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Enhancing Library Services Using Artificial Intelligence: An Overview

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Abstract

Traditional library services are being revolutionized by artificial intelligence (AI), which presents chances for efficient and high-quality service delivery through AI-powered platforms. Many library operations and services might be automated by artificial intelligence, giving patrons round-the-clock help in fulfilling their information needs. As a result, libraries frequently incorporate artificial intelligence into their daily operations and services. Examining the present level of knowledge about libraries and artificial intelligence can help to confirm this further. Consequently, the study's goals were to ascertain the state of knowledge at the moment on the use of AI for library services and to look into any study gaps in this area. According to the evaluation, a great deal of research was done to identify the library services and activities where artificial intelligence (AI) may be used to improve the efficacy and efficiency of service delivery. It also identified the difficulties libraries encounter when implementing AI technologies. The study also identified the gaps.

Keywords: Academic Libraries; Artificial Intelligence and Library Services; Library Technology

Introduction

Libraries are thought of as service-oriented institutions, and in the current day, cutting-edge technologies have changed the services they offer. The evolving needs of library patrons are changing quickly in the digital era. This has forced librarians to look for fresh and creative technology in order to preserve their libraries' user experiences. As a result, libraries must constantly manage enormous volumes of material, offer effective services, and guarantee a flawless user experience. The combination of information technology and automation has drastically changed traditional library systems. Artificial Intelligence (AI) is one such revolutionary technology that might completely change library operations and services.

A wide area of computer science called artificial intelligence (AI) focuses on creating intelligent computers that can carry out jobs that generally call for human intellect. By enabling computers to respond to inquiries from humans, it enriches computers with intelligence. Because of its potential, artificial intelligence (AI) has become a significant technological advancement that has an impact on the operations of both business and service-oriented organizations. AI's primary objective is to enable computers and machines to perform cognitive functions like problem-solving, decision-making, perception, and understanding human communication.

AI has become a crucial tool for increasing organizational efficiency and services. AI adoption in libraries has the potential to open up a new technology environment for innovative and successful library service delivery. According to Okunlaya et al. (2022), new technology solutions for improving library services and operations include biometric recognition, expert systems, machine learning, machine vision, algorithms, sensors, and robotization, all of which are AI-based. There are several AI solutions that may be utilized in libraries to increase service efficiency and provide 24-hour user information support with minimum human participation.

It is amazing how AI technologies have had such a significant impact on numerous industries in the twenty-first century, particularly libraries. AI is becoming the latest developing trend in libraries. AI in libraries enables robots to detect, comprehend, behave, learn, and perform administrative tasks, offering cutting-edge

technology. Librarianship is noted for infusing cutting-edge technology into not just information distribution but also the use of computer-based goods and services to various library operating procedures and library services. AI applications have a significant scope for library activities, emphasizing the efficiency and accuracy of services rather than their technological capabilities. AI is a revolutionary technology used by libraries to fulfill their primary goals.

In general, artificial intelligence is being progressively incorporated into the operations of libraries as well as the delivery of services from such libraries. An investigation into the current state of knowledge regarding artificial intelligence and libraries throughout the world lends more credence to this assertion. The purpose of this study is to evaluate the current state of knowledge on the application of artificial intelligence in library services and to suggest areas that require more investigation. As proven by a number of studies conducted all around the world, AI-driven solutions are bringing about a revolution in the delivery of library services. On the other hand, a literature evaluation concerning the application of AI in libraries has been carried out. This study focuses on library services that are driven by artificial intelligence systems. By utilizing artificial intelligence (AI) technology for effective service delivery and developing regulations to promote the ethical use of AI, the findings of the study will be of assistance to libraries. The purpose of the study was to determine the present level of knowledge on the application of artificial intelligence in library services. Also finds that library professionals will be inspired to make use of artificial intelligence (AI) in library services for persons with disability (PwD) users, which will further boost library operations in the necessary direction.

AI and library integration

- AI in library services will assist in integrating readers and libraries to give correct information in the information explosion era. Library staff and users will gain impetus from AI. Readers will use the same platform and get humanized services for less effort. Lack of research linking AI to librarianship is another reason not to use AI in libraries. Some libraries have partially adopted AI, such as virtual reference chatbots that employ machine learning. These services help librarians address patrons' library questions. AI can assist patrons examine ethics, privacy, and falsehoods. AI may also enable the clients to locate print books on the shelf and help them to find the appropriate book in the right spot. AI chatbots can offer virtual reference services to help users. In the AI era, librarians are called virtual storytellers or reader advisors. AI chatbots will improve library services to meet users' requirements. According to MIT, GPS can help library visitors access relevant material. For years, many libraries in poor and developed nations have linked GPS to library websites (Cox et al., 2018).
- Modern social media platforms, such as Twitter, Snapchat, Facebook, and Instagram, make use of artificial intelligence. Many libraries have altered their offerings on social media to attract customers. Users may save and manage their important information using these programs, which employ artificial intelligence for data management and storage. Libraries should utilize it to store large amounts of data. Technologies for face recognition that are managed and driven by artificial intelligence are present in almost every smartphone. As far as face and virtual voice systems are concerned, the finest examples are Siri and Alexa. Deep learning is a type of learning that can be taught in an academic setting using these sorts of technology.
- An expert system connects AI to the library catalog. There are two methods for connecting AI to a library catalog: a human-machine interface that allows us to trace the data intermediary and support system, and linkages between an electronic publishing system and a library catalog that allow data to be passed through an online medium without the intellectual input of an intermediary.

Methodology

Based on a qualitative methodology that makes use of content analysis tools, this study was conducted. For the purpose of this study, the existing body of literature on the topic was investigated and examined. The study examines the benefits and drawbacks of artificial intelligence (AI) in library services, as well as potential solutions to the problem.

Issues/gaps concerning AI in libraries

- Certain librarians contend that the integration of AI into library operations presents particular challenges that must be resolved prior to its implementation in library services.
- Financial challenges are essential considerations for the implementation of AI in library services. The library frequently suffers from insufficient infrastructure, as AI necessitates advanced technological tools for effective implementation. Consequently, inadequate infrastructure cannot adequately support AI in library services.
- Resistance to change poses a challenge, as certain librarians exhibit a lack of interest in adopting new and innovative technologies. The negative perception of librarians regarding their insufficient IT skills may pose challenges for AI implementation, as some librarians lack proficiency in IT applications.
- Additional challenges encompass inadequate networking, inconsistent power supply, insufficiently trained personnel, obsolete technologies, economic constraints, and the high costs of necessary technological tools, all of which must be addressed prior to the implementation of AI in library operations. Despite these challenges, AI is expected to enhance library operations through improved information delivery services, increased efficiency, cost-effectiveness, and expedited services for both current and past patrons.

Findings

Artificial intelligence (AI) is a dynamic technology that has the potential to be utilized in library services, as demonstrated by the findings of this study. However, there are a few barriers that hinder the use of AI in library operations. These obstacles include a lack of enough money, the attitude of librarians, and technical abilities. The findings also indicate that the implementation of AI in library operations will hasten the progress of libraries in the desired direction. In addition, this paper details a number of applications that may be implemented without incurring any expenses.

Conclusion

Implementing AI will make it simpler for the library to reach out to current and past users in their time of need. Libraries in developed and underdeveloped nations are still not completely aware of this technology. Although there is a wealth of material on artificial intelligence in libraries, the most of it focuses on specific library applications. AI is certainly one of the growing technologies that, if applied, maximize library services while remaining low-cost. Libraries play an important role in promoting breakthrough technology. Adequate funding for incorporating AI in library operations should be considered.

Advocacy programs for librarians can identify the numerous difficulties related with AI in library operations. Training and AI conferences should be established to help librarians gain new skills. A appropriate policy should be developed to meet both the strengths and shortcomings of AI in library services. Bringing librarians to discussion forums can assist in changing their minds about the adoption of AI in library operations.

AI is still an emerging technology that is increasing at an alarming rate in many companies. In both developed and developing nations, a few prominent services related to library operations include RFID, GIS technology, chatbots, and virtual references, yet most librarians are ignorant of their uses. Although some low-cost applications, such as facial recognition, chatbots, and Google maps, can be linked to library websites, most applications, such as big data, the Internet of Things, and augmented reality, are prohibitively expensive for libraries in both developed and developing countries.

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