

Chapter 25

Applications of Artificial Intelligence in IoT

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ABSTRACT

Artificial intelligence is an excellent solution for handling big data streams and storage in IoT networks. The IoT is becoming more significant with the discovery of high-speed internet networks and lots of superior sensors that may be incorporated into microcontrollers. Internet information streams will now consist of sensor record and user data sent and obtained from workstations. As the range of workstations and sensors keep growing, some information may face reminiscence, latency, channel boundaries, and network congestion problems. Within the last decade, many algorithms were proposed to avoid some of these issues. Amongst all algorithms, AI stays the best solution for data mining, network control, and congestion management.

INTRODUCTION

The IoT refers to Internet-connected things or gadgets that can acquire and process data to make clever choices. The significance of IoT is that theoretical information and knowledge is no way taken into consideration enough for powerful decision making, for this reason the significance of real-time data that allows agencies and people to make more actionable and wise choices. As a result, IoT is developing exponentially in reputation.

Everyday gadgets become “smarter” thanks to the IoT since they can connect with humans as well as other IoT-enabled devices as well as share statistics via the internet. The Internet of Things is rapidly developing into a more intelligent world by merging the physical with the digital.

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All types of statistics systems use the Internet as a powerful tool. The community is accessible almost everywhere, including at home, at work, and on mobile devices (phones, watches). People are starting to expect that practically all commonly used gadgets will be connected to the Internet and will communicate with one another by making simple decisions for people and sustaining their existence. Although it is estimated that there are currently 15 billion connected devices, this number still represents less than 1% of all potential devices that could be connected to the Internet. The next phase is to incorporate artificial intelligence into systems for the Internet of Things (IoT). The IoT is a network of physical “matters” that are implanted with electronics, software, sensors, and connections in order to generate additional revenue and services by exchanging information with the manufacturer, operator, and/or other connected devices. Although each component has an embedded computer that makes it uniquely identifiable, they may all work together inside the current Internet architecture.

As the IoT is described in the definition above, data or records can be transmitted over the internet whether it's from system to device, human to human, or human to computer. Each device will be connected to the internet using its unique identifier number to send or receive priceless data or to provide a service. Things could be sophisticated electrical gadgets that can send or receive signals. With this idea, we want to make things smart and cunning enough to decide whether to reply or to send a signal, like a clinical help message or a stock restock indicator, for example. The concept of AI (Artificial Intelligence) is not new in the context of today's world. Many “things” are created based on this concept, and as IoT and AI combine, more “intelligent matters” that are better at effective dialogue will emerge. In daily life, artificial intelligence is being employed more and more. It is a broad-ranging idea that has applications in a variety of scientific disciplines. It is used in programmes that suggest users to watch movies, take into account their viewing patterns, or identify individuals on tracking recordings. Its distinctive advantage comes from the device learning components, which allow special artificial intelligence approaches to understand a lot of data and show some of their summary. The ability to view a recording of the monitoring in the context of looking for a certain person, for example, is a very significant amenity for someone who does not need to statically check all the data arriving from the necessary gadget (Djenouri et al., 2022).

INTERNET OF THINGS (IoT)

These Internet of Things (IoT) applications have a big influence on the networking, connectivity, and communication protocols used by such web-enabled gadgets. Through the use of AI and machine learning, IoT might make the procedures for gathering data more dynamic and straightforward. IoT enables objects connected to closed, personal internet connections to exchange messages and “these networks come together thanks to the IoT. It makes possible for devices to interact not just among themselves but also with other devices through various forms of networking, making the world much more inter connected.”

The IoT can be characterised as an extension of a net and other internet connectivity to various sensors and devices, or “things,” giving even basic items like lightbulbs, locks, and vents a higher level of processing and analytical capabilities.

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