathways through intermediary publications. By exploring these linking studies, the visualization enables researchers to trace knowledge, identify influential contributions, and identify relevant literature that bridges conceptual or chronological gaps between the two works. Nodes in the visualization represent publications, while the connecting lines denote citation relationships.

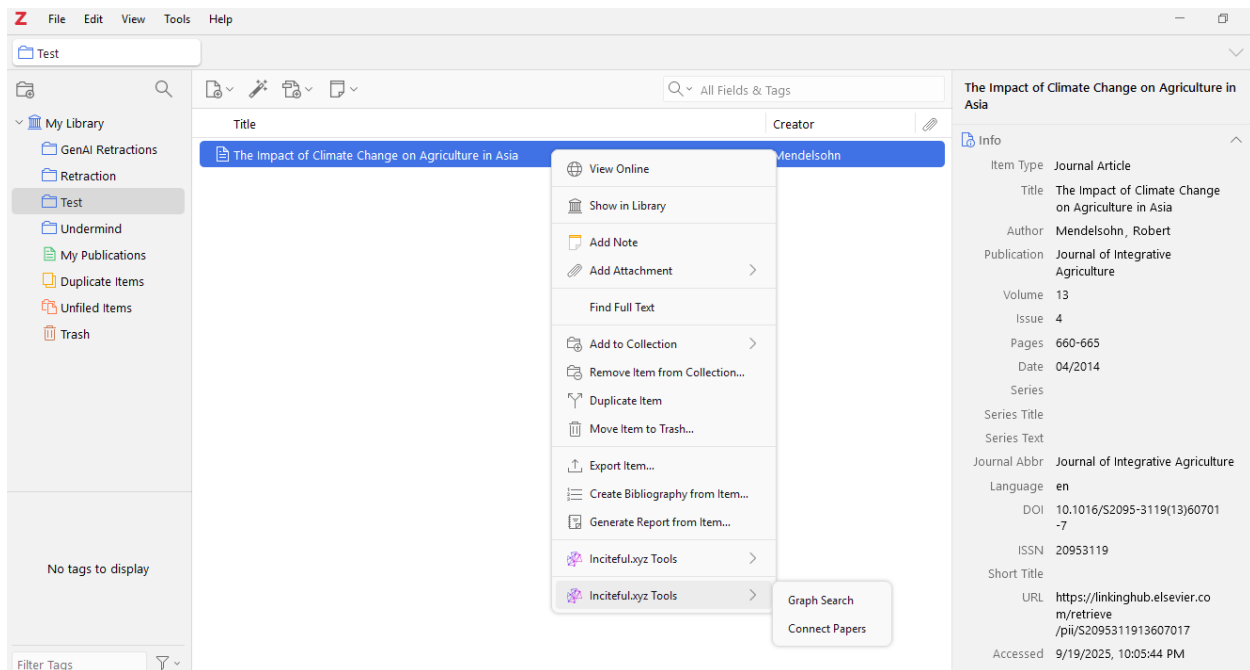


Figure 11. Zotero plugin enabling direct access to Inciteful

The Zotero plugin integrates with Inciteful (Figure 11) enabling researchers to select references from their Zotero library to generate citation networks and explore connections among publications. The Zotero plugin enabling integration with Inciteful is available from <https://github.com/inciteful-xyz/inciteful-zotero-plugin>

Citation networks can be initiated by importing a BibTeX file of selected publications using the 'Import BibTeX' option located below the main search field, allowing these records to serve as seed documents for network generation. Tables with DOI-linked records include an export function that allows downloading bibliographic data in BibTeX format.

Conclusion

Conventional literature search strategies commonly involve keyword-driven retrieval and manual evaluation using bibliographic databases such as Google Scholar, Web of Science, and Scopus. These approaches are effective for locating relevant publications but may benefit from additional methods that reveal citation-based relationships. Inciteful addresses these limitations by integrating citation-network visualizations that reveal relationships among scholarly publications, including direct citations, bibliographic coupling, and co-citation linkages. Inciteful's thematic clustering and citation-driven relevance model may surface semantically or contextually related literature even when the keyword match is weak. It enhances precision in literature exploration by enabling researchers to refine the citation network through seed paper selection, adjusting network depth, and using available filters to narrow results to the most relevant studies. Citation network approaches are intended to complement, rather than replace, bibliographic databases such as Web of Science and Scopus. By presenting citation counts, graph depth, and temporal distribution, Inciteful allows users to understand not only the impact of a single paper but also its structural role within a

broader research ecosystem. The tool's ability to identify similar papers is further strengthened by the principles of bibliographic coupling, where papers sharing common references are algorithmically clustered to reveal topical proximity and emerging research fronts.

Citation network-based literature discovery offers several advantages; however, certain limitations should be acknowledged. The platform relies on openly available bibliographic and citation data sources, and its coverage is therefore dependent on the completeness and accuracy of these sources. Publications that are not comprehensively indexed, including some regional or non-English works, may be underrepresented, potentially affecting the breadth of the generated networks. Additionally, while algorithmic indicators are used to identify related and influential papers, the specific criteria used for similarity and ranking are not fully transparent. The platform also provides limited control over analytical parameters compared to specialized bibliometric databases, requiring researchers to rely primarily on default settings. As citation networks expand, visualizations may become dense, requiring careful refinement to remain interpretable. Importantly, the platform is not intended to replace established bibliographic databases; rather, it complements them by enabling relational exploration of scholarly literature. Further research is warranted to evaluate the effectiveness of Inciteful across diverse disciplines and research contexts.

As academic literature expands rapidly, tools like Inciteful are increasingly vital for efficiently exploring scholarly work. Instead of relying solely on keyword searches, Inciteful leverages citation-based discovery to help users identify key research, reveal connections, and keep pace with new developments across disciplines. The ability to visualize citation relationships benefits multiple academic stakeholders, including researchers seeking influential studies and new topics, and librarians supporting evidence-based research. Inciteful continues to evolve through platform updates documented on its official website.

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