International Journal of Information Movement *Vol. 10 Issue V* *September 2025*
Website: www.ijim.in *ISSN: 2456-0553 (online)* **Pages 9-13**

APPLICATIONS OF ARTIFICIAL INTELLIGENCE BASED TOOLS AND INNOVATIVE SERVICES FOR USERS FROM LIBRARY AND INFORMATION CENTERS IN INDIA

Dr. Shivakrishna S.D.
Assistant Librarian,
Department of Library, College of Sericulture, Chintamani
(University of Agricultural Sciences, Bangalore)
Email-id: shivakrishna2002@gmail.com

and

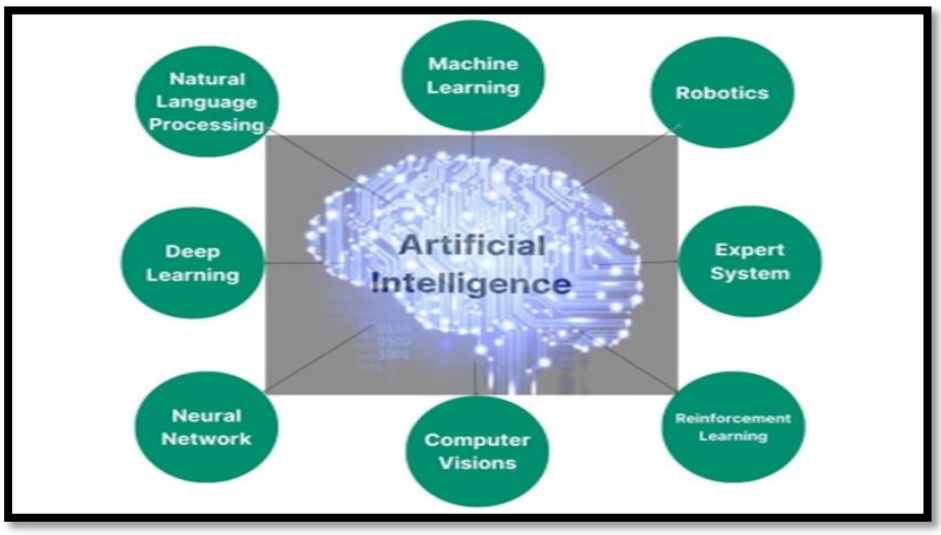
Dr. G. Kiran Kumar
Assistant Librarian,
Department of Library, College of Agriculture, Vijayapura
(University of Agricultural Sciences, Dharwad)
Email-id :- kiranmyslibphd@gmail.com

Abstract : Artificial intelligence (AI) is ongoing trend in libraries, leveraging computing capabilities to perform tasks that traditionally necessitate human intelligence. The core goal of Artificial intelligence in libraries is to develop systems capable of cognitive functions comparable to humans, thus profoundly impacting librarianship. Its integration spans various areas, including expert systems for reference services, robotic assistance in book reading and shelf organization, and immersive learning through virtual reality. While some may perceive Artificial intelligence as potentially distancing librarians from their patrons, its primary function is to augment rather than replace human roles, enriching various service provisions.

Keywords: - Artificial Intelligence, Machine Learning, Metadata, Chatbot, NLP, Expert System, Chat GPT, Virtual Reality.

1.0 Introduction

Artificial Intelligence (AI) is a branch of computer science that focuses on creating systems capable of performing tasks that typically require human intelligence. These tasks include learning, reasoning, problem-solving, perception, and language understanding. Artificial Intelligence aims to replicate or simulate human cognitive abilities in machines, enabling them to analyze data, make decisions, and adapt to new situations. Artificial intelligence is a term used to describe a group of technologies that enable computers to do a variety of complex activities, including speech and text comprehension, data analysis, recommendation making, and vision. The term Artificial Intelligence refers to a group of technologies that provide computers the ability to do a variety of complex activities, including speech and text comprehension, data analysis, recommendation making, and vision. Through the facilitation of its description, picture recognition enabled by Artificial Intelligence increases the accessibility of visual content for individuals with vision impairments. Analytical data for the development of collections Artificial Intelligence driven data analytics help libraries build their collections by revealing how different resources are used. Libraries are vital in today's ever-changing digital world because they offer access to knowledge and information. With Artificial Intelligence, libraries can take their services to new heights, offering innovative solutions that meet the needs of their communities more effectively.



2.0 Advantages of Artificial Intelligence

Artificial intelligence (AI) has many benefits in a variety of disciplines, dramatically changing business and enhancing daily life. These are some of the main benefits:

- Automation of Tasks Efficiency
- Data Analysis and Insights Speed
- Enhanced Personalization Customer Experience
- Cost Reduction Operational Efficiency
- 24/7 Availability Continuous Operation
- Accessibility Support for Disabilities
- Enhanced Security Threat Detection
- Fraud Prevention
- Improved Decision-Making Predictive Analytics
- Innovation and Creativity New Solutions
- Enhanced Healthcare Diagnostics
- Treatment Planning

3.0 Disadvantages of Artificial Intelligence

Artificial Intelligence (AI) brings numerous advantages, but like any technology, it also has its disadvantages. Here are some key drawbacks:

- High Initial Costs
- Complexity and Dependence
- Security Risks
- Social Isolation
- Regulatory and Legal Difficulties
- Lack of Creativity and Intuition
- Job Displacement and Economic Impact
- Ethical Concerns

4.0 Applications of Artificial Intelligence in Libraries

There are various applications of Artificial Intelligence in libraries to cater the user needs like:

i. **Information retrieval:** AI-powered search engines can increase the discoverability of library resources by understanding user queries, analyzing content, and providing relevant recommendations.

ii. **Data analytics**: Artificial intelligence (AI) powered analytics tools can help libraries make data-driven decisions and optimize their use of resources by giving them insights into user behavior, usage patterns, and resource allocation.

iii. **Accessibility:** Artificial intelligence (AI) technology can improve accessibility for users with disabilities by providing text-to-speech, image recognition, and other assistive capabilities.
iv. **Content Curation:** AI algorithms are able to highlight popular topics, recommend articles that are relevant, and provide customized reading lists based on the interests and preferences of the user.
v. **Virtual assistants:** AI chatbots can provide users with immediate assistance by answering their questions, pointing them in the direction of the appropriate library books, and offering customized recommendations.
vi. **Collection Development:** Artificial intelligence (AI) algorithms can analyze user preferences and usage patterns to offer insightful information for collection development decisions. This aids libraries in acquiring the most pertinent and sought-after materials.
vii. **Digital Archives and Preservation:** Artificial intelligence algorithms can help with the digitization and preservation of these fragile objects, ensuring that rare manuscripts and historical records are available to future generations.

5.0 Popular Artificial Intelligence (AI) Based Tools Used in Libraries

The Artificial Intelligence is an area of computer science that emphasizes the creation of intelligent machines that work and reacts like humans. Different types of Artificial Intelligence based tools are used in Academic Library according to user needs. Automated cataloging can analyze and categorize large amounts of data, saving time and effort for librarians and library staff. By recognizing the patterns of the received data and classifying it, it is possible to exchange information.

- **Keras:** An open-source neural network library written in Python, Keras is known for its user-friendliness and seamless integration with Tensor Flow and other backend.
- **SpaCy:** An open-source library for advanced natural language processing tasks, SpaCy is known for its efficiency and ease of use in tasks such as named entity recognition and dependency parsing.
- **Tensor Flow:** Tensor Flow is an open-source machine learning library developed by Google. Primarily used for research and production-level deployments.
- **PyTorch:** PyTorch is a machine learning library developed by the widely popular Facebook's AI Research Experiment School.
- **OPENCv:** Open CV (Open Source Computer Vision Library) is a library of programming functions aimed primarily at realtime computer vision, useful for tasks such as image processing and object detection.
- **NLTK (Natural Language Toolkit):** NLTK is a leading platform for creating Python programs for working with human language data, particularly in Natural Language Processing (NLP).
- **Scikit-learn:** A simple and efficient tool for data mining and data analysis built on NumPy, SciPy and matplotlib, it supports various supervised and unsupervised learning algorithms.
- **GENSIM:** GENSIM is a Python library for topic modeling, document indexing, and similarity retrieval with large corpora. It is often used for tasks such as document similarity analysis and keyword extraction.
- **Research Rabbit:** In 2021, a three-person Seattle team came up with it. To help users identify publications related to one or more seed papers, this tool includes lists of prior, subsequent, and comparable articles as well as visualization maps. A state-of-the-art "citation-based literature mapping tool" is an internet application named Research Rabbit. By assisting you in finding references, this type of tool aims to maximize your time when you start organizing your essay, little project, or literature review. The librarians can locate the newest and most creative ideas that can significantly enhance our libraries with the help of Research Rabbit! Maintain your leadership in library science advancements so that we can provide our clients with the greatest tools and support possible.
- **Perplexity:** Engineers having experience in back-end systems, artificial intelligence, and machine learning, Andy Konwinski, Johnny Ho, Denis Yarats, and Aravind Srinivas created Perplexity in 2022. Like ChatGPT, Perplexity is a search engine that leverages LLMs to provide AI-generated results, including citations that are linked above the summary. AI can assist libraries in keeping up with new developments in research. This ensures that library materials contain current knowledge and information to meet the ever-changing needs of users.
- **Scite:** Scite.ai is a qualitative citation analysis tool of the future. Scite is an artificial intelligence tool that was introduced in 2018 and finds out if academic articles mention, agree with, or disagree with the assertions of each cited article. Facts are friends to librarians! Scite ensures that all of the information

we provide is consistently backed up by trustworthy citations. This allows us to provide users with accurate, consistent responses.

- **Hugging Face Transformers:** This library provides sophisticated natural language processing pipelines and pre-trained models for various NLP tasks including text classification, language translation and text generation.
- **CAFFE:** Developed by the Berkeley Vision and Learning Center, CAFFE is a deep learning framework designed for speed, modularity, and expressiveness. It is commonly used for image classification and segmentation tasks.
- **ChatGPT:** OpenAI, a San Francisco-based company that produced the first GPT series of big language models, introduced ChatGPT on November 30, 2022. Advanced language models and natural language processing capability ChatGPT, a state-of-the-art conversational artificial intelligence assistant. Chat GPT can be used to automate certain tasks, such as answering reference questions, providing recommendations for books or articles, and assisting with information retrieval. This can potentially free up library staff to focus on more complex and personalized patron interactions, while also providing faster and more efficient service to patrons.
- **Semantic Scholar:** The non-profit Allen Institute for AI was founded in 2014 with the intention of carrying out significant Artificial Intelligence engineering and research for the good of society. Semantic Scholar was unveiled as the institute's groundbreaking project in 2015. Semantic Scholar provides researchers worldwide with free AI-powered search and discovery tools as well as open resources.
- **Elicit:** Stuhlmüller, a former researcher at Stanford's Computation and Cognition Lab, and Ought, a nonprofit research group founded in 2017, developed a for profit startup named Elicit. 2019 saw the addition of Jungwon Byun, the other co-founder of Elicit, who had led growth at online lender Upstart. Elicit is a machine learning tool that helps you find papers, recognize key claims, compress, come up with ideas, and more. Elicit might be useful when looking for cited papers using questions typed into the search window. It can also be used to create a list of concepts based on a search.
- **QuillBot:** QuillBot was founded with the intention of simplifying writing. It was founded in 2017 by David Silin, Rohan Gupta, and Anil Jason while they were students at the University of Illinois. The application was first created to assist with word rewording through paraphrase, but it has since evolved into a flexible writing tool. QuillBot makes sure that all of our written content, including grant proposals, articles in publications, and signage, is precise and easy to understand. Well-written message can help us inform and engage our customers in an efficient manner.
- **Consensus:** Consensus was founded by Eric Olson and Christian Salem. The goal of Consensus is to provide everyone with access to the greatest knowledge available worldwide. Use consensus to find the finest science more quickly. Librarians can provide information to clients backed by independent, peer-reviewed studies when there is consensus. By doing this, the public's trust in the library as a trustworthy source is increased because the correctness and dependability of the knowledge shared are ensured.
- **EndNote:** Clarivate created EndNote. It's a reference manager that helps you organize citations quickly so you can concentrate on your study. EndNote automates citation management, saving librarians time and effort when researching grants, programs, and other tasks. Accurate citations ensure that shared knowledge is properly attributed.

6.0 Conclusion

Artificial Intelligence (AI) application in libraries holds immense potential for revolutionizing library operations and enhancing user experiences. The comprehensive review conducted in this article has highlighted the diverse ways Artificial Intelligence technologies are employed in libraries, including Artificial Intelligence chatbots, intelligent libraries, robots, and various Artificial Intelligence applications in library services. The findings of this review indicate that Artificial Intelligence can improve information retrieval, automate routine tasks, personalise user interactions, and provide innovative services. Artificial Intelligence powered chatbots can effectively handle user inquiries and provide instant assistance, improving overall user satisfaction. Intelligent libraries equipped with Artificial Intelligence technologies can streamline various activities like cataloguing, classification, and recommendation processes, enabling efficient information access for users.

7.0 References

i. Abbas, J., Khan, S. U., & Khan, S. A. (2020). The Adoption of Artificial Intelligence in Library and Information Science: A Review. Information Discovery and Delivery, 48(1), 31-43.
ii. Acord, S. K., & Harley, D. (2021). AI in Libraries: An Investigation into the State of Academic Librarian Roles. Library Hi Tech, 39(1), 69-90.
iii. Ajakaye, J. E. (2021). Applications of Artificial Intelligence (AI) in Libraries. IGI Global.
iv. Al-Aamri, J. H., & Osman, N. E. E. (2022). The role of artificial intelligence abilities in library services. Int. Arab J. Inf. Technol., 19(3A), 566-57
v. Barki, M. S. (2022). Artificial Intelligence Application and Impact on Library Management Sysytem. International Research Journal of Engineering and Technology, 905-912.
vi. Cullen, A., & Henderson, K. (2019). Artificial Intelligence and the Academic Library: An Exposition of Critical Themes. Journal of Librarianship and Information Science, 51(3), 795-805.
vii. Dillon, A., & Richardson, J. (2019). Artificial Intelligence and Academic Libraries: A Research Bibliography. College & Research Libraries, 80(4), 504-526.
viii. Galibtech. (2024). AI in Libraries. Retrieved June 13, 2024, from https://galibtech.georgialibraries.org/emerging/aiin-libraries
ix. Gudic, M. (2021). Artificial Intelligence and Academic Libraries: A Bibliometric Analysis of the Literature 2010-2019. Journal of Academic Librarianship, 47(3), 102352.
x. Hamid, F. (2024). QuillBot AI Review: Everything You Need to Know (2024). Retrieved June 16, 2025, from https://www.elegantthemes.com /blog/business/quillbot-ai-review
xi. Hinton, G. E., & Salakhutdinoy, R. R. (2006). Reducing the Dimensionality of Data with Neural Networkds. Science, 313(5786), 504-507.
xii. Isiaka, A. O. (2023). Application and Use of Artificial Intelligence (AI) for Library Services Delivery in Academic Libraries in Kwara State, Naigeria. Library Philosophy and Practice (e-journal), 1-12.
xiii. Mali, T. S. (2023). Use of Chat GPT in Library Services. International Journal of Creative Research Thoughts (IJCRT), f264-f266.
xiv. Peters, D., & Waller, A. (2019). Libraries and AI: An Ethical Conundrum? Library Hi Tech, 37(3), 540-556.
xv. Poluru, L. (2024). Anticipating AI Impact on Library Services: Future Opportunities and Evolutionary Prospects. IGI Global.
xvi. Sridevi, P. C., & Shanmugam, A. P. (2017). Artificial intelligence and its applications in Libraries. In E- Resources Management. Retrieved June 29, 2025 from:https://www.researchgate.net/publication/327831852_Artificial_Intelligence_and_its_applications_in_Libraries.
xvii. Weller, A., & Montgomery, L. (2019). Artificial Intelligence and Information: A Bibliometric Analysis of the Literature. Aslib Journal of Information Management, 71(3), 293-307