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Online Attention and Scholarly Impact of Artificial Intelligence Related Research: An Altmetric Citation Analysis

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ABSTRACT

This study investigates the online visibility and scholarly impact of Artificial Intelligence (AI) research using Altmetric Attention Scores (AAS) and citation data. A total of 456 peer-reviewed AI-related journal articles published between 2020 and 2024 were collected from the Dimensions database using the following Field of Research (FoR) codes 4602 (Artificial Intelligence), 4611 (Machine Learning), and 4603 (Computer Vision and Multimedia Computation). Altmetric.com was used to retrieve AAS and major source-level engagement indicators, including Twitter (X), Mendeley readers, news mentions, blogs, Wikipedia, Facebook, Reddit, and policy documents. The datasets were merged using DOI as the unique identifier, and all analyses were conducted using Microsoft Excel, Python, and SPSS. The findings show that AI research received substantial online attention, with AAS values ranging from 190 to 3501 and a clear upward trend from 2020 to 2024. Twitter and Mendeley emerged as the dominant contributors to online visibility, jointly accounting for more than 90% of total mentions. Journals such as Nature, Science, and Nature Computational Science recorded the highest mean AAS, indicating strong engagement with articles published in high-impact venues. A Spearman correlation analysis revealed a weak but statistically significant positive relationship between AAS and citation counts ($\rho = 0.197$, $p < 0.001$), suggesting that while online attention and academic citations are related, they represent distinct dimensions of research impact. Overall, the study highlights the growing online presence of AI research and emphasizes the complementary value of altmetrics in understanding broader societal and digital engagement beyond traditional citations.

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KEYWORDS: Artificial Intelligence; Online Attention; Altmetrics; Social Media Metrics; Citation Analysis; Research Visibility.

1. INTRODUCTION

The rapid growth of digital communication technologies has transformed the ways in which scholarly knowledge is disseminated, accessed, and evaluated. Traditional citation-based indicators, though widely used, often suffer from limitations such as long citation accumulation times, uneven field coverage, and restricted insight into public

engagement with research (Bornmann & Daniel, 2008; Moed, 2005). With the expansion of social media platforms, online news outlets, blogs, and digital repositories, new opportunities have emerged to measure the broader visibility and attention that scholarly works receive beyond academic citation systems. This evolving landscape has given rise to altmetrics, a term introduced by Priem et al. (2011) which captures online attention to scholarly outputs through metrics derived from social media, policy documents, blogs, mainstream news, online reference managers, and collaborative platforms.

Altmetrics offer an alternative window into wider public and scholarly reception of research work, possibly providing insight into science communication, social impact, and knowledge dissemination (Priem, 2013; Sugimoto et al., 2017). Unlike the drip-drip of conventional citations, which collect progressively as a product of academic recognition, then altmetrics can measure initial attention to research productivities and their distributions through actual societies – policy circles, developers, practitioners in the clinic or industry, educators etc., and the 'concerned public' itself (Haustein, 2016). The migration of scholarly communication into digital media is making altmetrics necessary as an indicator for the spread of scientific knowledge on the Internet (Bornmann, 2014).

Artificial Intelligence (AI) represents one of the fastest-growing and most socially influential domains in contemporary science and technology. Research in AI spans various subfields—including machine learning, natural language processing, computer vision, robotics, and autonomous systems—and has profound implications for multiple sectors such as healthcare, finance, education, governance, and industry (Jordan & Mitchell, 2015; Russell & Norvig, 2022). Due to its societal relevance, ethical concerns, and continuous technological breakthroughs, AI research frequently attracts substantial attention from social media, technology blogs, industry reports, governmental agencies, and global news outlets. This makes AI an ideal domain for analyzing online visibility patterns using altmetrics.

Despite its growing influence, very few empirical studies have specifically examined the online attention and social media visibility of AI scholarly publications. Existing altmetric research has largely focused on fields such as medicine, environmental science, and life sciences (Costas et al., 2015; Thelwall et al., 2013), leaving a gap in understanding how AI research circulates across digital ecosystems. Given the high public interest in AI, its ethical implications, and its ubiquitous presence in digital conversations, analyzing the altmetric attention of AI publications is crucial for mapping how AI-related knowledge is communicated and perceived in broader society.
This study aims to address this gap by examining the social media visibility of Artificial Intelligence (AI) research using altmetric indicators. By integrating data from Altmetric.com and citation records from Dimensions, the study explores patterns of online engagement, identifies platforms contributing most to AI research visibility, and investigates the relationship between altmetric attention and scholarly citations. The findings are expected to contribute to the understanding of digital scholarly communication in AI, offering insights for researchers, librarians, policymakers, and science communicators interested in tracking the broader impact of emerging technologies.

2. RESEARCH QUESTIONS

1) To what extent is AI research visible on social media, measured by Altmetric Attention Scores?
2) Where is altmetric attention to AI publications mostly influenced by online sources?

3) What can be learned from the correlation between AI altmetric attention and scholarly citations in Dimensions?
4) How does online visibility evolve over publication years and AI research journals?

3. REVIEW OF LITERATURE

The literature on altmetrics and scholarly communication has expanded significantly in the past decade, reflecting growing academic interest in understanding how research outputs gain visibility and influence within digital environments. This section reviews prior studies in four broad areas: (1) the evolution and conceptual foundations of altmetrics, (2) empirical studies measuring online visibility of scientific research, (3) altmetric–citation relationships, and (4) studies focused on Artificial Intelligence (AI) and related technological domains.

3.1 Altmetrics: Origins, Evolution, and Concepts

The concept of Altmetrics was first coined by Priem et al., (2011). The altmetrics platform advocates for a shift from traditional citation analysis to alternative metrics that capture the diverse ways in which research outputs are utilized online. Unlike traditional bibliometric periods, which depend on on citations accrued over many years, Altmetrics capture nearly instant indication of attention from sites such as news media, X, Wikipedia, blogs, and reference managers like Mendeley (Priem, 2013) etc. Few researchers have suggested that altmetrics and citation-based indicators can complement each other, rather than the latter replacing the former as a means to measure early and broader societal impact (Bornmann, 2014; Sugimoto et al., 2017). Haustein (2016) pointed out few challenges that altmetrics research had to face, such as data collection and platform dependency, or the interpretability of social attention metrics. A significant expansion of the reach, scope, and visibility of altmetric data. However, made the use of large-scale indicators possible beyond scholarly dashboards to parallel evaluation systems and science communication strategies.

3.2 Altmetric Studies in Scientific and Technological Fields

Several studies have examined the relative performance of different research areas on Altmetric platforms. Health and medical issues have usually been among the most widely discussed topics on news media websites, in social media, , or in policy documents (Thelwall et al., 2013). Costas et al. (2015) conducted one of the most extensive cross-disciplinary studies, finding that altmetrics density distribution varies markedly by discipline, with the social sciences and biomedical sciences receiving more online attention than physics, mathematics, and engineering. Biotechnology as well as environmental and climate related studies are also areas that produce a high demand in online forums due to their social/ecological importance and public appeal. This variability suggests that topic, audience fit, and public visibility impact altmetric data.

3.3 Relationship Between Altmetrics and Citations

There is a growing literature to investigate the relationship between traditional citation counts and altmetric indicators. Costas et al. (2015) Found weak to moderate correlation between citations and altmetrics particularly Mendeley readership within various subject areas. Thelwall and Wilson (2016) also found that Twitter now X platform lay in the realm of public attention and not academic recognition with only weak correlations with citation counts. Thelwall et al. (2013) stressed that Altmetrics as well as citations represent dimensions of impact scholarly

and societal that should be carefully interpreted. Studies using Dimensions and Altmetric.com has shown that altmetrics can be early indicators of attention but are not good predictors of long-term citation impact (Ortega, 2019). However, Mendeley readership consistently shows stronger associations with citation counts compared to Twitter (X) or news mentions, suggesting that different altmetric sources represent different impact channels (Sugimoto et al., 2017).

3.4 Altmetrics and Artificial Intelligence (AI) Researc*h*

With innovations such as deep learning, machine learning, natural language processing (NLP), autonomous systems, robotics, and Artificial Intelligence (AI) is emerging as an international field of impact in the world today(Jordan & Mitchell, 2015; Russell & Norvig, 2022)). The social impacts of AI, including ethics, automation, privacy, algorithmic fairness and bias, and governance have raised public awareness and policy scrutiny of AI. AI research is even regularly discussed and mentioned in news media, social media, and technology blogs. Despite this high public visibility, comprehensive altmetric analyses of AI research remain limited. Still, it resurfaced and gained popularity with the surprisingly fast rise of social media, which published alternative metric analyses at Internet speed. A study by Fang et al. (2020) observed that AI articles online have received more attention (disproportionate to other areas in computer science), especially on X(Twitter) and within digital media. Another study by Bui et al. (2023) show the growing Altmetric activity related to AI ethics and responsible AI research, demonstrating growing social worries about the deployment of AE.

Yet, the literature is a scattered collection of pieces lacking organization across the journal landscape, spanning multiple years, and receives no immediate attention from online sources. To the best of our knowledge, there has been no comprehensive altmetric study on AI publications that aggregates source data from Altmetric.com and Dimensions. The literature has shown that altmetrics are commonly used in the Health Sciences, Environmental Science, and Social Sciences, but not so much in AI. Although the AI field is one of the most widely discussed areas worldwide, there has been scarce empirical documentation on its online presence, origins of prominent attention, and correlations with citation impact. This lack serves as the motivation for a quantitative study to examine AI research in relation to social media coverage and online influence using Altmetric indexes.

4. METHODOLOGY

A descriptive, quantitative, and analytical research methodology was employed to evaluate artificial intelligence research in terms of its online visibility and scholarly impact, utilizing altmetric indicators and citation-based metrics. Articles data were downloaded from the Dimensions database based on the Field of Research (FoR) codes 4602 (Artificial Intelligence), 4603 (Computer Vision and Multimedia Computation), and 4611 (Machine Learning). Only peer-reviewed journal articles from 2020 to 2024 were considered. Bibliographic details, including DOI, title, year of publication, journal name, and citation counts, was obtained from Dimensions and Altmetric.com was utilized to get the Altmetric Attention Score (AAS) and its main source-wise metrics, including news mentions, Twitter (X) mentions, blog mentions, Facebook shares, Wikipedia entries, Reddit posts, as well as policy papers and Mendeley readership. Data from both databases were integrated based on the DOIs, and all cleaning, standardization, and preliminary calculations were performed using Microsoft Excel. Following a combination of the Altmetric and Dimensions datasets through DOI, a total of 456 records were included in the final analysis for which has both AAS and citation data.

Descriptive statistics of the source-specific contributions, AAS distribution, and journal-level metrics were applied for statistical analysis. A non-normalized distributed Spearman rank-order correlation was employed to test the relationship between citation counts and AAS using SPSS. The relationship between AAS and overall citations was illustrated using a scatter plot with a regression trendline in Microsoft Excel. The study has some limitations: First, only documents indexed in the Dimension databases and monitored by Altmetric were analysed and records without AAS were excluded. Second, the altmetric indicators are dynamic over time, so the results reflect the status of data extraction. Third, we only included significant Altmetric sources, which may not capture attention from less visible sources. Lastly, the study used quantitative measures exclusively, not examining the character or valence of online interaction.

5. DATA ANALYSIS

5.1 Level of Social Media Visibility of AI Related Research

Table 1 Descriptive Statistics of Altmetric Attention Scores (AAS) for AI-Related Research Articles (N = 456)

Statistic	Value
Mean	474.94
Median	312.00
Standard Deviation	443.85
Minimum	190
25th Percentile (Q1)	235.50
75th Percentile (Q3)	483.25
Maximum	3501

The Altmetric Attention Scores (AAS) of the 456 AI research articles exhibit high variability, with values ranging from 190 to 3501. The mean AAS is 474.94, while the median AAS is 312, indicating a positively skewed distribution where a smaller number of articles received exceptionally high online attention. The large standard deviation (443.85) further confirms the uneven distribution of visibility among AI publications. Overall, AI research demonstrates a high level of social media visibility, driven by a subset of highly influential articles.

Table 2. Frequency Distribution of Altmetric Attention Scores

AAS	Frequency	Percent	Valid Percent	Cumulative Percent
193	8	1.8%	1.8%	1.8%
243	7	1.5%	1.5%	3.3%
227	6	1.3%	1.3%	4.6%
233	6	1.3%	1.3%	5.9%
205	6	1.3%	1.3%	7.2%
Valid Total	**33**	**7.2%**	**7.2%**	**7.2%**
Missing	—	**92.8%**	—	—
Total	**456**	**100.0%**	—	—

The frequency distribution shows that only a small number of AAS values appear multiple times, while most scores occur only once, indicating a highly dispersed distribution. The most frequent score was 193 (1.8%), followed by

243 (1.5%) and several scores with six occurrences each. This confirms that AAS values are widely spread across articles, consistent with the skewed nature of altmetric data.

Table 3. Top 10 AI Research Articles with Highest Altmetric Attention Scores

Rank	Title (DOI)	AAS	Citations	Year
1	Discovering faster matrix multiplication algorithms with reinforcement learning (10.1038/s41586-022-05172-4)	3501	428	2022
2	Learning agile soccer skills for a bipedal robot with deep reinforcement learning (10.1126/scirobotics.adi802)	3213	126	2024
3	Maturation and circuit integration of transplanted human cortical organoids (10.1038/s41586-022-05277-w)	2974	371	2022
4	Outracing champion Gran Turismo drivers with deep reinforcement learning (10.1038/s41586-021-04357-7)	2311	331	2022
5	Using sequences of life events to predict human lives (10.1038/s43588-023-00573-5)	2289	64	2023
6	AI-synthesized faces are indistinguishable from real faces and more trustworthy (10.1073/pnas 2120481119)	2239	242	2022
7	Can a robot laugh with you?: Shared laughter generation for empathetic spoken dialogue (10.3389/frobt 2022.933261)	2104	12	2022
8	Human-level play in the game of Diplomacy by combining language models with strategic reasoning (10.1126/science.ade9097)	2098	184	2022
9	The connectome of an insect brain (10.1126/science.add9330)	2046	338	2023
10	A petavoxel fragment of human cerebral cortex reconstructed at nanoscale resolution (10.1126/science.adk4858)	2010	224	2024

The Top 10 AI research articles—ranked by Altmetric Attention Score—show AAS values from 2010 to 3501. These items cover a mix of breakthrough methodological work (e.g., reinforcement-learning approaches and large-scale computational methods), high-impact interdisciplinary studies (connectomics and human cortical reconstruction), robotics and human–robot interaction, and AI-generated media trustworthiness. The presence of both methodological AI contributions and high-public-interest interdisciplinary applications explains the high online attention for these papers. Several of these top items also have substantial citation counts (e.g., 428, 371, 338), indicating that articles attracting online attention often also achieve scholarly recognition, though the pattern varies by article.

Table 4. Year-wise Summary of Altmetric Attention Scores

Year	Count	Mean AAS	Median AAS	Min	Max
2020	71	404.55	290	191	1561
2021	77	361.40	299	193	1186
2022	113	540.53	335	190	3501
2023	101	501.15	331	193	2289
2024	94	514.12	303.5	190	3213

Altmetric visibility for AI research shows notable growth between 2020 and 2024, with mean AAS increasing from 404.55 (2020) to 514.12 (2024). The year 2022 records the highest maximum AAS (3501), indicating the presence of exceptionally influential publications. These rising trends demonstrate increasing public and media interest in AI research over the years, especially during periods of rapid advancements such as deep learning breakthroughs and large language model developments.

The top-ranking articles indicate that both core AI methodological advances and interdisciplinary, publicly engaging AI applications attract the highest social media visibility; the most visible items include topics in reinforcement learning, robotics, human brain reconstruction, synthetic media trust, and large-scale computational methods.

5.2 Source-wise Breakdown of Online Attention for AI Research

Table 5. Overall Counts and Distribution of Major Altmetric Sources (N = 456 articles)

Source	Total Mentions	Mean per Article	Median per Article	Articles with >0 mentions (N)	% Articles with >0 mentions	% of all mentions
Twitter	135,589	297.34	124	450	98.68%	50.28%
Mendeley	118,380	259.61	102	456	100.00%	43.85%
News	21,290	46.69	32	440	96.49%	7.90%
Blogs	1,903	4.17	3	394	86.40%	0.71%
Reddit	643	1.41	0	177	38.82%	0.24%
Facebook	581	1.27	1	259	56.77%	0.22%
Wikipedia	455	1.00	0	132	28.95%	0.17%
Policy	195	0.43	0	62	13.60%	0.07%

Table 5. Overall counts and distribution of major altmetric sources for 456 AI research articles. Data show total mentions across all articles, mean and median mentions per article, number and percentage of articles receiving at least one mention, and the share of each source in the total pool of mentions.

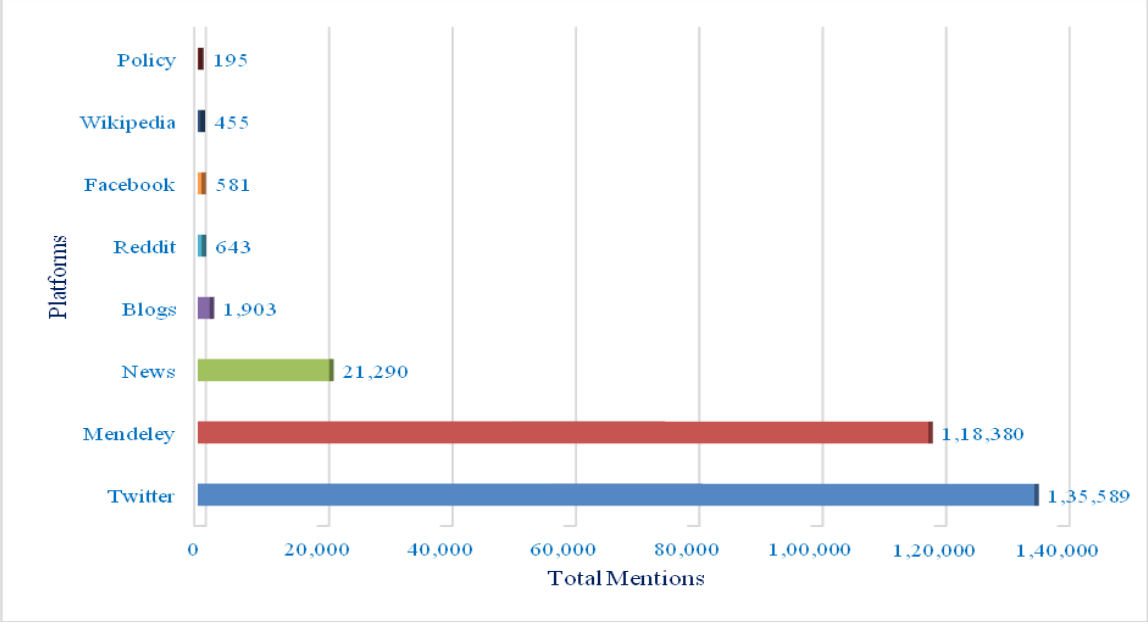

Figure 1. Platform-wise total mentions

Twitter (X) and Mendeley dominate the altmetric landscape for AI related research. Twitter accounts for 50.3% of all recorded mentions and has the highest total mentions (135,589) and high coverage (98.7% of articles). Mendeley readers account for 43.9% of total mentions and are represented in all articles (100%). News outlets provide the next most significant contribution (7.9% of mentions), followed by blogs, Reddit, Facebook, Wikipedia, and policy documents (Figure 1).

Table 6. Mean AAS for Articles with at Least One Mention in Each Source

Source	Avg AAS (articles with >0 mentions)	N (articles with >0 mentions)
Policy	710.23	62
Wikipedia	672.65	132
Reddit	624.11	177
Facebook	573.01	259
Blogs	496.68	394
News	482.17	440
Twitter	476.46	450
Mendeley	474.94	456

Table 6 shows the average Altmetric Attention Score (AAS) for articles that received at least one mention in each source, showing the mean AAS and the number of articles with mentions in that source. Although Twitter and Mendeley dominate in total mentions, articles that appear in policy documents or Wikipedia have substantially higher average AAS (710.23 and 672.65, respectively). Reddit and Facebook mentions are also associated with higher-than-average AAS. This suggests that mentions in policy documents, Wikipedia, and specific social platforms are indicators of particularly high overall online attention.

Table 7. Correlation between Source Mentions and Altmetric Attention Score (Spearman's rho)

Source	Spearman rho (AAS vs source)	p-value
Twitter	0.697	0.001
Mendeley	0.475	0.001
News	0.482	0.001
Blogs	0.402	0.001
Reddit	0.277	0.001
Facebook	0.338	0.001
Wikipedia	0.315	0.001
Policy	0.227	0.001

Table 7 reveals the Spearman rank-order correlations between Altmetric Attention Score (AAS) and prominent source mention counts for 456 AI articles. All correlations are significant at $p < 0.001$. Spearman correlation analysis indicates that Twitter mentions show the strongest association with AAS ($\rho = 0.697$), followed by news ($\rho = 0.482$) and Mendeley readers ($\rho = 0.475$). Other sources, such as blogs, Facebook, Wikipedia, and Reddit, have moderate but statistically significant correlations with AAS. Policy mentions show a weaker yet significant

correlation (rho = 0.227). These findings suggest that Twitter activity is a substantial factor in AAS, but other sources (news, Mendeley, blogs) may also contribute significantly to the total online attention.

The source-level breakdown indicates that attention to AI papers on altmetric.com is dominated by Twitter (X) and Mendeley, with these two platforms accounting for more than 94% of the total tracked mentions. There were more overall mentions, and the closest, strongest relationship with the attention score was found for Twitter, indicating that it is the most impactful platform for immediate online visibility. Mendeley readers are universal in the dataset, although not as strongly correlated with AAS as Twitter, and suggest academic interest. News articles add significant AAS and are also linked to the higher average AAS of the mentioned articles. Except for policy documents, mentions of Wikipedia are relatively rare. Still, on average, they have a much higher AAS value than other sources, suggesting that references in these sources represent high-voltage exposure to wider or possibly more authoritative audiences.

5.3 Journal-wise Altmetric Attention of AI Research Publications

Table 8. Journal-wise Altmetric Attention Scores (Top 15 Journals by Mean AAS)

Rank	Journal	N	Mean AAS	Median	Min	Max
1	PLOS Digital Health	1	1447.00	1447	1447	1447
2	Science of the Total Environment	1	1179.00	1179	1179	1179
3	Nature Synthesis	1	1123.00	1123	1123	1123
4	International Journal of Women's Dermatology	1	992.00	992	992	992
5	Nature Computational Science	4	873.25	465	274	2289
6	First Monday	1	859.00	859	859	859
7	Frontiers in Robotics and AI	4	776.50	397.5	207	2104
8	Science	33	674.45	394	197	2098
9	AI Magazine	2	630.50	630.5	312	949
10	Nature	84	616.54	386.5	192	3501
11	IEEE Computational Intelligence Magazine	1	595.00	595	595	595
12	Patterns	15	563.07	335	224	1216
13	Computer Methods & Programs in Biomedicine	1	546.00	546	546	546
14	Drones	1	531.00	531	531	531
15	Communications Biology	5	524.40	524	301	779

Table 8 presents the top 15 journals based on the mean Altmetric Attention Score (AAS) for 456 AI articles from 96 journals. Journal-level analysis reveals a widespread increase in Altmetric visibility among outlets. In journals such as PLOS Digital Health, Science of the Total Environment, or Nature Synthesis, mean AAS scores (over 1100) are extremely high, indicating that AI research in these venues generates significant interest among the public and media. High-reach journals, like Nature, Science, and Nature Computational Science, also show very high average AAS values, given their global reach and pursuit of the leading edge in AI (which reaches a broad audience via social media).

High average attention has also been observed in thematic journals such as Frontiers in Robotics and AI, Patterns, and AI Magazine, indicating that applications of AI to the fields of robotics (as well as interdisciplinary computing) and pattern analysis engage an online audience that is no longer limited to a specialized field. Taken together, the results indicate that both multidisciplinary flagship journals and niche AI journals serve as influential outlets for achieving high online visibility.

Table 9. Overall Journal-wise Distribution of AAS (All 96 Journals)

Statistic	Value
Total Journals	96
Journals with Mean AAS > 500	15
Journals with Mean AAS 300–500	28
Journals with Mean AAS < 300	53
Highest Mean AAS	1447.0 (PLOS Digital Health)
Lowest Mean AAS	190.0 (Multiple journals)

A small number of journals are responsible for an Altmetric score that is significantly higher than that of others, indicating unequal attention among publication media. The journal-level analysis reveals that greater variability exists at the journal level in terms of Altmetrics visibility. Several journals (PLOS Digital Health, Nature Synthesis, Nature Computational Science, and Science) are among those in which authors mean AAS is higher than all others due to high-impact innovative AI research. Broader and society-relevant journals lead to more social media and news attention. Around 96 journals indexed in the dataset published AI papers; at the same time, only ~15 journals have mean AAS values higher than 500, indicating that online visibility is highly concentrated in select, high-reputation sources. These results suggest that journal prestige, subject relevance, and topical novelty are associated with public and social media engagement with AI papers.

5.4 Correlation Between Altmetric Attention Scores and Citations

Table 10. Spearman Correlation Between AAS and Citations

Correlations

			AAS	Citations
Spearman's rho	AAS	Correlation Coefficient	1.000	.197
		Sig. (2-tailed)	.	.000
		N	456	456
	Citations	Correlation Coefficient	.197	1.000
		Sig. (2-tailed)	.000	.
		N	456	456

Table 10 presents the Spearman correlation between Altmetric Attention Scores and Dimensions citation counts for 456 AI research articles.

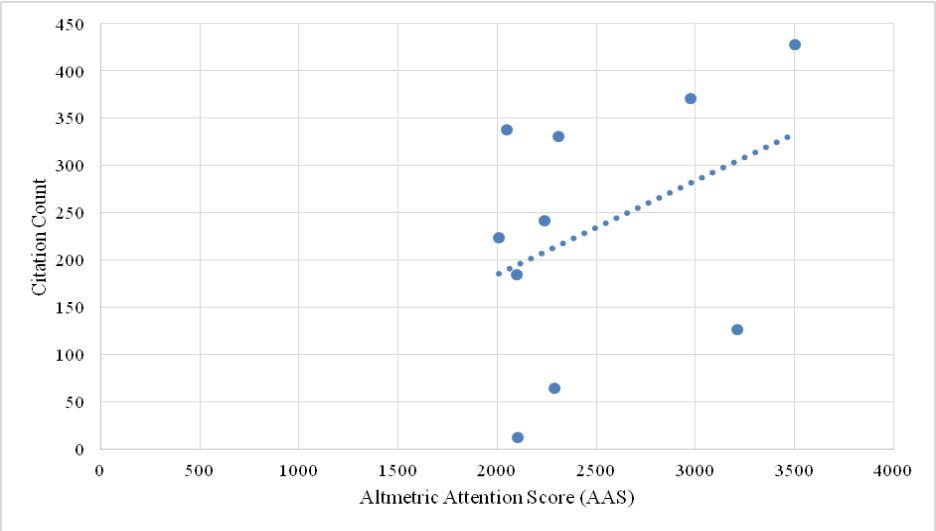

Figure 2. Scatter Plot of Altmetric Attention Score (AAS) vs. Citation Count

The analysis revealed a weak positive correlation between Altmetric Attention Scores (AAS) and citation counts (Spearman's $\rho = 0.197$, $p < 0.001$). Although statistically significant, the strength of the relationship is modest, indicating that articles with high social media visibility tend to have slightly higher citation counts; however, the association is not strong (Figure 2).

As such, this finding aligns with previous Altmetric research (Costas et al., 2015; Thelwall et al., 2013), which has consistently demonstrated low to moderate correlations between news and social media indicators and conventional citations. The findings indicate that AAS measures for online/social attention and citations measure scholarly acknowledgment, which represent complementary yet separate components of research impact.

Social media visibility (AAS) is weakly associated with scholarly citations among AI research articles; however, highly shared or discussed articles receive a slightly higher number of scholarly citations. However, online attention does not strongly predict academic citation impact, as is apparent from this analysis, which shows a significantly but weakly positive relationship between social media visibility (AAS) and scholarly citations among AI research articles.

6. FINDINGS AND DISCUSSION

This study evaluated the online attention and scientific impact of 456 research papers on AI (Artificial Intelligence), based on Altmetric Attention Scores, source-level Altmetrics indicators, journal-wise patterns, and citation metrics.

6.1 Altmetric Visibility of AI Research

The attention relating to AI in research received medium-to-high collectiveness AAS values of between 190 and 3501. The skewed parameters obtained are indicative of a positively skewed ARC distribution, thus demonstrating that the data set includes some few articles of paramount importance but with very little or few number of citations. The increasing AAS trend from 2020 to 2024 suggests the growing interest of social and news media in AI study, presumably promoted by dramatic successes of Deep learning, robotics and computational neuroscience.

6.2 Source-wise Contribution to Online Attention

References were overall very dominated between Twitter (X) (~52%) and Mendeley amounting for more than 94% of all attention. Of these, Twitter was most strongly correlated with AAS, and its use appears to be the one that

generates the most immediate visibility and public engagement. Even rarer were mentions in policy papers and on Wikipedia, the latter of which had an average AAS above any other source category and are likely to indicate influential or popular research. This is consistent with earlier research that finds, although social media and scholarly networks represent a push for the swift distribution, policy platforms/PKPs may represent broader societal relevance.

6.3 Journal-wise Distribution of Altmetric Attention

The visibility of Altmetrics varied substantially among journals. Journals were the highest-yielding medium, along with high-impact interdisciplinary journals such as Nature, Science, Nature Computational Science, and PLOS Digital Health, which saw the highest mean AAS values. These are generally the venues where papers that rise to join the club of such uncovered discoveries first appear, which is why they have a high online reach. Specialized AI journals, including Frontiers in Robotics and AI and AI Magazine, also attracted significant altmetric attention, indicating that both general science and AI-focused venues are contributing to public engagement.

6.4 Relationship Between AAS and Citations

A positive correlation (weak but statistically significant) was observed between self-associated recall and age-of-acquisition delay differences (Spearman's ρ = and $p < 0.001$) between AAS and citation counts. In other words, the more visible an article is accessed online, the weaker its effect appears to be. In line with other studies, we observe that Altmetrics and citations measure different aspects of research impact—social media interest reflects instantaneous public appeal, whereas citations indicate cumulative recognition within academia.

Globally, AI is receiving high and increasing online attention, particularly in social channels and in the most prestigious journals. Nevertheless, social visibility does not automatically imply the scholarly impact of publications because altmetrics are supplementary (instead of alternative) to traditional scholarly metrics. This result reinforces the evolving status of research communication and the trend toward digital engagement in the field of AI.

CONCLUSION

This article examines the web visibility and scholarly impact of Artificial Intelligence (AI) research, assessing Altmetric Attention Scores (AAS), source-level engagement indicators, journal-specific analysis, and citations. The results demonstrate that AI related publications are widely discussed online and show a heavy-tailed distribution in the AAS values of controversial astronomical literature. Online visibility has been gradually increasing from 2020 to 2024, reflecting the growing attention received by AI-enhanced breakthroughs in both the public and media. Twitter (X) and Mendeley were the most dominant in terms of contribution to Altmetric attention, mentions in policy documents, and Wikipedia, infrequently correlating with higher average AAS, indicative of a wider societal footing. Journal-related works in the top-ranked journals (Nature, Science, and Nature Computational Science) yield promising results in terms of engagement, indicating that, as is the case with scientific citation, non-relational indicators are also relevant.

A weak but statistically significant positive association between AAS and citation counts further highlights that online attention is distinct from, yet complementary to, scholarly impact in measuring research influence. Social media attention can promote greater sharing, but is not a strong predictor of academic citations. Overall, we find that there is significant digital attention on AI related research, which is motivated by public interest as well as media

outlets and high-impact journals. Altmetrics can complement traditional citations and indicate the immediacy of societal influence as well as online attention to scientific output.

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