

Chapter 75

Current Trends: Machine Learning and AI in IoT

Jayanthi Jagannathan

Sona College of Technology, India

Anitha Elavarasi S.

Sona College of Technology, India

ABSTRACT

This chapter addresses the key role of machine learning and artificial intelligence for various applications of the internet of things. The following are the most significant applications of IoT: (1) manufacturing industry: automation of industries is on the rise; there is an urge for analyzing the energy in the process industry; (2) anomaly detection: to detect the existing fault and abnormality in functioning by using ML algorithms thereby avoiding the adverse effect during its operation; (3) smart campus: in-order to efficiently handle the energy in buildings, smart campus systems are developed; (4) improving product decisions: with the help of the predictive analytics system products are designed and developed based on the user's requirements and usability; (5) healthcare industry: IoT with machine learning provides numerous ways for the betterment of the human wellbeing. In this chapter, the most predominant approaches to machine learning that can be useful in the IoT applications to achieve a significant set of outcomes will be discussed.

INTRODUCTION

The Internet of Things (IoT) is the network of various physical devices in-order to exchange data and take appropriate action. In recent years the growth in technology enhances the communication between different devices are made much easier. It is estimated that there will be 30 billion devices by 2020 [Nordrum et al ., 2016]. Some of the IoT applications include automated vehicles, home automation, remote health monitoring etc. In-order to make these devices work in a smarter way or to make IoT applications more intelligent there is need for analyzing the huge amount of data using machine learning algorithm [Mahdavinejad et al., 2016]. Machine learning refers to the set of techniques meant to deal

DOI: 10.4018/978-1-6684-6291-1.ch075

Current Trends

with huge data in the most intelligent way in order to derive actionable insights. Figure 1 refers to the confluence of different fields such as IoT, artificial intelligence and big data

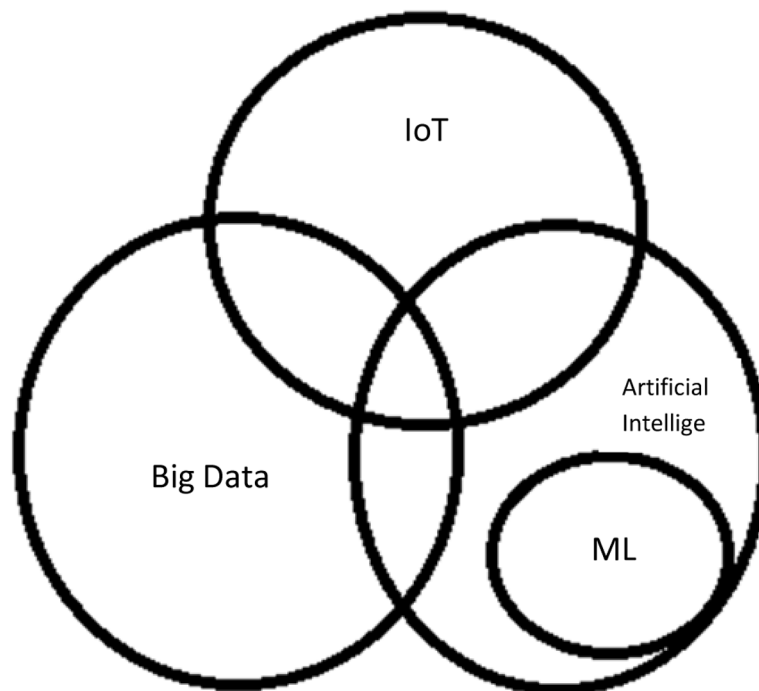
Internet of Things

The Internet of Things (IoT), refers to the collection of inter connected everyday objects over the Internet and also to one another. It provides users with smarter and smoother experiences. Internet of Things is mainly being driven by various sensors that would possibly sense the real world data, some of the widely used sensors are temperature, pressure, gas, smoke, IR, image sensors etc. IoT platform could deliver plenty of functionalities with the intelligence by combining a set of sensors and a communication networks. Thus it could able to improve and achieve effectiveness in their autonomous functionality.

The data that is flowing across the network and devices are being stored and the same is being processed, to derive the required insights. The various stakeholders who are in need of those insights will be served on time. The data sharing is done in a secured way, only the authorized users permitted to use the same.

Let us take a worlds well know Tesla vehicles as an example. The sensors mounted in and around the car senses variety of data and derive many fact values based on the perception from the environment. Then it uploads data into a huge database. The data is further processed and send necessary signals to other vehicles or other parts.

Figure 1. Confluence of IoT, artificial intelligence and big data



12 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/current-trends/307520

Related Content

Churn Prediction in a Pay-TV Company via Data Classification

Ilayda Ulku, Fadime Uney Yuksektepe, Oznur Yilmaz, Merve Ulku Aktasand Nergiz Akbalik (2021). *International Journal of Artificial Intelligence and Machine Learning* (pp. 39-53).

www.irma-international.org/article/churn-prediction-in-a-pay-tv-company-via-data-classification/266495

Machine Learning Techniques to Mitigate Security Attacks in IoT

Kavi Priya S., Vignesh Saravanan K.and Vijayalakshmi K. (2022). *Research Anthology on Machine Learning Techniques, Methods, and Applications* (pp. 642-663).

www.irma-international.org/chapter/machine-learning-techniques-to-mitigate-security-attacks-in-iot/307476

Review and Applications of Machine Learning and Artificial Intelligence in Engineering: Overview for Machine Learning and AI

Melda Yucel, Gebraail Bekdaand Sinan Melih Nigdeli (2022). *Research Anthology on Machine Learning Techniques, Methods, and Applications* (pp. 26-37).

www.irma-international.org/chapter/review-and-applications-of-machine-learning-and-artificial-intelligence-in-engineering/307442

Extending Graph Databases With Relational Concepts

Kornelije Rabuzin, Mirko ubriiloand Martina Šestak (2023). *Encyclopedia of Data Science and Machine Learning* (pp. 441-456).

www.irma-international.org/chapter/extending-graph-databases-with-relational-concepts/317464

Stock Market Analysis and Prediction Using ARIMA, Facebook Prophet, and Stacked Long Short-Term Memory Recurrent Neural Network

Parvathi Rand Xiaohui Yuan (2023). *Scalable and Distributed Machine Learning and Deep Learning Patterns* (pp. 104-122).

www.irma-international.org/chapter/stock-market-analysis-and-prediction-using-arima-facebook-prophet-and-stacked-long-short-term-memory-recurrent-neural-network/329550