

# Chapter 7

## Past, Present, and Future of Artificial Intelligence in Library Services

**Ambar Yoganingrum**

*Research Center for Informatics, National Research and Innovation Agency, Indonesia*

**Rulina Rachmawati**

*Repository, Multimedia and Scientific Publications, National Research and Innovation Agency,  
Indonesia*

**Koharudin Koharudin**

*Department of Computer Science, IPB University, Indonesia & Bureau for Organization and Human  
Resources, National Research and Innovation Agency, Indonesia*

### **ABSTRACT**

*In the past, human imagination about intelligent machines was only found in the science fiction of story-books and films. Today, artificial intelligence (AI) can be found in people's daily lives. Various professions should prepare to face the automation era in the future. Libraries may be one of the slowest institutions to develop AI. Gradually, the institution adopts it for their services. Many papers focus on AI development in libraries, but the opportunities and challenges for librarians to face the era of automation are essential to discuss. This chapter provides insights into the professions that librarians can offer. First, this chapter provides information on the history and development of AI in library services. Then, based on bibliometric analysis, this chapter discusses AI trends in library services. Next, this chapter conducts a systematic review and presents the types of AI developed over time for library services. Finally, this chapter discusses the types of jobs, expertise, and skills that librarians can develop in the robotics era in the future.*

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## **INTRODUCTION**

Artificial intelligence (AI) is currently found in various aspects of human life, including when using library services. There was a time when the internet was perceived as a threat to eliminate the human need for a library. Even though it was considered slow to react, at the end, not only internet technology, the library also responds and decides to use AI in its various flagship services. Understanding the challenges and opportunities of AI in the future will help self-development in the library field.

Artificial Intelligence is described as human efforts to train machines by learning from experiences, causing machines to recognize patterns and then assist humans in making decisions (Muthukrishnan et al., 2020). AI helps humans deal with the complexities of analyzing or recognizing patterns in large datasets. AI is currently used in many industries, such as banking, healthcare, technology, and libraries. The adoption and development of AI in those various industries are on their way. Especially in libraries, the application of AI in library services still requires encouragement and efforts for adaptation.

A trained machine can replace activities that can be expressed in a series of instructions. Consequently, some jobs are at risk of being lost, including some assignments in the library. Frey & Osborne (2017) predicted that robots could replace library technicians, library assistants, and librarians within twenty years by 99%, 95%, and 65%, respectively. Meanwhile, some librarian tasks such as serving and reacting to user requests or conducting research to improve processes will be more challenging to automate. Therefore, certain professions are threatened with being lost, even to those institutions (Massis, 2018; Arlitsch & Newell, 2017).

However, the library has developed a number of AI prototypes for user services. This chapter provides information on the opportunities and challenges of library workers in the AI era. The jobs and skills that librarians need to develop to face the AI era are proposed. The authors focus on AI development in academic, public and specialized libraries such as law, medical, and other libraries. Before discussing AI in library services, this chapter will first discuss AI in general, such as the history of AI and the current development of AI in library services. The following section discusses the results of the bibliometric analysis regarding AI trends in library services. Next, the authors will discuss the types of AI developed over time for library services with a systematic review.

## **BACKGROUND**

Numbers of motivations and suggestions have been proposed for survival in the new world of the library. Libraries, both academics and public, have the opportunity to be used by people who need information about skills and knowledge that are in line with the new world. Public libraries can play a role in helping the workforce acquire AI skills (Finley, 2019). Alternatively, exert ourselves to practice quantitative and analytical skills to learn the value of big data and understand the algorithms that can make the machine work (Arlitsch & Newell, 2017). Adopting AI into library services may provide positive improvements for library services. However, the positive side of AI intrusion still needs to be explored further (Massis, 2018). Ratledge (2017) argued that a robot at the service desk became common in the new world as long as the changes are not too sudden and societies have time to adapt.

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