

USE OF ARTIFICIAL INTELLIGENCE IN LIBRARIES, EDUCATION & RESEARCH

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Abstract: This article examines the role of Artificial Intelligence (AI) in libraries, emphasizing its potential to improve library services and reshape the responsibilities of librarians. This refers to technology that allows machines to imitate human cognitive abilities such as learning, solving problems, and making decisions. brings several advantages to libraries, such as increased efficiency, enhanced user experiences, and optimized resources. The study illustrates how AI-driven tools like chatbots and content management systems can assist in patron services and decision-making, while also leading to cost savings and improved accessibility. Librarians are seen as crucial advocates for AI integration, responsible for educating both users and staff about AI applications, promoting ethical usage, and weaving AI into library services and educational initiatives. Moreover, AI can revolutionize collection development through automation and data analysis. Nonetheless, challenges persist, particularly concerning the ethical aspects of AI and the necessity for ongoing staff training to keep pace with new technologies. The article concludes that AI is here to stay, and libraries must adapt to harness its potential effectively.

Keywords: Artificial Intelligence (AI), Accessibility, Enhanced Efficiency, chatbot

1.0 Introduction

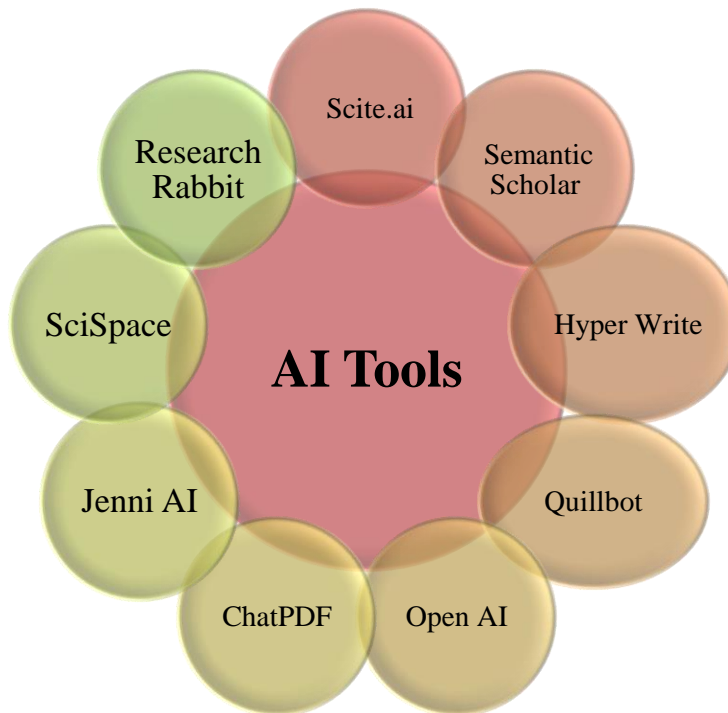
“Artificial intelligence (AI) refers to technology that allows computers and machines to mimic human learning, understanding, problem-solving, decision-making, creativity, and autonomy” (IBM, 2024). “Artificial intelligence (AI) is ‘a machine-based system that can, for a given set of human defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. AI systems are designed to operate with varying levels of autonomy’. (OECD, 2020). AI encompasses the capability of computers and other machines to demonstrate or simulate intelligent behavior, as well as the academic field focused on this area. More recently, it also refers to software that performs tasks or produces outputs previously thought to require human intelligence, particularly through machine learning techniques that analyze large datasets (Oxford English Dictionary, 2024).

Artificial intelligence combines advanced technology and machine-based systems to replicate human intelligence and perform complex tasks autonomously. It encompasses a wide range of applications, from decision-making and problem-solving to creativity and learning. As an evolving field, AI has expanded to include software that utilizes machine learning to analyze large datasets and produce outputs once deemed exclusive to human capabilities. This highlights its growing significance in both practical applications and academic study.

1.1 Use of Artificial Intelligence (AI) in libraries

Librarians play a key role in educating users about AI and advocating for its integration. They can organize workshops and sessions to help educators become familiar with AI concepts and tools, empowering faculty to confidently incorporate AI into their teaching by providing the necessary knowledge and resources. Additionally, librarians can implement safeguards to ensure user safety while supporting both teachers and students in the responsible use of AI. As AI becomes more prevalent, librarians are uniquely positioned to explore how this technology can enhance learning. With their expertise in providing access to diverse educational resources, they are well-equipped to guide users in making the best use of emerging AI tools.

1.2 Artificial Intelligence (AI) Tools



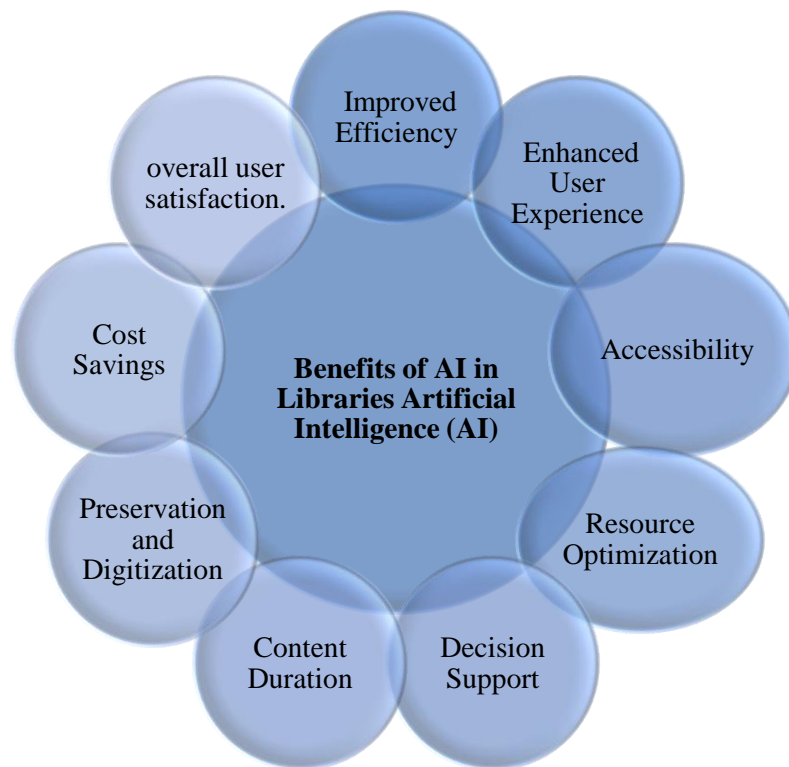
1.3 Benefits of Artificial Intelligence (AI) in Research

I. Due to their ability to quickly process and analyze massive amounts of data, AI has the potential to assist researchers in discovering new topics, relationships, and insights that were previously overlooked.

II. Scholars argue that artificial intelligence facilitates the understanding of the curriculum in various conditions. Support can be offered to students in danger of being disengaged if these are flagged through predictive assessment. AI educational tools provide consistency to students and reduce the workload on teachers. Employing AI assists with the evaluation of a large dataset to enhance resource distribution, design the curriculum, and assess existing programs. In addition, marketing strategies for international students become easier thanks to AI. These students are able to concentrate more on their studies because AI-driven translation applications assist them in communicating and learning in different settings. Algorithms of AI facilitate researchers in evaluating data which in turn expedites the rate of academic research substantially.

1.4 Benefits of Artificial Intelligence (AI) in Libraries

1. Improved Efficiency
2. Enhanced User Experience
3. Accessibility
4. Resource Optimization
5. Decision Support
6. Content Duration
7. Preservation and Digitization
8. Innovative Services support, guidance, and information retrieval, enhancing overall user satisfaction.
9. Cost Savings



2.0 How Can Artificial Intelligence (AI) be Used in Libraries

2.1 AI-Driven User Assistance

Library digital services combine various third-party e-media collections and software solutions, which we strive to present as a unified library experience. While libraries have been investigating the use of AI-powered chatbots, many of our vendors are also launching sophisticated, patron-oriented solutions. For example, Overdrive, a digital content distributor for libraries, has begun using AI-assisted support to tackle frequently asked questions from patrons.

2.2 Library Programs and Services

As with any emerging technology, libraries play a crucial role in guiding our communities through disruption. We can host lecture-style programs to help patrons grasp the basics of AI, its common applications, and the ethical discussions surrounding it. Additionally, we can offer hands-on experiences with AI tools like image generators and chatbots (such as ChatGPT), as well as training artificial intelligence using Google's Teachable Machine. Libraries have long been advocates for media literacy, and the rise of AI presents both challenges and opportunities in this area. Library staff must become proficient in these new tools, learning to identify deepfakes and discern AI-generated text—skills that are especially important in academic settings. As we integrate these skills into our reference services, we must also share this knowledge with our users. As users interact with AI-chatbots that can write reports, librarians and educators will need to find ways to effectively integrate these tools into the learning environment.

2.3 ChatGPT as a Conceptualizing

The AI bot ChatGPT offers various applications for library staff. Some team members may find themselves unintentionally taking on the role of web designer; in such cases, ChatGPT can provide simple code from text prompts and troubleshoot existing code. Asking the AI a question can yield a list of suggestions and ideas, serving as a helpful starting point for everyday challenges. Additionally, ChatGPT can be a great remedy for writer's block, generating initial drafts for reports that can be refined later. Lastly, library managers may occasionally need to draft standard memos. ChatGPT effecting the transformation a few points into a functional staff memo or email, which can then be lightly edited to align with your organization's tone and style.

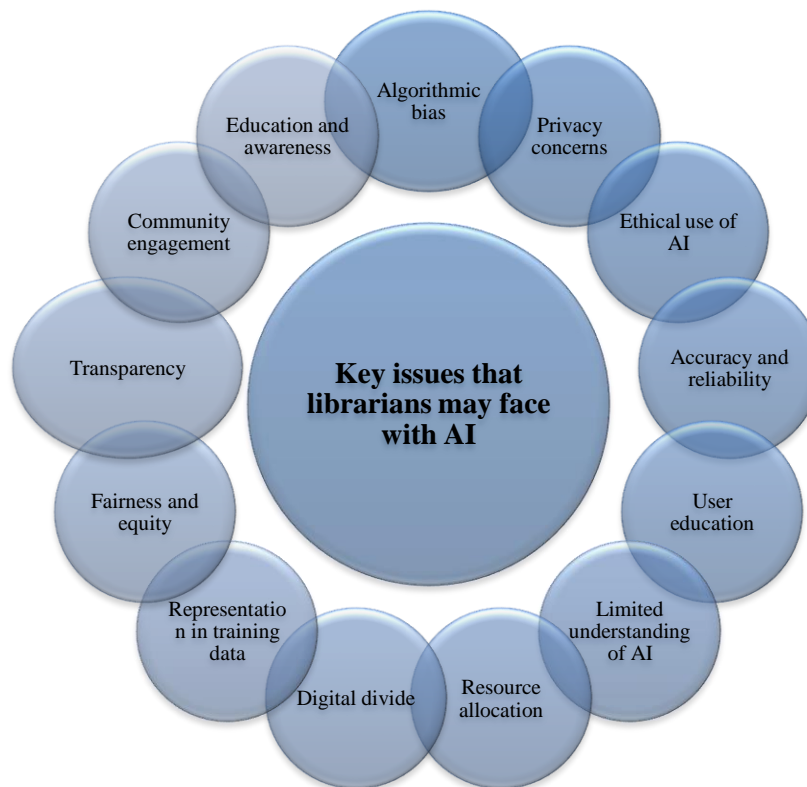
2.4 Impact on Collection Development

AI-driven collection development tools are set to be integrated into libraries soon. These tools can provide more in-depth insights into materials by leveraging the full text of titles to generate lexile scores and conduct diversity audits. In the realm of audiobooks, the relatively low cost of AI narration is expected to boost the number of titles

published each year. While this trend may raise concerns for narrators, it also has the potential to enhance overall accessibility of the collection.

2.5 Key issues that librarians may face with Artificial Intelligence (AI)

1. Algorithmic bias:
2. Privacy concerns
3. Ethical use of AI
4. Accuracy and reliability
5. User education
6. Limited understanding of AI
7. Resource allocation
8. Digital divide
9. Representation in training data
10. Fairness and equity
11. Transparency
12. Community engagement
13. Education and awareness
14. Ongoing monitoring and evaluation



3.0 Conclusion

The research article concludes that Artificial Intelligence (AI) is a transformative technology that libraries must adopt to enhance their services and operations. While AI offers significant advantages, such as improved efficiency, cost savings, enhanced user experience, and innovative tools for education and research, it also presents challenges. These include ethical concerns, algorithmic bias, privacy issues, and the need for continuous training and resource allocation.

Librarians play a critical role as educators, advocates, and ethical gatekeepers in integrating AI into library services. They must ensure equitable access, transparency, and community engagement while addressing the digital divide and representation issues in training data. The article emphasizes that AI's potential to revolutionize libraries and research is undeniable, making it essential for libraries to adapt and leverage AI effectively to stay relevant in the future.

4.0 References

- i. Website of the Digital librarian (2024) Accessed on 01.10.2024 Retrieved from
- ii. <https://the-digital-librarian.com/2023/01/23/artificial-intelligence-in-the-library/>
- iii. Website of the Infotoday (2024) Accessed on 01.10.2024 Retrieved from
- iv. <https://www.infotoday.com/it/jan24/Boedigheimer--Libraries-Play-an-Important-Role-in-the-Human-Use-of-AI.shtml>
- v. Website of Oxford English Dictionary (2024) Accessed on 01.10.2024 Retrieved from
- vi. https://www.oed.com/dictionary/artificial-intelligence_n
- vii. Website of Cambridge English Dictionary (2024) Accessed on 01.10.2024 Retrieved from
- viii. <https://dictionary.cambridge.org/dictionary/english/artificial-intelligence>
- ix. Website of IBM (2024) Accessed on 01.10.2024 Retrieved from
- x. <https://www.ibm.com/topics/artificial-intelligence>
- xi. Website of Research information (2024) Accessed on 02.10.2024 Retrieved from
- xii. <https://www.researchinformation.info/analysis-opinion/ai-challenges-librarians#:~:text=Digital%20divide%3A%20The%20use%20of,access%20to%20AI%2Denhanced%20services>.
- xiii. Website of Research information (2024) Accessed on 02.10.2024 Retrieved from
- xiv. (<https://www.researchinformation.info/analysis-opinion/ai-challenges-librarians#:~:text=Digital%20divide%3A%20The%20use%20of,access%20to%20AI%2Denhanced%20services>).
- xv. (<https://www.infotoday.com/it/jan24/Boedigheimer--Libraries-Play-an-Important-Role-in-the-Human-Use-of-AI.shtml>)
- xvi. Website of Sage Journals (2024) Accessed on 23.10.2024 Retrieved from
- xvii. <https://journals.sagepub.com/doi/10.1177/09610006221142029#bibr45-09610006221142029>
- xviii. Kenchakkanavar, A. Y. (2023). Exploring the artificial intelligence tools: Realizing the advantages in education and research. *Journal of Advances in Library and Information Science*, 12(4), 218-224.
- xix. Charalabidis, Y. (2020). Artificial Intelligence (AI). Industry, Innovation and Infrastructure.
- xx. Helen, Crompton., Donggil, Song. (2021). The Potential of Artificial Intelligence in Higher Education. doi: 10.35575/RVUCN.N62A1