Chapter 8
AI for IoT Application: An Systematic Review

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ABSTRACT

The popularity of the Internet of Things (IoT) has increased due to the development of faster internet networks and more advanced digital devices (Smarter Hardware), such as sensors integrated into a microcontroller. Currently, sensors and other digital devices used in diverse geographical sectors, such as agriculture, hospitals, smart homes, and smart cities, generate and share vast quantities of data. These IoT data must be collected and mined using AI for knowledge management (AI). Collaboration between AI and IoT results in intelligence system automation. This continuum will influence all emerging industries, including healthcare, transportation, manufacturing, and retail. IoT devices generate vast quantities of data, and AI will aid in more intelligent data planning for various IoT applications. In the software engineering and technical research processes, AI techniques are utilized for automatic problem solving and problem identification.

INTRODUCTION

Artificial intelligence (AI) and the IoTs are tying physical items and devices together because they encourage physical objects and devices to see, hear, and think. Through the exchange of information, physical objects/devices are able to "speak" to one another and convey their decisions to one another. Products that were previously unintelligent are becoming intelligent thanks to technologies such as the IoTs, which connect previously unintelligent objects to the internet by using a variety of embedded devices, communication protocols, sensor networks, internet protocols, and applications to connect them to the internet (Alam et al., 2018). Before learning about AI, you must have the basic knowledge of computer programming language such as C, C++, Java, Python, etc. along with this knowledge of essential

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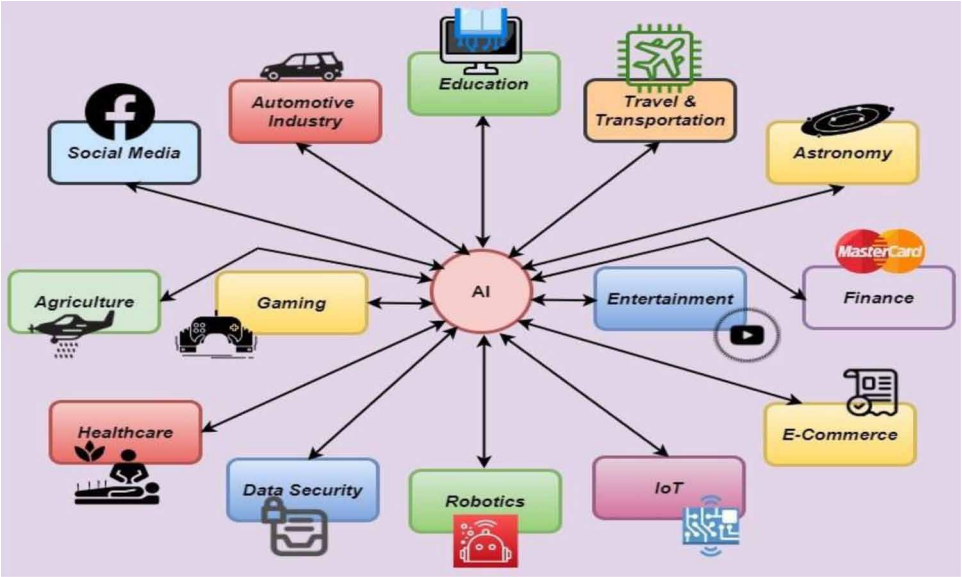
mathematics such as derivatives, probability theory, etc. Figure 1 display a graphical representation of AI based IoTs that is currently in use in the every sector.

ARTIFICIAL INTELLIGENCE DEFINITION

AI is capacity of a machine to carry out cognitive tasks similar to those performed by humans, such as perception, learning, reasoning, and problem-solving. Technology is advancing quickly in the modern world, and we are daily coming into contact with new innovations (Gupta et al., 2016). Here, artificial intelligence (AI) is one of the emerging computer science technologies that are prepared to usher in a new revolution by building intelligent machines. We are currently surrounded by AI. It is now working on a extensive series of sub-fields, since broad to precise, including selff-driving cars, chess play, theorem proof, composition production, image, etc. One of the exciting and all-encompassing areas of computer science with a bright future is artificial intelligence.

Figure 1. AI Based IoT Applications (Al-Dhief et al., 2020)



AI has the potential to make a machine behave and function like a human. AI stands for "a man-made thinking power" and is formed up of the words "artificial" and "intelligence," where "artificial" denotes something that is "man-made" and "intelligent" denotes something that has "thinking ability." When a machine has human-like abilities such as observation, analysis, problem understanding and intelligent problem solving, learning, reasoning, and so on. The brilliance of AI is that you can design a machine with pre-programmed algorithms that's also capable of working with its intelligence. without having to pre-program it to perform a task. It is claimed that artificial intelligence is not a new technology, and some individuals claim that mechanical men that could function and behave like humans existed in ancient times in accordance with Greek myth.