

# Chapter 7

## The Application of Artificial Intelligence for Reference Purposes in Academic Libraries

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### ABSTRACT

*Artificial intelligence has played an important role in reference services for academic libraries. This chapter reviews 40 journal articles published between 2000 and 2023. It reports that artificial intelligence technologies of machine learning, robots, and natural language processing have all played an important role in providing personalised services in information literacy, sentiment analysis, information retrieval and recommendations on library materials. In addition, the review reported an increased usage of ChatGPT among academics and reference librarians in academic libraries. The review generally showed a limited adoption of artificial intelligence for reference purposes in the developing world due to several limitations such as lack of knowledge and skills, lack of finance and limited infrastructure among these institutions.*

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## **INTRODUCTION**

Although libraries are typically associated with the collection, management, preservation, and dissemination of printed materials, technological advancements have revolutionized a number of the services that libraries have historically provided. However, traditional libraries now confront difficulties that have rendered traditional books outdated and library instructions meaningless due to the quick technological advancements of the web and the internet. Additionally, information literacy courses are now part of the curriculum, bridging the gap between theory and practice. Meanwhile, technology has taken over some traditional library functions, meaning that desk-reference library services may soon become obsolete as virtual reference services take their place. One of the main library departments that has been impacted by these technological advancements is the reference services division. Through the integration of these technologies into their regular services, artificial intelligence has the potential to revolutionize reference services in academic libraries. Academic library reference librarians must employ technology to give the information and literacy skills that today's "netgen" generation of users require. They cannot remain static or traditional in their services or outreach to users (Musangi, 2015). Today's academic library patrons and technological advancements have altered the physical layout and operations of libraries, which affects the delivery of information as these institutions work to reinvent their offerings to better meet the requirements and expectations of their patrons. Libraries no longer have to be concerned about geographic restrictions while providing reference services to their clients. Reference services have four basic objectives, according to Tyckoson (2011): educating users, providing informational answers to queries, recommending resources, and promoting library services.

Accessing physical library collections in many traditional libraries requires laborious manual labour. However, in recent years, advances in AI-related machine learning technologies have made it easier for library staff and patrons to locate books, locate digital content on the web, and locate and retrieve it from institutional repositories and databases. Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN), which have shown success in text identification and recognition, have been used to do this (Yang et al, 2016). According to Singh (2019), it can be difficult for readers to find books in a library with a wide selection of volumes. For this reason, technologies like RFID and AI are becoming more and more relevant in libraries. As libraries' features evolve, shaped by the always-shifting requirements and characteristics of the communities they serve, certain changes are highly pertinent and are even reflected in the terminology used to designate different types of libraries. In such circumstances, academic libraries have always looked for

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