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*Article*

# Artificial Intelligence Tools and the Future of Librarians

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**Abstract:** The recent advancement of Artificial Intelligence (AI) and Machine Learning (ML) tools has had a pervasive effect on every sphere of human existence. Libraries and information centres are not immune to these technological advances. These disruptive technologies have transformed the traditional face of libraries and their operations. There are many available AI tools, for example, chatbots, literature review tools, plagiarism detection tools, and several other developments in the field that have perhaps made the functioning of libraries easier. However, there is growing concern and uncertainty among both traditional library and modern professionals regarding the possible job loss and security issues related to these new technologies, which the professionals must deal with. Librarians and information professionals must be ready to handle the unforeseen situation. However, it is to be observed how libraries cope with these uncertainties, and threats to the integrity, availability of data, and normal library housekeeping functions.

**Keywords:** library and information science; artificial intelligence; chatbots; literature review tools; information resilience; plagiarism detection tools

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## 1. Introduction

The Library and Information Science (LIS) field has been relatively slow in adopting the latest advancements in Information and Communication Technology (ICT) [1]. The main reason behind this slow adoption is the financial constraints, skilled personnel, and resistance to change. However, there is a growing recognition that use of ICT can improve accessibility, efficiency, and the range of services offered by libraries. There are tremendous changes in the LIS field particularly with the advent of Internet. Lately, many new technologies have been adopted and severely affected the field of LIS. For example, Artificial Intelligence (AI) tools and computer operations have changed libraries and their functioning. Among the many examples in library housekeeping operations, libraries had adopted Integrated Library Systems (ILS). Now it is transformed to Library Services Platforms [2].

AI is a very dramatic, transformative, and all-pervasive effect on many aspects of the society. Certainly, libraries are not immune to it. Now AI tools are used in library services, information search landscape, and in information literacy [3]. Among many, few AI tools recommended for librarians include chatbots, plagiarism detection tools, literature search and review tools and so on [4].

As the LIS profession is centered around the service of patrons, these tools have made librarian's job easier. Nevertheless, there is a concern that these technologies will replace the traditional librarians' job. However, scholars argue that AI tools for example ChatGPT expected to be complementary to traditional libraries in terms of providing customized information support [5].

In this context, this paper is going to review a few available AI tools and their potential application in library services. As these are disruptive innovations in the field, they are going to change the equilibrium of current information landscape. While doing so, the paper is divided into the following section. The section follows will deal with the concept of information resilience, followed by a few available AI tools and the role of information professionals in the changing scenario and finally the concluding remarks.

## 2. Available AI Tools

There are many available AI tools that are used in the library for their different functions. For example, chatbots, literature review tools, plagiarism detection tools and so on. This section will deal some of the AI tools relevant to the library.

### 2.1. Chatbots

Chatbots, short for chat robots, are computer programs designed to simulate conversation with human users, especially over the internet [6]. These programs use artificial intelligence (AI) and natural language processing (NLP) to understand and respond to user inputs in a conversational manner [7]. Chatbots are employed in various applications and platforms to provide information, answer queries, and perform tasks without requiring direct human involvement [8].

Chatbots utilize NLP algorithms to comprehend and interpret human language [9]. This allows them to understand user queries and respond in a manner that resembles natural conversation. Chatbots interact with users through chat interfaces [10], such as messaging apps, websites, or dedicated chat platforms. Users can put text or voice messages, and the chatbot processes and responds accordingly. Many chatbots are designed to perform specific tasks or actions [11]. This can include providing information, guiding users through processes, making reservations, answering frequently asked questions, and more. Chatbots can be integrated into various platforms [12], including websites, mobile apps, social media platforms, and messaging apps like Facebook Messenger, WhatsApp, or Slack. Some advanced chatbots leverage machine learning algorithms to improve their performance over time [13]. They learn from user interactions and adapt their responses based on patterns and user feedback. Chatbots can provide around-the-clock service, allowing users to access information or assistance at any time without the need for human intervention. Advanced chatbots can be designed to provide personalized interactions by remembering user preferences, history, and context from previous conversations [14].

Chatbots are used in a variety of industries and scenarios, including customer support, e-commerce, healthcare, education, and more [15]. They offer businesses a scalable way to interact with users, handle routine queries, and streamline certain processes. The evolution of AI and natural language processing has contributed to the increased sophistication and effectiveness of chatbots, making them valuable tools for enhancing user experiences and operational efficiency [16].

Chatbots are revolutionizing the field of library and information science by offering both opportunities and challenges. These handy tools can increase efficiency by handling normal housekeeping operations, routine tasks, providing 24/7 access to services, and providing data-driven insights. However, they also present many challenges. For example, librarian can face job displacement fears, skill gaps, algorithmic bias, and overreliance on technology. However, library and information professionals must adapt these comparatively emerging and disruptive technologies in their normal activities, invest in training programs, and be aware of potential biases to ensure fair and inclusive experiences. Moreover, balancing both the automation and human connection is crucial to ensure fair and balanced approaches to modern library services.

### 2.2. Literature Review Tools

Literature review tools are software applications or online platforms designed to assist researchers and academics in conducting literature reviews more efficiently and effectively [17]. These tools provide various features to help users discover, organize, annotate, and analyze scholarly literature relevant to their research topics [18].

Reference management tools help users collect, organize, and cite academic references [19]. They allow users to import citation metadata from databases, PDFs, and websites, and organize references into libraries or folders. Academic search engines and databases provide access to a wide range of scholarly literature across various disciplines [20]. They allow users to search for relevant articles, books, conference papers, and other academic resources [21]. Systematic review tools help researchers conduct systematic literature reviews by facilitating the screening, selection, and analysis

of relevant studies. They streamline the review process and enable collaboration among multiple reviewers. Text mining and analysis tools help researchers extract insights from large volumes of textual data [22]. They allow users to analyze themes, patterns, and relationships within the literature, and visualize findings through charts and graphs. Alert services notify users about new publications relevant to their research interests. Users can set up customized alerts based on keywords, authors, or specific journals, and receive regular updates via email or RSS feeds. Collaboration platforms facilitate communication and collaboration among research teams [23]. They allow users to share literature, annotations, and comments, and coordinate tasks and workflows in real-time. Annotation tools enable users to annotate PDFs and other documents with highlights, comments, and tags. They help users organize and categorize key findings and insights from the literature. Visualization software allows users to create visual representations of bibliographic data, citation networks, co-authorship networks, and other relationships within the literature. Visualizations help users identify trends, clusters, and gaps in the literature [24]. However, they also present challenges such as overreliance on tools, potential biases, ethical concerns, and job displacement fears. Librarians must be aware of these issues and address them during consultations. They should also advocate for ethical use of these tools, addressing data privacy, ownership of research outputs, and potential manipulation of results. Overall, these tools should be seen as assistants rather than replacements.

### *2.3. Plagiarism Detection Tools*

In today's digital age, where information is readily accessible and academic resources abound online, maintaining academic integrity is paramount. Plagiarism, the act of using someone else's work or ideas without proper attribution, undermines the credibility of scholarly research and erodes trust within academic communities [25]. However, advancements in technology have led to the development of sophisticated plagiarism detection tools that play a crucial role in identifying and deterring plagiarism.

Plagiarism detection tools streamline the process of evaluating written assignments and research manuscripts, saving time for instructors, editors, and peer reviewers [26]. These tools serve as a deterrent against academic misconduct by creating awareness of the consequences of plagiarism and encourage responsible research practices [27]. By identifying instances of plagiarism, these tools help to maintain the quality and integrity of scholarly publications, ensuring that research findings are based on original work and properly attributed sources [28]. These are valuable educational resources that help both students and researchers to understand the importance of academic integrity and develop proper citation and referencing skills [29]. These tools play a vital role in safeguarding academic integrity and promoting responsible research practices [30]. These tools offer librarians opportunities to improve academic integrity, provide early intervention, create educational resources, and streamline workflows. However, they also present challenges such as false positives cases, overreliance on technology, privacy concerns, and stigmatization. Librarians must ensure data privacy and handle it ethically, while addressing potential misuse of students' work. Additionally, they must address students' anxiety and stigmatization to ensure a positive learning experience.

## **3. How These Tools Disrupt the Information Landscape**

As seen from the previous example, there are many AI tools that libraries can use to integrate in their normal functions. Libraries around the world particularly libraries in developed countries are increasingly using AI tools to enhance their services. These tools help in normal library operations for example, data collection, data analysis, information extraction, pattern recognition, summarization, visualization, and trend analysis. Moreover, these tools help in record-keeping, and overall research processes. In this way these tools are providing librarians with valuable resources to streamline their workflows.

In the year 2020, International Federation of Library Associations and Institutions (IFLA) released a statement outlining key considerations for the use of artificial intelligence (AI) and machine learning (ML) technologies in library sector [31]. The statement provides guideline to libraries for integrating AI and ML tools responsibly and effectively into their services. The guideline



further addressed issues such as privacy, equity, and transparency. Additionally, IFLA emphasizes the importance of promoting AI literacy among library professionals to ensure informed decision-making and user support.

Research and reports, such as those from CILIP, highlighted that AI, machine learning, automation, and robotics are transforming information professions. These technologies are not just tools but also influence professional roles and skill requirements. They offer opportunities for enhanced data analysis, information retrieval, and decision-making. However, there are concerns about job displacement and the need for upskilling to adapt to the changing demands. Despite challenges, embracing AI and related technologies can lead to more efficient and innovative practices among information professions. Studies stress the importance of understanding and managing the implications of these technologies for the future of information-related fields [32].

#### 4. Concluding Remarks

The latest development of AI technology and the vast information created and shared through these technologies has changed every sphere of human activities. Presently, users around the globe are becoming more dependent on AI-generated content. In this context, there is a need to win consumer's confidence in the veracity and authenticity of AI-generated content. Information users frequently encounter a difficult-to-navigate complex web of information because of AI-generated material.

By leveraging advanced technology and algorithms, these tools can help in information search, reference services, help to identify instances of plagiarism, educate users about proper citation and referencing practices, and uphold the credibility of scholarly research. However, it is important to recognize that plagiarism detection tools are not infallible and should be used in conjunction with other measures to ensure academic integrity. Ultimately, fostering a culture of honesty, transparency, and ethical conduct is essential for maintaining the integrity of scholarly research in the digital age.

Librarians are perhaps in a unique position to help users and AI-generated content interact because of their reputation for proficiency in information curation, verification, and dissemination. Librarians have a definite role in an information resilient society where AI-generated information is not only plentiful but also trustworthy, dependable, and available to everyone [33].

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