# The Impact of Artificial Intelligence on the Library

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**Abstract:** The purpose of this research is to present a view of the application of artificial intelligence and its effects on library services. Artificial intelligence is one of the important modern technologies that have appeared in recent years and have shaped important changes in library work. It is believed that the application of artificial intelligence in the work of libraries will offer libraries a new service. This study describes the role artificial intelligence, analyses the advantages and disadvantages of artificial intelligence in library services and highlight the challenges in implementing of artificial intelligence in library.

**Keywords:** Artificial Intelligence, AI in Library services, Smart Library, Innovation of library services, Information management.

**Introduction:**

Over the past ten to fifteen years, the technological revolution has had a greater impact on the library field. For example, in the form of managing physical space, organizing information resources, managing the service mode, providing intelligent services through conventional internet of things, big data, cloud computing, RFID technology. The introduction of technology in the library includes browsing, a returning system and a seat reservation system. The introduction of technologies requires the library to increase the reader experience and improve reader's service. Due to the development of technology day by day, only from the RFID technology and internet things it has been unable to meet fully in the library. The artificial intelligence works as a new command for the development of library services.

So many of us already touch and feel the artificial intelligence in our daily computing activities. Today, most mobile phones and computer system functions are developed with the features of artificial intelligence. Example of these include speech recognition, natural language processing, self-drive of cars, machine learning and robotics. The advantage of artificial intelligence is that it can effectively recognize patterns at a scale and speed that human can't. Artificial intelligence has already been used in medicine, military, education, games and libraries. The idea for introduce and implement the artificial intelligence in the library dates back to 1990. From this system library staff and patrons can benefit from improvement of information services. The application of AI in the library services includes descriptive cataloguing, subject indexing, reference services, technical services, book shelf reading, collection development and the information retrieval system.

The profession of the Librarians is not only about collecting and disseminating information, but also working with technology. As AI become an emerging technology and trend in the libraries, librarians must learn, adapt and implement themselves. Artificial intelligence has had positive impact on libraries and has brought changes in search and retrieval methods, discovery search, text and data mining (Fernandez, 2016)

**Artificial Intelligence:**

According to Wikipedia "Artificial Intelligence as the intelligence of machines or software, as opposed to the intelligence to living beings, primarily of Humans. It is a field of study of computer science that develops and studies intelligence machines. Such machines may be called AI's". According to Nwakunos (2021), AI is the computer-controlled robot that think intelligently like human beings. Its stores and analyses every activity made

by the users. As the technology improvement every field. AI is being used in all facets of human development. AI is the subfield of computer science concerned with understanding the nature of intelligence actions (Winston, 1999). In other words, the theory and development of computer system able to perform tasks that mentally require human intelligence such as visual perception, speech recognition, decision making and translation between languages.

At present, the technological fields used in the AI research are; problem solving, natural language processing, artificial neural networks, genetic algorithms, expert systems, knowledge engineering, artificial life, deep learning, intelligent control etc. John McCarthy, who coined the term in 1995, defined AI as "the science engineering of making intelligent machines" (McCarthy et al., 2007). The central goal of the AI is to reason, discover, generalize, manipulate objects and natural language processing etc. (Nilsson 1998; Mackworth & Goebel 1998; Russel & Norving 2003; Luger & stubfield 2004; Copeland, 2005)

Artificial Intelligence has the ability to think and act like a human, without any human inferences, it can help in the evolution of an intelligent library with latent intelligent roles to perform without the intrusion of human support (Massis, 2018).

**Artificial Intelligence in the Library:**

AI application can provide a useful and easy way to use this information and achieve better results in libraries. This can allow libraries to change their focus and emphasis. Artificial Intelligence is an expert system that helps the libraries understand the need to develop library operations and services. AI can make an information and recommendations, chatbots and virtual assistants, collection management and preservation. Any number of library collections can be found, searched and analyzed using artificial intelligence application. It brings together the skills and knowledge of library staff, researchers and students together to design an information system, activates critical enquiry, the imagination of forester, and support criteria for human learning and knowledge criteria (Massis, 2018; Cox et al., 2019). Through the adoption and implement this process service innovations will multiple the result. It will cut the half of the effort of the library staff. From the perspective of circulation and user services, the services provided by the intelligent library have a great impact on the frequency of using the resources of the library for readers (Chein & She, 2020). Some of the major activities for any libraries include acquisition, processing, collection building and management. AI helps with potential intelligent sides like, data acquisition, data circulation and data quality control (Gul & Bano, 2019). Also, the application of AI can be use also in the cataloging, classification, acquisition of collection, indexing and management activities as well. Through the AI technology different Intelligent technologies are also used for improving the library operations and services better. An intelligent browsing table on the library, which is able to collect information about users reading habits and this information can be used in the arrangement of collection and shelves (Minami, 2005).

Another important concept of library services deals with reference services, the role of AI can act important here also. An artificially intelligent conversational agent or chatbot might works as a virtual reference librarian which enhance face to face human interactions, and also acts as library web site tour guides, automated virtual reference and readers advisory librarians and virtual story tellers (Rubin et al., 2010; Yao et al., 2015; Cox at al., 2018; Gul & Bano, 2019).

Information search and retrieval also the major area of implementing AI. Agent technology has been used to support the information search process in digital libraries, including strategic search support, proactive support for query formulation, intelligent assistance to information search and retrieval, and personalized services to users (Lin, 2011). Depending on the interest of the users, intelligent software searches the DLs and return the information which the users is looking for and also through the personal agents, users can customize their interfaces (Kumar & Srinivas, 2004). AI can shape the library operations, administrations, research, scholarship, service innovation, usability, retrieval and so on.

AI also performs the tremendous application in library and information services such as

1) Automatic cataloguing and classification using optical character recognition (OCR).
2) Automatic translation of foreign language materials using natural language processing (NLP)

3) Automatic Indexing through expert systems.
4) Retrieval of audiovisuals materials, music and pictures in the library collections.
5) Gateways to online sources
6) Intelligent document delivery services (DDS)

## Advantages of AI in the libraries:

1) AI can finish the task quicker than human.
2) Can completed the stressful and tough work easily.
3) Complex assignment can be done in limited period.
4) Multiple functions can do at a time,
5) Less defects in task and errors, and success ration is great.
6) With in short time can get more efficiency.
7) Required low space and less size.
8) Manipulation of long term and complex situations.
9) It can enhance user experiences.
10) It can improve operational efficiency.
11) Enhanced and immersive user experience in library services delivery.
12) Maximization of efficiency in library operations; selection and acquisition of materials, technical services, circulation services, reference services and serial management etc.

## Demerits of AI in the libraries:

1) Affected to human jobs.
2) Unemployment case increase.
3) Quality of the AI is dependent upon programmer.
4) Absence of human touch.
5) Chances of laziness in new generation.
6) Chances of increase in technological dominance.

## Issues, challenges and limitations to implement AI in the libraries:

1) Ethical consideration: By using AI the library management, it raises ethical concern such as privacy and algorithm.
2) Skills and training: Implement of AI in the library requires librarians to acquire new skills and expertise in data analytics, machine learning and natural language processing.
3) Libraries needs hardware, software and management devices.
4) Availability of support from the management and heard of the library and agencies.
5) Lack of adequate funding to develop and procure AI systems in libraries.
6) Cost of the AI in system development and maintenance.
7) Limited natural language capabilities.
8) Limited in AI experts among library automation vendors.
9) The filed of AI complex and require a specialized knowledge person.

## Conclusion:

The use of Artificial Intelligence in the library is not the meaning of replace the job of librarians as a whole. The use of AI system in the library to help the librarians and carry out their activities. In todays' environment several activities of librarianship have been replaced by the information technology. It is not an easy task for librarians to always remain on their own and eager to use and develop technologies. The education system is changing due to the impact of the artificial intelligence. Artificial intelligence helps to enrich and improve the exchange of information and communication between people. Therefore, librarians should also change their mind about the implementation of artificial intelligence and positively embrace artificial intelligence and promote library operations, communication functions and efficiency in library services.

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