NewGen Libraries: The World of Artificial Intelligence

Chithra Ashok
Librarian
IES College of Engineering, Thrissur, Kerala, India.
*Corresponding Author
E-mail Id:- chithraashok@gmail.com

ABSTRACT
Newgen Libraries mainly focus on the possibility of application of modern technologies in different areas like Library Management, Information Services, day-to-day library activities etc. and thereby creating a platform for e-learning. This paper is about the application of Intelligence Systems in Library environment, various subfields of AI, merits, demerits, implementation difficulties etc.

Keywords:- *Artificial intelligence, machine learning, robotics, cloud computing*

INTRODUCTION
The use of modern technologies reshaped the face of Libraries from the custodian of printed documents to a world of open access digital data and this transformation has a tremendous impact on libraries, its services, and its role. The technological evolution in libraries has been called a "quiet revolution" (Abdus-Sattar, 1997). Modern libraries are expected to adapt the new technologies like artificial Intelligence, Machine learning, Robotics, cloud computing and other areas of technology. The Library professionals also should be well trained in using these modern technologies.

ARTIFICIAL INTELLIGENCE
Human Intelligence is the ability to acquire and apply knowledge and skills. Artificial Intelligence is considered as an extension of human intelligence, consists of a group of technologies that allows machines to perform multiple activities like humans. Three main focus of artificial intelligence is perception, reasoning and action.

Artificial Intelligence is the brainchild of John McCarthy, an American Computer Scientist who introduced the term in 1956, defines "AI as the science and engineering of making intelligent machines, especially intelligent computer programs."

We can categorize Artificial Intelligence in to three such as Artificial Narrow Intelligence (ANI)which is used for face recognition, speech recognition/voice assistants, and driving cars, Artificial general intelligence (AGI) referred as strong AI with the ability to mimic human intelligence or behaviors to solve any problem and Artificial Super Intelligence (ASI) is the hypothetical AI that surpasses human intelligence and abilities.

The objective of Artificial Intelligence in different areas, i.e., Expert System (ES), Natural Language Processing (NLP), Pattern Recognition (PR), and robotics, is to simulate human intelligence with supercomputers.

REFLECTION OFARTIFICIAL INTELLIGENCE IN LIBRARIES
Application of artificial intelligence in library system encompasses descriptive cataloguing, subject indexing, reference services, technical services, shelf reading, collection development, information retrieval system etc. The benefits of

artificial intelligence in libraries can be summarized as follows:

- **Indexing**: The application of AI tools helps to improve the quality and authenticity of indexing. The different stages like identification of concept, assigning corresponding keywords etc. using AI is very easy than manual indexing. In this way AI Indexing tools helps to provide the most accurate needed information to users and they can get the related information from different disciplines also.
- **Data Summarization:** Automatic condensation of a document or particular section with key elements is possible through AI tools. There are mainly two type of automatic summarization such as Extract summarization that depends on extracting sentences from the original text and abstracted summarization used advanced natural language techniques to produce a new summarized version of the document that is different from the original one.
- **Reference Service**: The speedy dissemination of information is an important factor in the process of reference service. Different AI methods like Refsearch, Pointer, Online Reference Assistance, AMSWERMAN, PLEXUS etc. helps to locate reference resources quickly and deliver the information without any delay.
- **Chatbots**: Chatbot is a computer program that simulates and processes human conversation either written or spoken, allowing humans to interact with digital devices as if they were communicating with a real person. In case of LibrariesChatbots can handle directional questions on a library website, alert when a book is due and point a user to relevant library resources or answer simple informational requests.
- **Cataloguing and Classification**: The process of manual cataloguing and classification is a very time consuming activity done in our Libraries. To overcome this we can apply AI technique for the generation of automated catalogues and classification by using optical character recognition. Automated catalogues generated mainly in two ways such as Human-machine interfaces, where intellectual work is distributed to the arbitrator and the support system. ii) An expert system with cataloguing capabilities associated with online publishing. The automated classification also can be possible through different Library softwares and tools like Coal SORT, EP-X, and BIOSIS
- **Acquisition**: The process of selection and Acquisition is another integral part of the Library and the application of AI tools in the same is also possible through methods like Monograph Selection Advisor.

- **Translation**: Automatic Translation of foreign language materials is possible using natural language processing.
- Portable computer reader service for handicapped users.
- Intelligent Document Delivery service
- Digitization of printed materials through scanning or Optical Character Recognition
- Automatic textual analysis through the use of Decision Support System (DSS)

AREAS OF ARTIFICIAL INTELLIGENCE

Artificial intelligence is not just an intelligent system or software program, it is a biologically motivated technology

used to replicate human ways of perceiving and processing information (Sridevi & Shanmugam, 2017) The AI effect is reflected in almost all areas of our daily life such as online shopping, business, medical fields etc. Some fields of artificial intelligence that are used in library management system are Machine learning, cloud computing and Robotics aims to stimulate the human intelligence with super computers.

- **Machine Learning**– Machine Learning is a branch of Computer Science and a subset of Artificial Intelligence. The main area of focus is the programming of Data and algorithms for performing various high intelligent tasks. The level of accuracy of such type of tasks is very high. In Libraries, Machine Learning helps to increase the speed of metadata generation and to enhance classification schemes to improve search and recall precision.

- **Robotics**- The use of robots is a trend in all areas of our day-to-day life such as for doing hospital duties, for creating graphic designs, bank transactions, and industry related works, in educational institutions especially in Library and Information field. Robots can take over most of the hectic library works such as circulation, rack guidance, gate register, fine collection, stock verification etc. To deliver variety of services, libraries need to build a personalized robotic scanning system which allows the browsing collection through the web interface.

- **Cloud Computing**-Cloud computing is another major subset of Artificial Intelligence, for storing and managing data by using various tools and software applications. Data security is the most attractive feature of Cloud Computing. According to the

Forrester defines cloud computing as "A pool of abstracted, highly scalable, and managed computer infrastructure capable of hosting end-customer applications and billed by consumption."

Cloud Computing offers services such as Software as s service (SaaS), Platform as a Service (PaaS): Infrastructure as a service (IaaS). Cloud computing is used in Libraries nowadays to increase the reliability and accuracy of retrieved data and for improving the performance of digital service. Using Cloud computing, users can able to browse library racks, digital resources and can archive rare historical resources through scanning. We can preserve huge amount of data in cloud platform. Examples are OCLC, Exlibris, Polaris, Scribd, Worldcat, Encore etc.

ADVANTAGES OF AI
- Multiple access to information resources and round the clock services delivery via the use of intelligent/ advanced automated systems
- Less defects and errors.
- Helps in repetitive work
- Faster decisions
- Improves Security

DISADVANTAGES OF AI
- Lack of human touch
- Lack of technical know-how to use and operate artificial intelligence systems among the library staff.
- Can be misused
- Lack of adequate funding to develop AI
- High maintenance cost
- Limited amount of artificial intelligence experts

OPERATIONAL DIFFICULTIES OF AI IN LIBRARIES

Many libraries are facing some issues for adapting modern technologies like artificial intelligence. Some of the major issues are lack of awareness, staff resistance to adapt new technologies, financial issues, language barriers etc. The willingness of Library staff to move towards digital era is the main step of accepting modern technologies.

TECHIE LIBRARIAN

A good librarian, through working with a user, can provide a much better tailored Service, potentially using up time freed up by using AI. – IFLA Library Policy and Advocacy Blog.

To meet the information needs of users in this Digital Era, Librarians also equally well trained in handling modern technologies. Librarians should have sufficient knowledge in search engines, databases, various types of online services etc. Nowadays Librarians are actively participating in the development AI knowledge discovery tools. Various institutions giving training for Library professionals to overcome the difficulties they are facing while handling digital technologies and for building confidence among them.

CONCLUSION

Libraries are considered as community hubs. Libraries can overcome the Digital Divide by educating non-digital learners to update themselves with modern technology. So, we can undoubtedly say that AI will definitely enhance the Libraries services and user satisfaction. To satisfy the information needs of Newgen learners, it is very essential to develop an E-learning Library platform with the support of newly emerging advanced technologies like Artificial Intelligence.

REFERENCES

1. Gundakanal, S., Kaddipuja, M.(2019). Intelligent Libraries: New horizons with Artificial Intelligence. *Journal of Information Management and Educational Technology*.3(2&3):8-17p.
2. Mogali S(2014). Artificial Intelligence and its applications in Libraries, Bilingual. *International Conference on Information Technology*, NewDelhi.February 2014
3. Cox, A., Pinfield, S., Rutter, S. (2018). The intelligent library: Thought leaders' views on the likely impact of artificial intelligence on academic libraries. *Library Hi Tech*,37(3):418-435p.
4. Vijayakumar, S., & Sheshadri, K. N. (2019). Applications of artificial intelligence in academic libraries. *International Journal of Computer Sciences and Engineering*, 7, 2347-2693.
5. Omame, I. M., & Alex-Nmecha, J. C. (2020). Artificial Intelligence in Libraries. In *Managing and Adapting Library Information Services for Future Users* (pp. 120-144). IGI Global.
6. Gosavi, N., Shinde, S. S., & Dhakulkar, B. (2012). Use of cloud computing in library and information science field. *International Journal of Digital Library Services*, 2(3), 51-60.
7. Chingath, V, Babu, R.(2020). Application of Artificially Intelligent Robot in Libraries.
8. Mahalingam, S., Aravindb, S., Devi R, T. (2017). Smart Robots in library management system. *International Journal of Innovative and Emerging Research in Engineering*, *4*(1),74–79p.
9. Padilla, T. (2019). Responsible Operations: Data Science, Machine Learning, and AI in Libraries. OCLC Research Position Paper. *OCLC Online Computer Library Center, Inc.*

10. Hsieh, C. C., & Hall, W. (1989). Survey of artificial intelligence and expert systems in library and information science literature. *Information Technology and Libraries*, *8*(2), 209.