

Chapter 11

Impact of Artificial Intelligence, Machine Learning, and IoT in 5G Wireless Communications on the Smarter World: A Review

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ABSTRACT

With the prompt evolution of the internet, the growth of the data rate is increasing day by day. Most of the current technologies, including 5G, provide high data rate services to handle and process those data. For this reason, machine learning came into its role. Machine learning is quite different from the traditional programming paradigm. Machine learning takes a massive, huge amount of data and results to produce such programs or models used for prediction purposes. The key enabling technologies with 5G are IoT and ML, which are used to change the picture of the real world, change their trends, and explore their applications worldwide. This review chapter starts with relating 5G with the opportunities of machine learning, and its techniques to manage these challenges.

INTRODUCTION

There is the major implementation of the machine learning field is Neural Networks (NN). NN is the best way to show that how machine learning works. In General, NN contains three consecutive layers. One is Input Layer; the Second is the Hidden Layer and the Third Layer is the Output Layer. The main element of NN is artificial neurons. At present, 'the internet of things (IoT) has revolutionized based on sensor and their activities. As per today's conditions till the year 2025, almost all IoT-based devices will be used by many people in their day-to-day life. Cyber-physical and device-to-device communication systems (D2D) are the systems these devices are used with. As per the condition these devices are expected to form a major platform for the 5G network paradigm (Cui et al., 2018; Santos et al., 2020, pp 1-34; Kumar et al., 2017, pp 32-52; Jagannath et al., 2019). The landscape of various industries is expected to change drastically due to some of the IoT techniques. The major three amazing trends in the present scenario in terms of technologies are:-

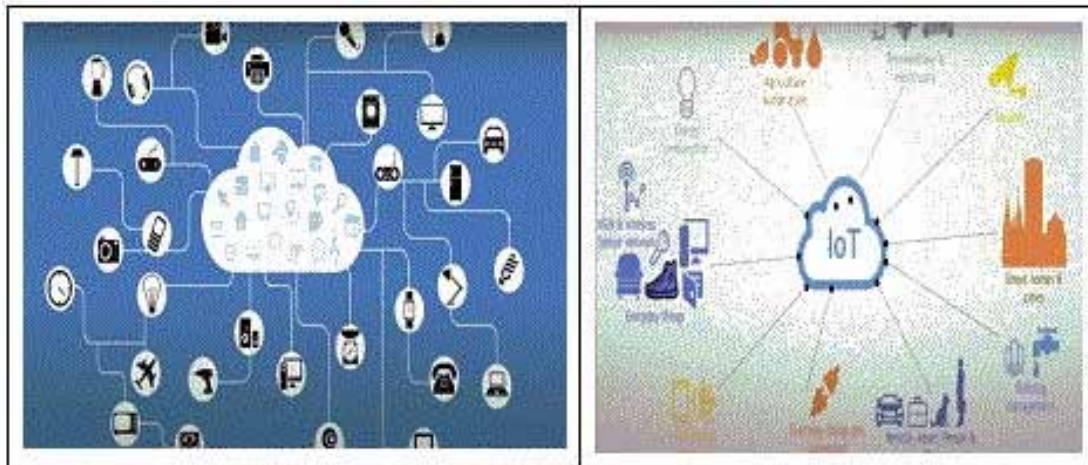
- 1). The rapid growth of IoT (i.e.), "Internet of Things".
- 2). The rapid growth of Artificial intelligence (AI)/Machine learning (ML).
- 3). The rapid growth and demand of 5G for communications.

Now a day's people are transferring manual work to automatic work with smart techniques. Due to adopting new technologies, work has been taken a very little amount of time. This innovation generates new ways for business growth.

Artificial Intelligence (AI)

Artificial Intelligence (AI) refers to design the machine as a human being who understands and reacts according to situations or past experiences. AI is a concept used to perform tasks that or-

*Figure 1. Application areas of IoT
(Pathak S 2013)*



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