Library Progress International
Vol.44, No.5, Jul-Dec 2024: P. 280-293

Print version ISSN 0970 1052
Online version ISSN 2320 317X

Original Article

Available online at www.bpasjournals.com

Understanding the Dynamics of Retracted AI Publications: A Comprehensive Study

Raj Kumar Mahapatra[1] , Dr. Banalata Pradhan[2] , Satyajit Nayak[3] Dillip Kumar Parida[4*]

[1] PhD Research Scholar, Siksha O Anusandhan University, Bhubaneswar, Odisha- 751030, Email- rrajkumarmahapatra@gmail.com, ORCID ID: https://orcid.org/0009-0004-9435-0286

[2] Librarian, SNIL, Siksha O Anusandhan University, Bhubaneswar, Odisha- 751030, Email- bnp.iter@gmail.com, ORCID ID: https://orcid.org/0000-0003-3703-9788

Technical Assistant, Knowledge Resource Centre, CSIR-Central Road Research Institute, New Delhi-110025, Email ID: satyajitnayak555@gmail.com, ORCID ID: https://orcid.org/0000-0002-3776-4173

[4*] Corresponding Author, Library Information Superintendent, Indian Institute of Technology, Bhubaneswar, Odisha- 752050, Email ID: dillip@iitbbs.ac.in, ORCID ID: https://orcid.org/0000-0003-4270-5650

How to cite this article: Raj Kumar Mahapatra , Dr. Banalata Pradhan , Satyajit Nayak, Dillip Kumar Parida (2024). Understanding the Dynamics of Retracted AI Publications: A Comprehensive Study. *Library Progress International,* 44(5), 280-293

Abstract

This current study accounts for most retracted works in Artificial Intelligence, providing a scientometric analysis to cover detailed trends, causes, and implications of those retracted works. This paper performs a bibliometric analysis of withdrawn papers in the AI domain during 2015-2024, tracing trends, networks of authors, and citation impacts. Data were retrieved using the Web of Science by the keyword "Artificial Intelligence, " a dataset containing 1,147 documents published in 100 journals that demonstrates fantastic annual growth of 39.23%. The mean document age is 2.17 years, indicating the research output is relatively recent and part of a strong citation network made up of 25,351 references. The analysis shows high international collaboration, with 20.05% documents holding international co-authorships. Emergent disciplines include Telecommunications, Computer Science Information Systems, and Engineering, the most represented being the core journals: Computational Intelligence and Neuroscience, adding to the landscape of retracted papers. Local contributors are authors and institutes making numerous impactful contributions; the Egyptian Knowledge Bank and King Abdulaziz University are most prominent. Geographical location wise, the scientific production heavyweights are China, India, and Ethiopia. Keywords like "classification" and "system" are often used, showing the durability of the topics in the contemporary trends of research. Findings The results enable critical insights in the dynamics of retracted AI publications based on their importance towards enhanced research integrity and provide a foundation for future investigations into the continually changing landscape of academic publishing in AI.

Keywords: Retracted; Artificial Intelligence; Research paper; Plagiarism; ethical etc.

Introduction

The Oxford English Dictionary defines a retraction as "the act of withdrawing a statement, accusation, etc. which is now admitted to be erroneous or unjustified recantation; an instance of this; a statement of making such a withdrawal". A careful analysis, (Fang et al., 2012) found that scientific misconduct was found more often in articles withdrawn from the biomedical literature. The US Office of Research Integrity defines scientific misconduct as "fabrication, falsification or plagiarism in proposing, performing or reviewing research or in reporting research results (https://ori.hhs.gov/definition-misconduct). As more retractions are published, so too is the confidence in the scientific validity of not just new research but older research as well. The removal of errant papers from the literature can be done in such a way as to honor the very precepts of science, even while the rate of retraction may point toward changes in scientific behavior.

Retracted articles are scholarly ones that have officially been withdrawn from the corpus of scholarly literature due to reasons that have an effect on their integrity or accuracy. Retraction forms one of the chief measures journals take to create scientific transparency and trust. Papers may be retracted for a variety of reasons, among them intentional misconduct such as data fabrication or falsification. In this modern world, academic misconduct has increasingly been used by some authors to manipulate the way publishing is carried out to gain undeserved success. These authors are energized by career advancement, recognition, or personal satisfaction and exploit the system to publish work that may not meet the standard criteria. With the enormous pressure to publish, as the expectation for high output has increased far more than what was seen in the past decades, some tempt researchers to cut ethical corners to fulfill the growing demands for scientific success. (Ghorbi et al., 2021).

Review of Literature

The literature on retracted articles in AI identifies various crucial concerns about scientific standards and research integrity. Most of the retractions were caused due to ethical violations, including authorship disputes and plagiarism-one of the more common offenses being the use of words or concepts without proper credit. Data integrity violations are problematic especially because they could wear down confidence in the results in applied AI research. With AI models and datasets being complex, repeatability issues are the norm and also pose difficulties in reproducing results for further verification by other researchers. Even cases of peer review fraud have surfaced, showing the level of task that needs to be observed to uphold the high standards and openness required in the fast-evolving field of artificial intelligence. This corpus of retracted publications in order to uphold scientific integrity communicates the imperative necessity to begin with stringent standards of ethics and proper peer-review process. The study deconstructs such retracted publications containing authors from India by dissecting the reasons for retraction, patterns of authorships, time lag, and implications on citations. The results of the study establish that there is a constant rate of retraction per 10,000 papers and plagiarism and duplicate publication are at the top of the list. Within six months, about a third of the publication is retracted, and time to retraction declines, especially for open-access journals. This research can assist librarians as well as researchers in preventing retractions (Kumar, 2024). The retractions in heart studies have gained significant importance, and the largest authors in terms of retractions come from China, USA, and Japan. The reasons for retractions due to honest mistakes, duplicate data, and fabricated data. A general trend of the journal impact factor, citations, and time to retraction witnessed from 2002 to 2022 was declining. An uptrend in retracting publications is coming across. Raising awareness in the scientific community is essential in solving this problem (Sharma, 2024). This paper analyzed Malaysian retracted papers for prevalence, characteristics, and reasons from 2009 to 2017. From 2009 to 2017, 125 publications were retracted: the highest number of retracted publications occurred in 2010 and 2012. Among all the reasons identified for the retraction of the articles; most were due to duplicate publication, plagiarism, compromised peer-review processes, and self-plagiarism. Most retracted articles did not have flawed data, and only two were

accused of scientific mistakes. As a result, retraction was described as an infrequent but possibly increasing issue in Malaysian journals, whose authors and editors had commonly encountered (Aspura et al., 2018). The paper demonstrates that misconduct was responsible for 58.5% of Chemistry articles between 2001-2021, self-plagiarism at 40.5%, and fraud numbered to 36%. Errors and issues not caused by misconduct made up 26% of total retractions (Sevryugina, 2023). The study examines the biomedical journal articles published with an Indian authorship that are withdrawn due to reasons like plagiarism, falsification, fabrication, duplicate publication, conflicts of authors, ethical issues, fake peer-reviews, and matters of data. Overall, the paper concluded that retractions were a very small percentage of total publications but had risen over the general trend in recent years. The causes of retractions are plagiarism, with 27%, falsification and fabrication, accounting for 26%, duplicate publication, 21%, wrong data, 12%, authorship issues account for 4%, fake-peer reviews account for 3%, and the rest stemmed from ethical and funding issues at 2%. The increase in retractions sparks very serious questions over research quality and wastage of resources whenever fundraising is scarce (Sharma et al., 2023).

Methodology

The use of a bibliometric approach was undertaken in order to analyze the retracted papers based on Artificial Intelligence, covering a specific time range. Literature search has been conducted using the source database Web of Science with the keyword "Artificial Intelligence" in order to capture relevant publication. Result filtered down to only those papers published between 2015 and 2024 and only in English for consistency to ease analysis.

Subsequently, the extracted data was exported and analyzed using R software and Microsoft Excel. Statistical advanced analysis, trend visualization, and network mapping by utilizing R was adopted to understand retraction patterns of AI papers through some aspects including trends in publication, authorship networks, and citation impacts. To derive the primary outcomes of retraction, main findings, frequency of retractions, causes, and their respective distribution across AI research domains, Microsoft Excel was used in the initial cleaning of data, descriptive analysis, and tabulation. It was, hence, possible to have an in-depth understanding of the characteristics and changes of the withdrawn AI publication for the period in question.

Objectives

The objective of this research is to provide a comprehensive scientometric analysis of retracted research papers in AI published in the last decade. It identifies trends in the frequency and growth of retractions, primary reasons behind the retractions, such as ethical misconduct, plagiarism, data manipulation, or technical errors, and examines the influence of these retractions on the AI research community using citation analysis both before and after retraction. It will examine patterns of authorship, institutional affiliations, and geographic distributions to see if such concentrations exist and whether those patterns differ among AI.What Are the Implications of the Retracted Papers?

- What are the Most Retraced Subjects areas?
- How Do retraced Publication affect Citation Rates?
- How to Identify Core Journals in Scientific Research?
- What Factors Contribute to High Citation Counts on retraced papers?
- Which authors are more retraced papers?
- Who are the most local cited authors?
- Which Author Productivity through Lotka's Law of retraced papers?

- Who are the authors and their contributions on retraction?
- Which institutes has more retraced papers?
- Which countries has most retraced papers?
- Which country has more cited papers on retraction?
- What are the most frequent keywords and most collaborative countries on retraction?

Data Analysis

Figure1 summarizes the number of retracted papers contained in the dataset accumulated between 2015 and 2024, consisting of 1,147 documents from 100 journals and books. The growth rate for this dataset is an impressive 39.23% annually, showing a vast increase in research productivity over these years. With most research being fairly young at a median document age of 2.17 years, it means most of the research is fairly young. The dataset comes in with 25,351 references; apparently, it presents an effective citation network that supports research it advocates. In a contribution to the dataset 2,612 authors have their articles, but for 300, the same author was credited for working on a work. On an average, 2.94 co-authors share the document, and 20.05% of these works involve international co-authorships, which present quite wide international collaborations. Mainly, it consists of articles-with 955 articles-for some retracted publications and reviews. With an average number of citations per document at 3,943, it indicates that the research somehow imparts impact and relevance to the academic arena.

Fig. 1: Summary of Research Publication Metrics (2015–2024)

Mostly retracted papers over the different discipline

Figure 2 represents the most retraced researched subjects with quantity in the number of publications in each field. Special attention was paid to the field of Telecommunications having 345 papers altogether. The spotlights a deep interest and wide exploration in the mentioned field. Computer Science Information Systems takes second position with 330 publications, demarcating an importance of information systems arising in both tech and business fields. Engineering, in general, and Electrical and Electronic specifically stands at 289, while Mathematical Computational Biology offers an impressive 200, and Neurosciences 161. These fields represent key points of interdisciplinary research in the comprehension of complex biological systems and brain functions. In total, Mathematics Interdisciplinary Applications amounts to 85 entries. Computer Science Artificial Intelligence ranks second closest to 70 with indicated strong focus on research in AI. Health Care Sciences Services and Instrumentation each have 67, showing significance of health care and instrumentation research. Last

but not least, Engineering Multidisciplinary has 58 retracted publications representing a collaborative discipline conducting engineering research across broader field boundaries.

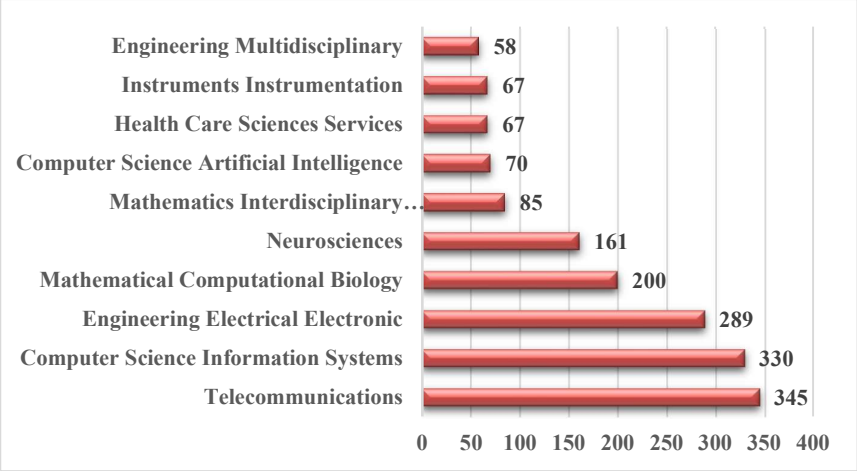

Fig. 2: Distribution of published papers across research disciplines

Mean Annual Citations

Table 1 provides a comprehensive analysis of citation patterns, offering insight into the academic importance and influence of documents over time. In 2015, even though only three retraced documents were published, the average citations per article reached an impressive figure of 64.67, underscoring the notable effect of these articles. In the following years, the average citations per article experienced sharp fluctuations while peaking at 12.10 citations per article in 2020 with the steep rise in the numbers of publication at 41, which actually results from the increasing demand in the research fields at the time. The data shows a decline in the average citations in the following years: with an average of 2. 91 per article in 2022 and further dropping to 1. 13 in 2023, which must be taken as caused by typical citation lag from the younger publications. The table represents the dynamics of academic citations with shifts in them and indicates that the true estimation of scholarly influence over the years should not be neglected, to take into account both the number of published works and the effectiveness of citations.

Table 1: Yearly Citation Metrics and Publication Trends (2015–2024)

Year	Mean TC/Art.	NP	Mean TC/Year	Citable Years
2015	64.67	3	6.47	10
2016	4.50	2	0.50	9
2017	11.00	4	1.38	8
2018	3.00	9	0.43	7
2019	3.90	10	0.65	6
2020	12.10	41	2.42	5
2021	7.18	214	1.79	4
2022	2.91	705	0.97	3
2023	1.13	100	0.56	2
2024	0.22	59	0.22	1

Core Sources by Bradford's Law

Table 2 here illustrates the occurrence of scientific journals' production with regard to Bradford's Law, where there is a concentration of output of research in a few core journals. These journals have been assorted into different zones according to the use of their production. Zone 1 constitutes the highest prolific journals whose total number of articles produced are of high number. Computational Intelligence and Neuroscience emerged as the most frequently cited source with 159 articles, therefore making it very important by topping the list. Zone 2, which harbors journals like Journal of Healthcare Engineering and Journal of Sensors, holding 67 and 64 articles, respectively, also happens to make them important but with a less observable contribution compared to core journals.

Table 2: Top 10 Journals by Publication Frequency and Their Zones

Source Title	Rank	Freq.	Cum. Freq.	Zone
Computational Intelligence and Neuroscience	1	159	159	Zone 1
Wireless Communications & Mobile Computing	2	123	282	Zone 1
Security and Communication Networks	3	116	398	Zone 1
Journal of Healthcare Engineering	4	67	465	Zone 2
Journal of Sensors	5	64	529	Zone 2
Mobile Information Systems	6	61	590	Zone 2
Mathematical Problems in Engineering	7	49	639	Zone 2
Applied Bionics and Biomechanics	8	42	681	Zone 2
Computational and Mathematical Methods in Medicine	9	40	721	Zone 2
Journal of Environmental and Public Health	10	38	759	Zone 2

Sources' Local Impact

Table 3 shows that the journal Computational Intelligence and Neuroscience has an h-index of 12. This means that at least 12 of its works published have had no less than 12 times a citation, making it reveal considerably high impact held in the domain. Of greater significance is the g-index that stands at 17. This underlines the breadth of interest the frequently cited articles have attracted, complementing a robust citation record. The m-index value at the moment is 1. 714 derived from the division of the h-index by the number of years that have elapsed since its birth in 2018 clearly signifies one coming from a large and increasing influence considering age. The journal received a total of 553 citations coming from 159 articles, which is an implication of high contribution in diffusing research. On the other hand, the Journal of Healthcare Engineering earned an h-index of 11 and a g-index of 17, after garnering a total of 430 citations from 67 articles.

Table 3: Journal Metrics Overview: h-index, g-index, m-index and Research Output

Source	h_index	g_index	m_index	TC	NP	PY_start
Computational Intelligence and Neuroscience	12	17	1.714	553	159	2018
Journal of Healthcare Engineering	11	17	2.2	430	67	2020
Mathematical Problems in Engineering	8	14	1.6	256	49	2020
Computational and Mathematical Methods In Medicine	7	13	1.75	215	40	2021
Journal of Ambient Intelligence and Humanized Computing	7	13	1.75	173	14	2021
Applied Bionics and Biomechanics	6	14	1.2	217	42	2020

Biomed Research International	6	18	2	333	20	2022
Complexity	6	9	1.2	106	23	2020
Security and Communication Networks	6	9	1.5	184	116	2021
Wireless Communications & Mobile Computing	6	8	1.2	201	123	2020

Most Relevant Authors

Figure 3 shows the most relevant authors with significant contributions in their area of specialty and metrics that describe the number of articles and the amount of impact the work has. Wang J is a well-known author who published 12 articles. The fractional count was found to be 4. 33, representing a high publication number and commitment. The authors, Li J and Li Y, have 11 articles. The fractional scores of 3 should be included. Please write this in a formal tone by adding line breaks at points 88 and 4. Ninety-five people excel in productivity and other features related to academic excellence. Among the prominent authors is Wang Y, who has published 11 articles with a fractional count of 5, and Wang L, who has published nine articles with a fractional count of 3. It unveils the massive incidence of authors whose surname is Wang in this data set.

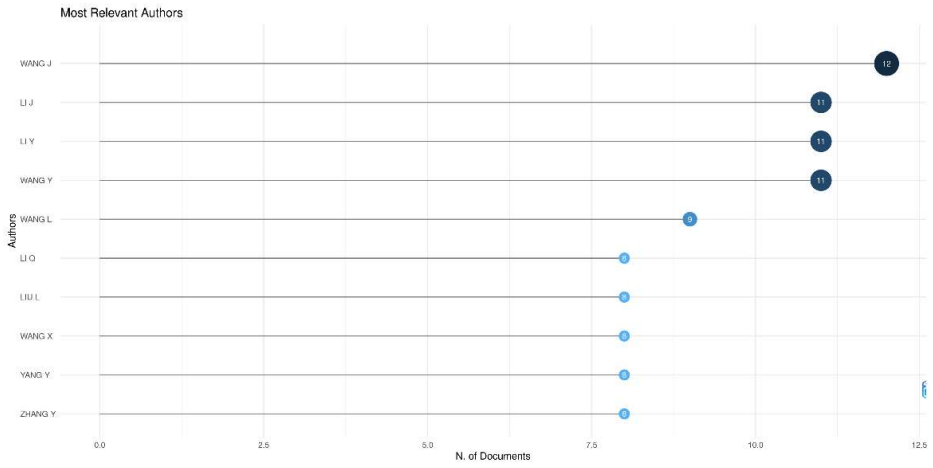

Fig. 3: Most Relevant Authors Based on Number of Documents Published

Most Local Cited Authors

Figure 4 depicts authors whose work has been widely cited in regional fields where the authors are acknowledged to be particularly prestigious within their academic domains. This score reflects how often a writer's academic works are referenced by other authors of the same subject or location as a testament to their power and authority in regional scholarship circles. The first of these is Khadidos A with 8 citations in local context, which suggests that her work profoundly shapes her peers, perhaps because of its relevance and novelty for the topics discussed by the concerned community. Ajay P, Ananthi P, Huang RH, Jia LQ, Kumar RA, Li LS are the other authors coming after them and garner six citations within the local academic circles. This is an excellent indication of the level of interest in their work within the local academic circles. The citation volumes show that the authors are not just producing quality research outputs but also altering the academic environment in their particular discipline. Presence of a large number of authors with nearly equivalent numbers of citations is an indicator that it is a team- oriented environment that provides space for sharing ideas and developing

the thoughts to hold a healthy academic atmosphere. Furthermore, Alazzam MB has accrued five local citations.

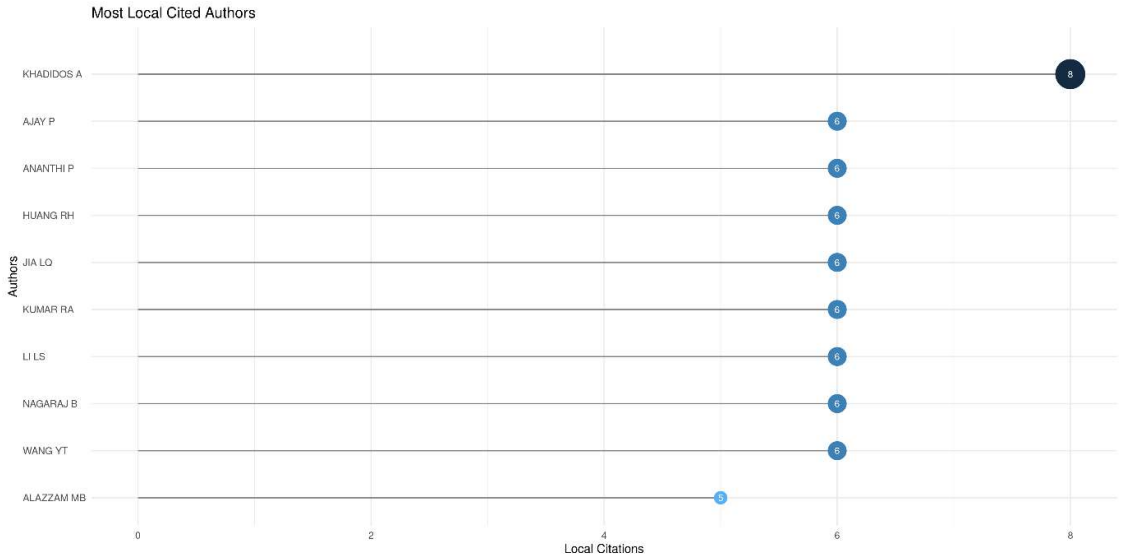

Fig. 4: Most Local Cited Authors Based on Number of Local Citations

Author Productivity through Lotka's Law

Table 4 reflects the distribution of output by authors, as described by Lotka's Law, which assumes that most documents in a field are produced by a minority of authors. Such an analysis makes it clear whether there exists a trend in the academic landscape since 2,131 authors published only one document, which constitutes 81.6% of the total. This indicates that there are contributions from ad hoc authors whose work is not a full-time activity. However, 355 authors representing 13.6% have produced two documents; therefore, the contributing frequency is moderate. Based on the number of productions, it significantly decreases: only 71 authors who are 2.7% have produced three documents and only 21 authors who are 0.8% have authored four. The decline in these figures remains so steep that 10 authors (0.4%) have published five documents, and an even smaller amount published more extensively—4 authors (0.2%) have written seven documents, and 5 authors (0.2%) have produced eight.

Table 4: Distribution of Authors by Number of Documents Written

Documents written	N. of Authors	Proportion of Authors
1	2131	0.816
2	355	0.136
3	71	0.027
4	21	0.008
5	10	0.004
6	10	0.004
7	4	0.002
8	5	0.002
9	1	0
11	3	0.001
12	1	0

Authors' Local Impact

Table 5 analysis outlines different influences among authors as well as their contribution to the field. This exceptional h-index and g-index are 6 while m-index is at 1.5 by Alazzam MB. This mirrors strong and consistent influence since 2021 with a total of 105 citations from 6 publications. Kotecha K ranks second with an h-index of 4, accumulating a total of 48 citations from 4 publications, thus showing a rising influence in the scientist's area of research. Similarly, Li Q has an h-index of 4 with 24 total citations from 8 published articles, thus being more productive than the sum of their citations. Koundal D ranked first in terms of total number of citations in this category with 267 total citations from 4 published articles.

Table 5: Authors Local Impact: h-index, g-index, m-index and Research Output

Author	h_index	g_index	m_index	TC	NP	PY_start
Alazzam Mb	6	6	1.5	105	6	2021
Kotecha K	4	4	1	48	4	2021
Li Q	4	4	1	24	8	2021
Alshawwa Sz	3	3	1	41	3	2022
Chen W	3	6	0.75	36	6	2021
Kadry S	3	4	0.75	49	4	2021
Koundal D	3	4	1	267	4	2022
Li H	3	4	0.6	17	6	2020
Li J	3	4	0.75	23	11	2021
Li Y	3	3	1	13	11	2022

Most relevant affiliations

Figure 5 shows that the EKB leads with 25 articles, which emphasizes the importance of its contribution toward the improvement of output in terms of quality of research. King Abdulaziz University produced 25 articles, which also reinforced its strong academic status. Taif University produced 23 articles, whilst King Saud University and Prince Sattam Bin Abdulaziz University have produced 17 and 14 articles, respectively. Wuhan University of Science and Technology and SRM Institute of Science and Technology Chennai have published 13 and 12 articles, respectively that, in good faith contributions and participation to the research community.

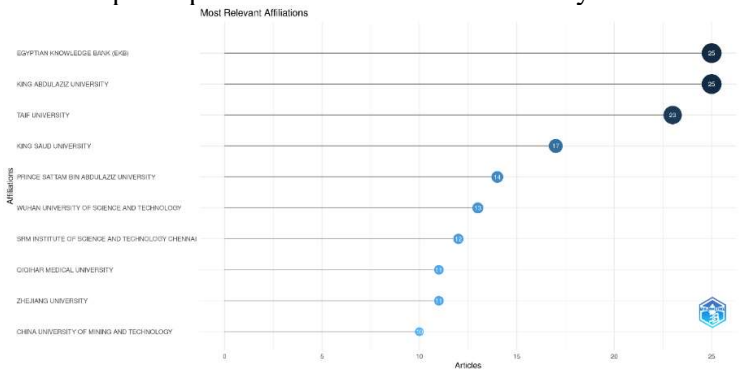

Fig. 5: Most Relevant Affiliations Based on Number of Documents

Countries' Scientific Production

Figure 6 illustrates the number of scientific articles published by various nations. China is way ahead in these publications, with 1,491 such works; India has 348, while Saudi Arabia has contributed 129. Pakistan and South Korea have produced 57 and 43, respectively. Significant contributors have also been Ethiopia, with 40; Egypt, with 38; and Malaysia, with 35 publications. Furthermore, Iraq, the

UK, and many other countries are represented, so that 30 articles originate from Iraq and 25 from the UK in a very kind of way, with plenty of diversity of contributions from different countries.

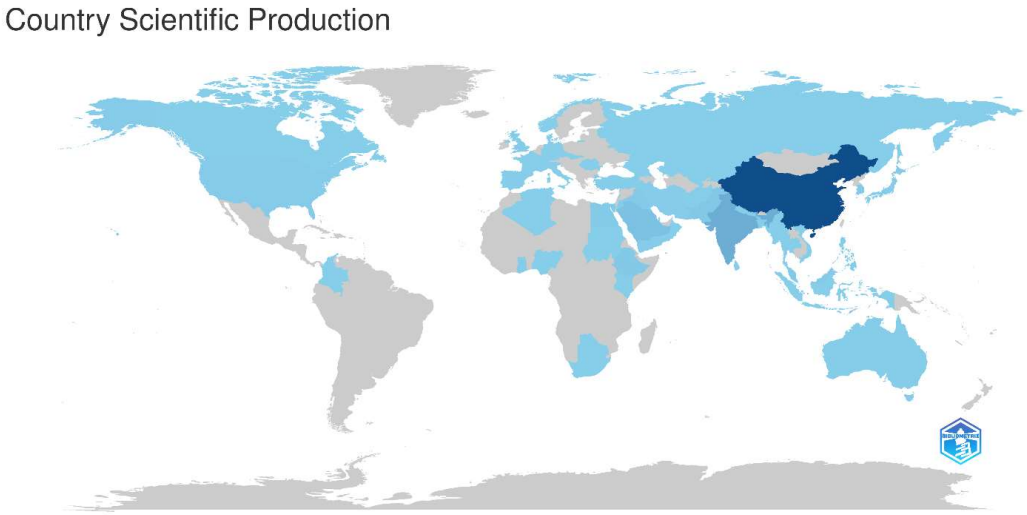

Fig. 6: Country-wise Scientific Publications

Most Cited Countries

From the Figure 7, it is evident that different countries rank based on the average citations per article and the total number of citations. China tops with 2,094 total citations and average citations ranging from 2 to 60 per article. India, with a total of 481 citations and averaging between 10 and 70 citations per article, has demonstrable influence, especially given the levels of production. The third country is Ethiopia which has a total of 405 citations and an average 11-90 per article. Turkey has 247 by an impressive average of 82. 30 per article citation. Saudi Arabia has 249 total citations with an average of 10. 40 per article. The chart also offers a range of overall and average citation statistics for other countries such as Bangladesh, Malaysia, Pakistan, South Korea, and Egypt, among others.

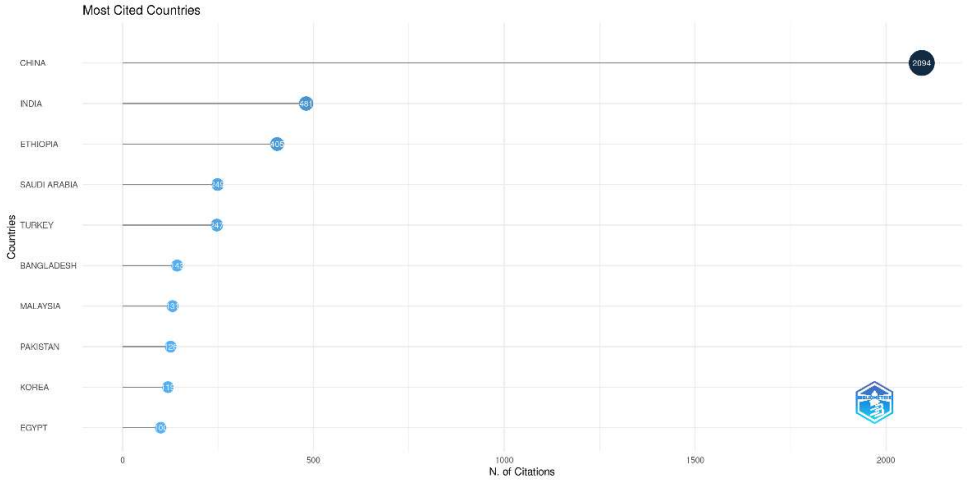

Fig. 7: Most Cited Countries Based on Number of Citations

Most Frequent keywords

Figure 8 shows the illustration of words captures the relative frequency of certain terms in scholarly literature and also their emergence with respect to the current trends of research. The term "artificial intelligence" has emerged 43 times in 2022 signifying increasing relevance in streams. However, the terms "system" is also a very common term and appears 42 times during the year. The term "classification" also reoccurs 28 times underlines that as a critical term in the sphere of machine learning and data analysis. Further key terms that reflect their emergent significance in computing research are the terms "prediction" and "algorithm appearing 23 times and cited 18 times respectively.

Fig. 8: Word Cloud of Most Frequent Keywords

Clustering by Coupling

Table 6 represents the relationships based on categorization into the essential areas and their frequent occurrences between the respective fields. The word "classification" in this group occurs in 62. 5% of the cases. Therefore, the importance rate in present day research has a high relation with its value. The Deep category, which holds a percentage confidence level of 66%, ranks second, which in turn indicates that the training also had a higher emphasis on deep learning. The Disease cluster has a confidence of perfect 100 percent, so it plays an important position in health studies. Other important clusters include "Design" with an 81% confidence and "Optimization" with a perfect 100% confidence, which depict significant research fields of creativity as well as effectiveness. The word "artificial intelligence" has a frequency of 11.1 percent, so it holds high importance in different applications.

Table 6: Topic Group Analysis with Frequency, Centrality, and Impact Metrics

Label	Group	Freq	Centrality	Impact	Color
classification - conf 62.5% deep - conf 66.7% disease - conf 100%	1	24	0.339	1	#E41A1C80
design - conf 81.8% internet - conf 75% optimization - conf 100%	2	88	0.43	1	#377EB880
artificial-intelligence - conf 11.1% special-issue - conf 66.7% convolutional neural-network - conf 50%	3	22	0.346	0	#4DAF4A80
artificial-intelligence - conf 11.1% system - conf 21.4% performance - conf 66.7%	4	39	0.329	0	#984EA380
ct - conf 100% pet/ct - conf 66.7% prediction - conf 28.6%	5	19	0.347	0	#FF7F0080
classification - conf 12.5% cloud - conf 50% future - conf 50%	6	5	0.296	0	#A6562880
implementation - conf 100% monitoring-system - conf 100% outcomes - conf 100%	7	6	0.187	0	#F781BF80

Label	Group	Freq	Centrality	Impact	Color
artificial-intelligence - conf 44.4% virtual-reality - conf 100% education - conf 66.7%	8	24	0.459	3.757	#99999980
forensic importance - conf 100% artificial-intelligence - conf 11.1% system - conf 14.3%	9	20	0.636	0	#66C2A580

Collaboration Network

Figure 9 captures the collaborative relations among nations and provides a quantitative measure of the contributions of each nation in scientific research. China is crucial in this network with a score of 393.849 in betweenness centrality, and this underlines its substantial contribution in science, as it promotes collaboration and also connects different groups of researchers together. Pakistan takes a central but small role in the network by conducting relationship promotion because it has a betweenness score of 87 points 095. The leader with limited but meaningful cooperative interactions are South Korea, Egypt, Malaysia and the United Kingdom, each having a betweenness score of 8.369, 2.193, 34.362 and 5.003 respectively. The United States is a prominent player in the network by scoring 18.27 on the betweenness scores. This relative power and connectivity is further reflected in their proximity and PageRank scores, which place China first on both of those metrics, followed closely by South Korea and Pakistan.

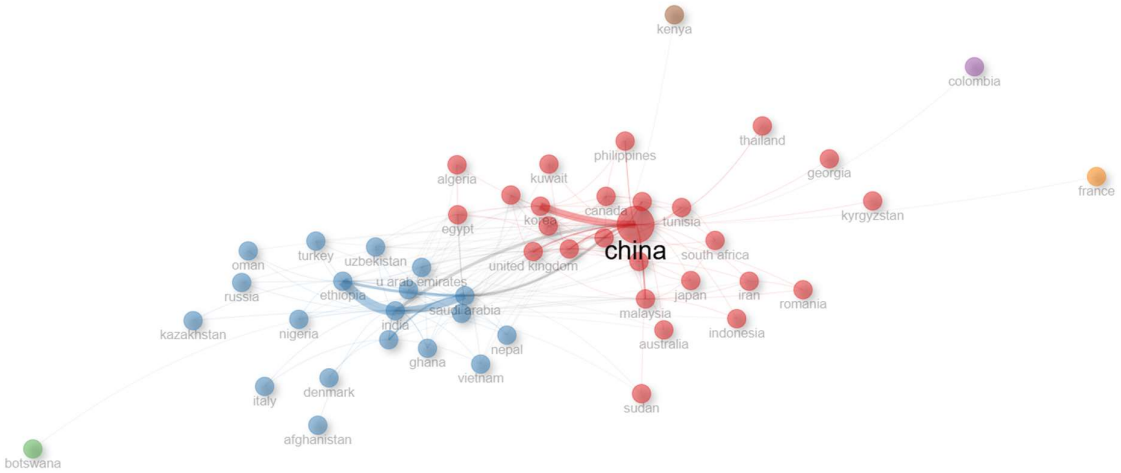

Fig. 9: Collaboration Network

Conclusion

With this, the thorough analysis of withdrawn papers in the Artificial Intelligence field obtains significant trends and dynamics. The database consists of 1,147 documents and was published between 2015 to 2024; thus, it shows outstanding annual growth of 39.23%. Analysis The great interdisciplinary of AI research is also pointed out through intense research contributions from Telecommunications, Computer Science, and Engineering. So, the citation patterns express a global collaboration vigorously innovative and full of knowledge exchange with geographical distribution of authors and affiliations. The ones that are stepping out in front of all others in terms of the volume of publications and citation impact are countries like China and India, indicating their important place in determining the future and course of AI research. In the complexity surrounding scientific research and its impact, understanding the reasons behind retraction and the nature of authorship with proper guidance for the better research integrity and accountability is the requirement. This study also

provides a good value in the quest for finding insights in how researchers, policymakers, and academic institutions might strive to understand and improve the research in this domain of Artificial Intelligence.

Declarations

Conflict of interest: All authors declare that there is no conflict in interest or financial or non-financial interests that are directly or indirectly related to the work submitted for publication.

References

1. Aspura, M. K. Y. I., Noorhidawati, A., & Abrizah, A. (2018). An analysis of Malaysian retracted papers: Misconduct or mistakes? *Scientometrics*, *115*(3), 1315–1328. https://doi.org/10.1007/s11192-018-2720-z
2. Elango, B. (2021). Retracted articles in the biomedical literature from Indian authors. *Scientometrics*, *126*(5), 3965–3981. https://doi.org/10.1007/s11192-021-03895-1
3. Fang, F. C., & Casadevall, A. (2011). Retracted Science and the Retraction Index. *Infection and Immunity*, *79*(10), 3855–3859. https://doi.org/10.1128/iai.05661-11
4. Ghorbi, A., Fazeli-Varzaneh, M., Ghaderi-Azad, E., Ausloos, M., & Kozak, M. (2021). Retracted papers by Iranian authors: causes, journals, time lags, affiliations, collaborations. *Scientometrics*, *126*(9), 7351–7371. https://doi.org/10.1007/s11192-021-04104-9
5. https://ori.hhs.gov/definition-misconduct
6. https://www.webofscience.com/ (Data extracted on 06.11.2024, 4.38pm)
7. Kumar, A., & Siwach, A. K. (2024). Analysis of Indian Retracted Publications: A Study Based on Scopus Data. *The Serials Librarian*, *0*(0), 1–14. https://doi.org/10.1080/0361526X.2024.2306396
8. Mohamed, A., & Maher, A. (2023). A bibliometric study of article retractions in technology fields in developing economies countries. *Scientometrics*, *128*(11), 6047–6083. https://doi.org/10.1007/s11192-023-04823-1
9. R software
10. Sebo, P. (2023). Retractions in primary care journals (2000–2022). *Scientometrics*, *128*(12), 6739–6760. https://doi.org/10.1007/s11192-023-04850-y
11. Sevryugina, Y., & Jimenez, R. (2023). Analysis of Retracted Manuscripts in Chemistry: Errors vs Misconduct. *ACS Omega*, *8*(35), 31568–31574. https://doi.org/10.1021/acsomega.3c03689
12. Sharma, A., Karavadi, V., Suresh, H., Balasubramanian, S., Singh, P., Walia, P., & Venkatesh, U. (2024). An analysis of retracted studies in cardiology in the last two decades. *Future Cardiology*, *20*(9), 471–477. https://doi.org/10.1080/14796678.2024.2370698

13. Sharma, P., Sharma, B., Reza, A., Inampudi, K. K., & Dhamija, R. K. (2023). A systematic review of retractions in biomedical research publications: reasons for retractions and their citations in Indian affiliations. *Humanities and Social Sciences Communications*, *10*(1), 1–12. https://doi.org/10.1057/s41599-023-02095-x
14. Sharma, P., Sharma, B., Reza, A., Inampudi, K. K., & Dhamija, R. K. (2023). A systematic review of retractions in biomedical research publications: Reasons for retractions and their citations in Indian affiliations. *Humanities and Social Sciences Communications*, *10*(1), 1–12. https://doi.org/10.1057/s41599-023-02095-x
15. Shepperd, M., & Yousefi, L. (2023). *An analysis of retracted papers in Computer Science. 18*(5), e0285383–e0285383. https://doi.org/10.1371/journal.pone.0285383 (Shepperd & Yousefi, 2023)
16. Siva, N., & Rajendran, P. (2023). Retracted publications in BRICS countries: an analytical study. *Scientometrics*, *128*(12), 6313–6333. https://doi.org/10.1007/s11192-023-04856-6
17. Vuong, Q.-H., La, V.-P., Ho, M.-T., Vuong, T.-T., & Ho, M.-T. (2020). Characteristics of retracted articles based on retraction data from online sources through February 2019. *Science Editing*, *7*(1), 34–44. https://doi.org/10.6087/kcse.187