Artificial Intelligence and Promoting Open Access in Academic Publishing

Intelligence artificielle et promotion de l'accès libre dans la publication académique

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INTRODUCTION

In the growing landscape of academic research, the integration of artificial intelligence (AI) has ushered in a transformative era [1, 2]. The traditional methods of bibliographic search, once a tedious and time-consuming process, are now being revolutionized by AI-powered chatbots [3]. These advanced tools, equipped with intricate algorithms and vast databases, are not only streamlining the research process, but also enhancing the accuracy and relevance of search results [1, 3]. Researchers worldwide are increasingly turning to these AI chatbots for their bibliographic needs. The reasons are manifold. First, the sheer volume of academic papers being published daily makes manual searches impractical. AI chatbots, with their ability to process vast amounts of data rapidly, offer a solution to this challenge. These chatbots can swiftly sift through thousands of papers, identifying the most pertinent ones based on the researcher's query [3]. Second, these chatbots, such as Chat generative pre-trained transformer (ChatGPT), have shown consistent improvements in precision when identifying relevant papers, especially as they evolved from versions 3.0 to 3.5, and up to 4.0, by mid-2023 [4]. By understanding the context of a query, they can filter out irrelevant papers, ensuring that researchers are presented with the most pertinent results. This precision not only saves time but also ensures that crucial papers are not overlooked. Furthermore, these chatbots are equipped with features that facilitate a more interactive and user-friendly search experience. From suggesting related topics to offering summaries of complex papers, they cater to the diverse needs of the academic community. Their adaptability and learning aptitudes mean that with each search, they become more attuned to the researcher's preferences and requirements. However, while the benefits of these AI chatbots are unquestionable, they also bring forth certain challenges [5], particularly concerning the sources they access [1, 3]. Most of these tools prioritize open access journals, often overlooking traditional subscription-based journals. This selective access poses questions about the comprehensiveness of their search results.

Thus, the aim of this editorial was to elucidate the transformative impact of AI chatbots on academic research, emphasizing the diminishing prominence of traditional journals, and advocating for a judicious shift towards open access while acknowledging its imperfections and underscoring the responsibilities of authors in this evolving landscape.

PROMINENT AI TOOLS IN BIBLIOGRAPHIC

In mid-2023, there were an undeniable surge in the number of AI-powered tools designed to assist researchers in their literature review endeavors (Table 1). This proliferation is not merely a testament to technological advancements, but also underscores a paradigm shift in the way academic research is conducted and disseminated. These tools, with their advanced abilities, are playing a pivotal role in making the transition from classic journals to open access platforms more seamless. By streamlining the literature review process, they are inadvertently emphasizing the value of open. These tools, each equipped with their unique functionalities, offer researchers a plethora of options to streamline and enhance their literature review process. The choice of tool would be contingent on the specific requirements and preferences of the researcher.

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Table 1. Artificial intelligence (AI)-powered tools designed to assist researchers in their literature review endeavors.

AI Software	Description	Unique Features	Integration with Academic Databases	Limitations
BERT (Google)	. BERT is a method from Google designed to help search engines better understand the nuances of human language, particularly in conversational search	. Natural language . Understanding . Bidirectional context . Transformers and masked . Language modeling . Handling ambiguity . Natural language tasks	. Pre-trained on Wikipedia . Fine-tuned on datasets like MS MARCO and SQuAD	. Not for content optimization . Contextual nuance . Natural language understanding vs. recognition
ChatGPT (OpenAI)	. A conversational AI model with real-time web navigation capabilities	. Dynamic data retrieval . Conversational design . ChatGPT history search	. Trained on a vast corpus of data, including academic literature	. Generative nature might produce imprecise data . Approach information with skepticism
Claude	. AI-powered tool for literature review assistance	. Offline document processing . Data extraction from documents . Integration with academic databases	. Integrated with various academic databases	. Limited coverage of online databases . Efficacy in data extraction contingent on document quality
Consensus AI	. AI search engine extracting findings from peer-reviewed studies	. Swift and straightforward evidence-based answers	. Powerful platform for comprehensive research	. Queries must be scientific . Avoid widely known facts . Avoid extremely narrow questions . Still in beta phase
Lateral	. Assists with academic research by analyzing research papers	. Key concept identification . Relationship and trend analysis	. Comprehensive tool for academic research	. Requires storage of cookies . Blocking storage categories may impact user experience
LLaMa2 (Meta AI)	. Advances the state-of-the-art in Generative AI, Computer Vision, NLP, and more.	. Llama 2 tool 2. . SeamlessM4T for research and translation	. Collaborative and open-source approach	. Not publicly accessible . Limited research access due to resource demands . Concerns about bias, toxicity, and misinformation
Perplexity	.AI-assisted research tool with advanced algorithms	.User-centric interface .State-of-the-art algorithms	. Integrated with various academic databases	. Might yield deviating information
Rayyan	.Tailored for systematic literature reviews	. De-duplication . Reference screening and organization	. Comprehensive tool for systematic reviews	. Limited to systematic and scoping review
Research Rabbit	.Finds, organizes, and analyzes research papers	.Free tool .Personal library feature	.Scans the web for scholarly articles	. Limitations in terms of the depth of its database, the accuracy of its recommendations
Scholarcy	. Assists with academic reading	. Article summarization . Flashcard creation . Bibliography generation	. Integrated with sources like Google Scholar and PubMed.	. Its limitations include the accuracy of its summarization, especially for complex or interdisciplinary papers, and its reliance on the structure and quality of the original document for extracting key details
Scite	. Provides Smart Citations for understanding research articles	. Smart citation . Context display for citations	. Open-source and AI-powered.	. Might not encompass all journals . Potential over-reliance on platform's classification . Requires familiarization.
Semantic Scholar	. Free academic search engine	. NLP and machine learning . Smart filters and insights	. Comprehensive tool for academic research	. Neuroscience predominates in indexed literature . No API . Limited search refinement options

API: Application-programming interface. **BERT**: Bidirectional encoder representations from transformers. **ChatGPT**: Chat generative pre-trained transformer. **LLaMa2**: second-generation open-source large language from Met. **MS MARCO**: Microsoft machine reading comprehension. **NLP**: Natural language processing. **SeamlessM4T**: Massively multilingual and multimodal machine translation. **SQuAD**: Stanford question answering dataset

The Limitations of AI Chatbots: The Open Access vs. Closed Access Dilemma

The integration of AI chatbots into the academic research milieu has undeniably aided in achieving a new era of efficiency and precision [3]. These tools, with their advanced algorithms, have revolutionized literature selection, offering researchers a streamlined approach to bibliographic searches. However, as with all technological innovations, AI chatbots are not devoid of limitations. A salient challenge that emerges in the context of these tools is their pronounced inclination towards open access journals, often at the expense of traditional, subscription-based journals. Open access journals, characterized by their unrestricted content availability [6-8], have become the preferred hunting ground for AI chatbots. The inherent nature of these journals, which allows unfettered access to their content, renders them an ideal resource. AI chatbots, equipped with capabilities to crawl, analyze, and extract data, find a veritable treasure trove in the vast repositories housed within open access platforms. This abundance of freely accessible information ensures that these tools can provide researchers with comprehensive and contemporaneous search outputs. Conversely, traditional journals, anchored in subscription models or characterized by closed access [6], present a more complex landscape for AI chatbots. The barriers erected by these journals, whether in the form of paywalls or restricted access; impede the seamless data retrieval capabilities of AI tools. Such impediments invariably culminate in potential lacunae in literature reviews conducted by these chatbots. The ramifications of this are profound: researchers, placing unwavering trust in AI chatbots, might inadvertently bypass seminal or pertinent research ensconced within the confines of closed access journals. The ripple effects of this selective access by AI chatbots extend beyond mere missed research opportunities. A potential bias looms large, as the research landscape presented by these tools becomes skewed, favoring only content that is freely accessible. Furthermore, the economic dynamics intrinsic to the open access model, characterized by publication charges for authors, juxtaposed against the often fee-less publication avenue offered by closed access journals, might inadvertently influence researchers' publication choices. Such choices, driven by economic considerations, could potentially modulate the visibility and impact of their scholarly contributions. While fostering collaborations between AI chatbots and closed access journals is a commendable idea, the intricate nature of such partnerships, given the complexities of access restrictions and proprietary content, makes it a challenging endeavor. Therefore, a more pragmatic solution appears to be nudging traditional journals towards the open access model [9]. However, this transition should be accompanied by a meticulous reevaluation of the open access paradigm. Addressing concerns such as fee waivers for authors from low-income countries and substantial discounts for those from middle-income nations can make this model more equitable. Yet, as we advocate for this shift, it is paramount to underscore the responsibilities that befall authors. Even if a harmonious integration between AI chatbots and journals is achieved, authors must exercise discernment [3, 10]. They should not solely rely on the bibliographic outputs generated by these chatbots, given their inherent limitations [3]. It is imperative for researchers to complement AI-driven literature searches with traditional methods, ensuring a comprehensive and holistic review of existing literature. This dual approach not only mitigates the risk of overlooking pivotal research but also upholds the sanctity and rigor of academic endeavors.

In light of these challenges, the clarion call is for a more holistic approach in the domain of AI-driven academic research. For AI chatbots to truly be the vanguard of a research revolution, they must transcend the open access bias and embrace a more inclusive ethos. This inclusivity could be actualized through collaborations between AI developers and stalwarts of traditional journal publishing. Such synergies could potentially bridge the chasm between cutting-edge technology and a rich tapestry of academic content, ensuring that the future of research is both comprehensive and unbiased.

CONCLUSION

The integration of AI into academic research has marked a pivotal shift, transforming traditional bibliographic search methodologies. AI chatbots like ChatGPT exemplify the potential of AI in refining the research process, offering competencies from intricate linguistic understanding to rapid data processing. Yet, challenges persist. The preference of these AI tools for open access journals, while efficient, risks neglecting vital contributions from closed, subscription-based journals. Central to our editorial is the practical and urgent advocacy for transitioning from closed access to open access journal models. This is not merely a theoretical proposition but a tangible step towards democratizing knowledge. By shifting to open access, we not only bridge the divide between different access models but also amplify the reach and impact of scholarly works. The practicality of this shift lies in its potential to make research universally accessible, eliminating paywalls that often restrict knowledge dissemination. Moreover, such a transition can significantly enhance the efficiency of AI tools, as they would have a broader spectrum of data to analyze, leading to more comprehensive and relevant search results. The implications of this editorial can guide academic policies, shape the evolution of AI tools, and foster collaborations, ensuring a balanced and comprehensive research trajectory. Furthermore, by championing the shift to open access, we stand to foster a more inclusive, equitable, and progressive academic landscape, where knowledge knows no bounds. Box 1 resumes "The take home messages".

Box 1. To take home messages.

- The integration of artificial intelligence (AI) into academic research has revolutionized traditional bibliographic search methods, with AI chatbots like Chat generative pre-trained transformer showcasing their potential for enhancing the research process through linguistic comprehension and rapid data processing.
- A significant challenge lies in the AI tools' preference for open access journals, potentially overlooking valuable contributions from subscription-based journals.
- Our editorial emphasizes the urgent need to transition from closed access to open access journal models, not only to democratize knowledge but also to expand the scope of AI analysis and improve research efficiency.
- This shift has far-reaching implications, influencing academic policies, shaping AI tool development, and fostering a more inclusive and equitable academic landscape where knowledge is universally accessible.

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