

## Chapter 7


# Exploring the Augmented Intelligence and Augmented Reality: Their Use and Future Applications in Libraries

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### ABSTRACT

*In the technology-driven world, the continuous evolution in technology has an immense impact on every domain of human civilization. Intuitive, assistive technological advancement enables the use of innovative applications. In recent years, among such rapidly developing technologies are augmented intelligence and augmented reality. Augmented intelligence is a technology that combines artificial intelligence with human intelligence to achieve operation. On the other hand, augmented reality is a technology where users interact through the lens of a camera and feel as if they work in a real-world environment. In this milieu, it is imperative for libraries to use these technologies and offer a strategic medium through which libraries can deliver the information to the patrons. The subject of this article is to explore the concept of augmented intelligence and augmented reality and their application in libraries.*

### INTRODUCTION

“Augmented intelligence is the alternative conceptualization of artificial intelligence”. It emphasises the

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importance of machine learning and the predictive analysis of data replacing human intelligence (Rui, 2017). It is one of the most useful types of artificial intelligence and uses machine learning, deep learning and predictive analysis of datasets to enhance human intelligence (IEEE Digital Reality, n.d). Augmented intelligence means the “use of technology to expand human information processing capabilities as it allows the combination of human intuition and imagination with the ability of artificial intelligence”. That means humans will directly influence the input and output of a system based on the judgement of augmented intelligence (Zheng et al., 2017). Its motive is not to replace humans but to expand their thinking (Sharma, 2018). According to Wójcik (2020) the potential of the human cognitive process and applying the computing power of machines offers the flexibility to connect digital and physical environments, creating the potential for development in human activities. Thus, augmented intelligence is the junction of two concepts viz artificial intelligence and augmented reality.

The advent of smartphones led every individual to have an augmented reality interface in the palm of their hands. The uses of augmented reality are mostly for entertainment purposes and can be widely seen in popular media platforms like Facebook and Snapchat, this technology may be utilised in learning and may further be used to introduce nonusers to the physical and virtual space of the libraries and allow to access resources from reference services (Lund & Agbaji, 2018). Augmented reality is the integration of 3D virtual objects in real-time with a 3D real environment. It is a part of mixed reality where virtual objects are superimposed with the real world and the users can see the real world (Azuma, 1997). It allows the integration of the real and the virtual world and displays information directly on the mobile device which corresponds to the physical environment. This technology allows users to experience a computer-enhanced perception of the world around them and to explore the new environment in an augmented view of reality (Baumgartner-Kiradi et. al, 2018; Abram, 2019). Augmented reality is a highly visual and interactive method of overlaying digital contents through the camera and is easily streamed on smartphones. It aims at enhancing the user’s perception of interaction with the real world and brings virtual information not only to the immediate surroundings but also provides an indirect view of the real-world environment (Carmigniani & Furht, 2011; Sinha, 2021).

On the other hand, artificial intelligence is a fast emerging and multidisciplinary domain involving the creation of machines and stimulates human rationality (Liu et.al, 2021). Tredinnick (2017) defines AI as “a cluster of technologies and approaches to computing focused on the ability of computers to make flexible rational decisions in response to unpredictable environmental conditions”. According to Gupta and Dhawan (2018) AI is the way of making a computer think intelligently in a similar manner as humans think and its main aim is to create an expert system that exhibits intelligent behaviour and implement human intelligence in machines. Veinstein (2019) further points out that intelligence in machines allows devices to perform better functions, recognize and imbibe patterns more efficiently than humans. AI has impacted every sphere of life and is vigorously used in healthcare, business, engineering, pharmacology, agriculture, smart manufacturing, economy, disaster management etc. (Cioffi et. al, 2020). Similarly, the utilisation of artificial intelligence in libraries started in 1990 and provided knowledge-based services to library users. It acted as a complementary system to the main library system and increased the effectiveness and efficiency of libraries by providing intelligent decisions for the retrieval and use of information (Asemi et.al, 2020). Technical service in the libraries can be performed beyond the ability of Natural Language Processing. Artificial intelligence provides a medium for intelligent library systems and innovative libraries can be established with adequate knowledge-based service (Oname & Alex-Nmecha, 2020). In the context of libraries, AI has been defined as “systems that modify their behaviour without being explicitly programmed based on data gathered, usage analysis and different observations. AI re-

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