

Status of Artificial Intelligence (AI) In Academic Libraries

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ABSTRACT:

Artificial Intelligence (AI) is rapidly revolutionising academic libraries by altering information retrieval, reference assistance, research facilitation, collection management, and user interaction. The incorporation of AI-driven tools, such as generative AI, smart search mechanisms, recommendation systems, and automated reference services, has considerable potential to improve the efficacy and availability of library services. Nonetheless, the proficient and judicious application of these technologies necessitates sufficient AI literacy among librarians, educators, researchers, and students. AI literacy encompasses the knowledge and skills needed to understand AI principles, assess AI-generated content, identify limitations and biases, safeguard data privacy, address ethical issues, and utilise AI tools judiciously. This study explores the burgeoning role of AI in academic libraries and underscores the need to foster AI literacy among library staff and patrons.

KEYWORDS: *Artificial Intelligence (AI), academic libraries, intellectual, technology*

I. INTRODUCTION:

Academic libraries encompass institutional libraries such as those found in schools, colleges, universities, and research facilities. All of these serve the requirements of the scholarly community by enhancing the institution's educational and research initiatives and aiding in the preservation and distribution of information. Despite sharing some attributes, these academic libraries exhibit significant disparities in value and substance. Academic libraries are not autonomous entities; they exist to fulfil the goals of the educational system to which they belong.

Aims of any academic institution are:

- Conservation and preservation of knowledge.
- Expansion of ideas and dissemination of knowledge with the help of interpretation, research and publication; and
- Dissemination of knowledge through teaching and extension services. The libraries in academic institutions help to achieve these objectives.

While academic libraries possess certain common characteristics, they exhibit numerous distinctions. The essence of these libraries is shaped by the characteristics of their users and their informational needs. In a school library, the users are children; in a college library, the users are young adults; while in a university library, the users are postgraduate students and researchers. Due to variances in their educational backgrounds and learning methodologies, their requirements also vary, spanning from basic reading to in-depth study.

In its most basic terms, Artificial Intelligence is a discipline that combines computer science with large datasets to facilitate problem-solving. Artificial intelligence does not supplant human decision-making; rather, it enhances human discernment. Consider AI as an intelligent assistant capable of comprehending concepts, acquiring knowledge from examples, and autonomously doing tasks without requiring explicit instructions each time.

The phrase "Artificial Intelligence" was introduced by John McCarthy in 1955 in the proposal for the 1956 Dartmouth Summer Research Project on Artificial Intelligence, which he co-authored with Marvin L. Minsky, Nathaniel Rochester, and Claude E. Shannon.

Categories of AI: Researchers in computer science have classified AI into three tiers based on anticipated advances in its ability to interpret data and generate forecasts.

1. Narrow AI:
2. Broad AI:
3. General AI:

In 2024, the integration of artificial intelligence (AI) in academic libraries moved from trial phases to actual use, though its implementation remained nascent and inconsistent. Libraries were investigating AI primarily to enhance information retrieval, automate mundane tasks, assist reference services, and foster AI literacy among students and personnel. A worldwide Clarivate survey involving over 1,500 librarians revealed that libraries remain in the nascent phases of AI adoption, with insufficient knowledge and constrained resources as primary issues.

History of AI:

Efforts to integrate AI into educational contexts have often followed technological advancements in the history of artificial intelligence.

In the 1960s, educators and researchers began developing computer-based instruction systems, such as PLATO, developed by the University of Illinois.

In the 1970s, AI techniques were added to computer-assisted instruction (CAI) to form intelligent tutoring systems. The LISP Tutor was evaluated in a Carnegie Mellon University mini-course in the fall of 1984

The International Artificial Intelligence in Education (AIED) Society was founded in 1993, and comprised researchers with backgrounds in computer science, education, and psychology. The International AIED Society also produces the *International Journal of Artificial Intelligence in Education* (IJAIED).

Coinciding with the AI boom of the 2020s, the use of large language models (LLMs) in the global north has been promoted and funded by venture capital and big tech. Companies creating AI services have targeted students and educational institutions as customers. Similarly, pre-AI boom educational companies have expanded their use of AI technologies. These commercial incentives for AIED (Artificial Intelligence in Education) use may be related to a potential AI bubble. In the U.S., bipartisan support of AI development in K-12 education has been expressed, but specific implementations and best practices remain contentious.

STATUS OF AI IN ACADEMIC LIBRARIES:

Artificial Intelligence (AI) has surfaced as a revolutionary technology with profound consequences for higher education and academic libraries. Artificial Intelligence encompasses computer systems capable of performing tasks that often require human intellect, including learning, reasoning, language comprehension, information extraction, pattern recognition, and decision-making.

Academic libraries have historically been crucial in facilitating education, research, and scholarly discourse. As AI becomes more integrated into information ecosystems, this position is evolving. Artificial Intelligence can aid libraries in domains like discovery services, reference assistance, metadata generation, digital collections, research support, information administration, and tailored user services. Simultaneously, the use of AI raises significant issues regarding information veracity, algorithmic bias, privacy, intellectual property rights, transparency, academic honesty, and the ethical utilisation of generated data.

AI literacy has emerged as an increasingly vital component of information and digital literacy. AI literacy encompasses more than merely understanding how to utilise AI instruments. It encompasses understanding the fundamental principles and capabilities of AI, acknowledging its constraints and inherent biases, assessing AI-produced content, employing AI technologies proficiently and ethically, and making informed decisions about the appropriate contexts and methods for AI utilisation. For scholars and students, these skills are crucial, as AI-generated material can appear credible even when erroneous, insufficient, biased, or fictitious.

Major Applications of AI

- **Reference and Information Services:** AI chatbots and conversational systems can answer routine questions and assist users in finding information.

AI chatbots and virtual reference assistants can answer frequently asked questions about library services, databases, opening hours, borrowing policies, and research resources. They can provide assistance 24/7, even when librarians are unavailable.

- **Information Retrieval and Discovery:** AI can improve searching, recommendations, semantic discovery, and access to library collections.

AI can understand natural-language queries and help users locate relevant books, journal articles, theses, e-books, databases, and other scholarly resources. AI-based search systems can go beyond simple keyword matching by identifying the context and meaning of a user's query.

- **Cataloguing and Classification:** Machine learning and generative AI were being investigated for metadata creation, classification, indexing, and related technical services.

- **Collection Development:** AI can assist with identifying user needs, evaluating resources, and supporting selection and acquisition.

- **Automation:** Repetitive administrative and technical tasks can potentially be automated, allowing librarians to concentrate on higher-value activities.

- **Research Support:** AI tools were increasingly relevant to systematic reviews, text/data mining, research discovery, and scholarly communication.

- **AI Literacy:** Libraries increasingly saw teaching students and researchers how to understand and critically use AI as part of their information-literacy mission

- **User Education and Information Literacy:**

AI can provide tutorials, explain database-search techniques, and help users understand citation practices and research methods. However, librarians remain essential for teaching critical evaluation, source verification, ethical use of information, and academic integrity.

- **Bibliographic and Citation Assistance:**

AI can help users identify citations, generate preliminary bibliographies, organise references, and identify relationships among scholarly works. Librarians should encourage users to verify automatically generated citations because AI systems can produce inaccurate or fabricated references.

- **Accessibility and Inclusive services**

AI-powered speech recognition, text-to-speech, translation, and conversational interfaces can make library resources more accessible to users with different abilities and language needs.

- **Predictive and Analytical Services**

Libraries can use AI to analyse anonymised usage patterns and identify emerging information needs. This may help libraries improve collections, databases, discovery systems, and reference services.

II. REVIEW OF LITERATURE:

Ajwa, Z.I. et al. (2024). Technological innovations are relevant across all sectors, including libraries. Libraries may utilise artificial intelligence (AI) as a technological resource. The researchers of this paper offer a comprehensive account of the evolution of libraries following disruption and highlight numerous potential applications of AI inside library environments. The utilisation of AI encompasses assisting librarians in performing their duties more efficiently and providing users with prompt, effective service. However, the optimal application of AI requires deliberate contemplation. Literacy libraries need to adapt to fulfil the needs of diverse learners in this increasingly interconnected and complex society. The essay proposes incorporating AI technology as an innovative approach to improving literacy library services for kids with diverse needs. We examine the capabilities of AI to enhance accessibility, customise education, and identify learning challenges early through conceptual analysis and observational studies. Focusing on fairness and inclusion, we also highlight the prospects and challenges associated with the deployment of AI technology. An AI-integrated library literacy program can foster a responsive, adaptable, and inclusive educational atmosphere for students from diverse backgrounds and varying ability levels.

Chigwada, J. (2024). The influence of artificial intelligence (AI) has permeated every academic discipline, necessitating the cultivation of AI literacy skills among humans. The statement on libraries and artificial intelligence, released by the International Federation of Library Associations and Institutions (IFLA), advocated that libraries participate in the utilisation of AI. A research project was undertaken to establish a structure for the design and implementation of an AI digital literacy program within an academic library. A literature study was conducted utilising Scopus and Web of Science to enhance understanding of existing digital literacy programs and to pinpoint deficiencies and exemplary practices in the development of AI-focused courses. By analysing documents and web material, university libraries that have implemented digital literacy courses were recognised. It was observed that academic librarians ought to collaborate with students, faculty, the research office, university administration, and ICT staff to create an AI literacy curriculum. A structure was suggested to tackle the limitations of providing an AI digital literacy program. The research enhances the wider domain of AI education by offering pragmatic guidance for academic libraries aiming to foster digital literacy and secure AI practices.

Steiger, K. (2024). This literature study examines the advantages and obstacles associated with the implementation of AI in academic libraries. Artificial intelligence possesses the capability to enhance the efficiency of library functions and aid students in their writing endeavours, yet it can also disrupt the academic library environment, resulting in plagiarism and the dissemination of false material. The writer delineates three categories of AI; the current and forthcoming assistance AI may provide to libraries; AI's role as a transformative force in higher education; and strategies to alleviate certain adverse effects of AI. Resistance or apprehension frequently arises when novel tools are implemented in society; yet, it is crucial for academic librarians to comprehend and master these systems for their advantage.

Andersdotter, K. (2023). The swift proliferation of artificial intelligence (AI) presents both obstacles and prospects for entities engaged with digital technology, such as libraries. Libraries and librarians face a dual challenge, as they must evaluate AI applications in their operations while also integrating AI competencies and knowledge into the information literacy training offered to users, whether through formal IL programs or informal learning environments. This research examines a learning circle where 123 librarians in Sweden participated in a pre-established online course on AI and convened periodically to debate its implications from a library standpoint. The augmented understanding of AI and libraries, together with the assurance to impart this knowledge to library patrons, is assessed via a self-efficacy evaluation administered on three distinct occasions during the learning circle. The test results indicate a rise in AI knowledge across the learning cycle; nevertheless, the limited sample

size complicates the ability to reach conclusive insights. A focus group from the learning circle was convened to gain comprehensive insight into librarians' primary issues of interest and enthusiasm regarding AI and libraries. The interview findings indicated a predominantly favourable perspective on AI for enhancing library collection accessibility and management; however, apprehensions were raised about AI's influence on the media environment and its potential effects on library patrons. The focus group, through introspection, identified obstacles in integrating AI into information literacy instruction for users, with a deficiency in AI competencies among colleagues that may hinder the application or discourse of AI inside the workplace and library profession. This document introduces a technique for enhancing AI expertise among librarians and library personnel. It underscores issues pertinent to several library categories about the advancement and implementation of AI inside libraries and society, which, according to the study's findings, are challenging to evade. The findings could be beneficial for strategizing educational initiatives and for contemplating library advancement and tactics concerning AI and its effects on libraries and their patrons.

Cox, A. (2022). The setting is a pragmatic and straightforward endeavour to document the efforts of academic librarians in exploring the potentials (and ethical dilemmas) of AI. This demonstrates, unsurprisingly, significant continuity with the longstanding practices of librarians, including the instruction of information literacy, the promotion of user communities, and the facilitation of content accessibility within collections. Almost all of the context illustrates cooperative initiatives with college collaborators, frequently grounded in participatory frameworks. Several prospective uses, such as chatbots and speech agents, have not been addressed in the discourse. However, this may indicate a truth that they are not extensively utilised (at this point) in academic libraries. There is thus no reference to employing AI technologies on user data to analyse, forecast, or influence user activity. Considering the ethical implications involved, this could be a beneficial decision.

III. CONCLUSION:

Artificial Intelligence (AI) is progressively emerging as a crucial technical element within academic libraries. Its utilisation in information retrieval, reference services, cataloguing, classification, resource discovery, recommendation systems, research assistance, and user services can enhance the efficiency, accessibility, and quality of library functions. AI-driven tools can reduce repetitive tasks and allow library experts to allocate more time to focused research and user assistance endeavours.

The integration of AI in academic libraries is concurrently evolving and is contingent upon institutional resources, technological frameworks, staff proficiency, financial support, and institutional regulations. Concerns around data privacy, ethical AI utilisation, algorithmic bias, copyright issues, information veracity, transparency, and the necessity for human oversight persist as significant challenges. Consequently, AI needs to be seen as an auxiliary tool rather than a substitute for expert librarians.

The present condition of AI in academic libraries can thus be perceived as a process of evolution. The successful execution requires appropriate infrastructure, ongoing professional development, clear ethical standards, prudent data management, and collaboration among librarians, researchers, administrators, and technology experts. By implementing these strategies, academic libraries can utilise AI judiciously to enhance their services while maintaining the professional and human-centric principles of librarianship.

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