Chapter 4
Exploring the Impact of Artificial Intelligence on Healthcare: A Comprehensive Review

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ABSTRACT

Alan Turing's visionary concept of computers emulating human behaviors has manifested in the widespread integration of artificial intelligence (AI) across various aspects of daily life, including banking, personal assistants, and gaming. AI's transformative influence significantly extends into the healthcare sector, particularly in the Internet of Things (IoT) realm. In healthcare IoT, interconnected devices and systems are converged, fostering seamless data exchange to enhance patient care. This encompasses notable applications such as optimizing early disease diagnosis and streamlining medical processes, resulting in expedited procedures, cost-effectiveness, and heightened efficiency. The primary objective of this thorough review chapter is to elucidate the profound impact of IoT-enabled artificial intelligence in healthcare.

DOI: 10.4018/979-8-3693-9641-4.ch004

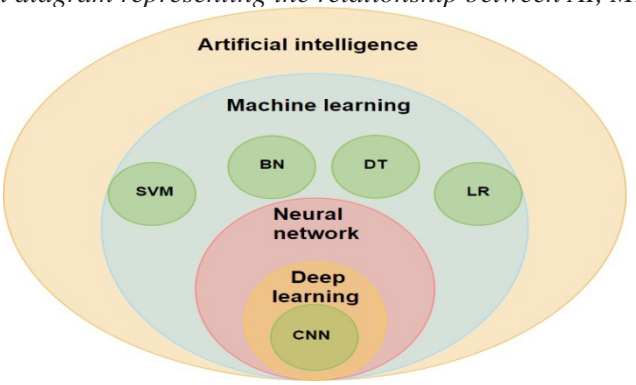
INTRODUCTION

Hospital patient monitoring methods currently in use take a lot of time. Real-time patient monitoring research prototypes can be designed thanks to advancements in IoT systems' communication protocols. This prototype will help with direct communication between doctors and patients. A patient's health can now be continuously and remotely monitored thanks to the growing use of sensors in medical equipment. additional mobile communication devices, also known as medical devices (IoTMDs), or the Internet of Things, (Khanna & Misra, 2014).

AI develops a robot or software that can behave like a human. AI has gained popularity for its diverse capabilities in handling complex tasks and vast data, gaining acceptance AI significantly impacts healthcare industry by managing large medical data, providing patient views, and supporting nurses and physicians. Healthcare utilizes AI algorithms to mimic human behavior. AI efficiently solves problems using large data sets, comparing data from small samples and counting patient photographs to assess effectiveness, (Ardan & Rahman, 2020). AI applications in healthcare offer advantages but also present challenges, such as inefficient technology usage and user perspective consideration. Ethical and legal issues include risk of bias, clarity in calculations, and security concerns with data used for training, (Tobore *et al.,* 2019). (Sun & Medaglia, 2018).

AI is an emerging field which is much more deep inside. There are lots of algorithms included in AI and it includes ML. Some of algorithms are discussed below. Figure 1 is a Venn diagram representing the relationship between AI, ML and DL.

Figure 1. Venn diagram representing the relationship between AI, ML and DL



Recently, IoT-based smart rehabilitation has been created to address the issue of limited resources caused by an aging population. It may be thought of as a Smart City subsystem. An Internet of Things (IoT)-based healthcare system creates a