# Chapter 49
# Big Data Analysis and Implementation in Different Areas Using IoT

**Aqeel ur Rehman**
*Hamdard University, Pakistan*

**Muhammad Fahad**
*Hamdard University, Pakistan*

**Rafi Ullah**
*Hamdard University, Pakistan*

**Faisal Abdullah**
*Hamdard University, Pakistan*

## ABSTRACT

*This article describes how in IoT, data management is a major issue because of communication among billions of electronic devices, which generate the huge dataset. Due to the unavailability of any standard, data analysis on such a large amount of data is a complex task. There should be a definition of IoT-based data to find out what is available and its applicable solutions. Such a study also directs the need for new techniques to cope up with such challenges. Due to the heterogeneity of connected nodes, different data rates, and formats, it is a huge challenge to deal with such a variety of data. As IoT is providing processing nodes in the form of smart nodes; it is presenting a good platform to support the big data study. In this article, the characteristics of data mining requirements for data mining analysis are highlighted. The associated challenges of facts generation, as well as the plausible suitable platform of such huge data analysis is also underlined. The application of IoT to support big data analysis in healthcare applications is also presented.*

## INTRODUCTION

Internet of Things (IoT) is a concept of providing uniquely identifiable objects connectivity to the Internet. When billions of things connect, it will be difficult to manage, and analyze the huge amount of data, as each object will send and retrieve data. Many challenges are related with analysis of big data on IoT due to the heterogeneity, variable data formats, priorities and specifically numerous numbers of connected devices.

Big data refers to the huge amount of data. It includes all type of data. The data is traditionally collected and then processed and move to a data warehouse for analysis. When the huge data is collected from many places, it may not necessarily relational data. This data can be treated as the big data. Since data is more diverse and without structured and difficult to process in a fast manner. Data mining is more efficient to handle these type data. In IoT, information administration is a major issue because of the availability of billions of gadgets, items, forms producing enormous information. Since the Things are not taking after a particular (normal) Standard, so examination of such information turns into a major test. There is a need to expound about the qualities of IoT- based data to find out the available and applicable solutions (Shi & Liu, 2011). Such kind of study also directs to realize the need for new techniques to cope up with such challenges.

## Big Data

Big data refers to more data or the huge amount of data. It includes all type of data. The data is traditionally collected. And then processed and move to a data warehouse for analysis. When a large amount of data is collected from different sources, it may not necessarily relational data. This data can be treated as big data.

"Information is progressively turning out to be more fluctuated, more mind boggling and less organized, and it has gotten to be imperative to process it rapidly. Meeting such demanding necessities represents a gigantic test for conventional information bases and scale-up foundations. Huge Data allude to new scale-out models that address these requirements." (O'Leary, 2013).

Big Data is presenting a range of analysis and use problems. It has following measures (Villars, Olofson, & Eastwood, 2011):

- Having a figuring framework that can ingest, approve, and investigate high volumes (estimate or potentially rate) of information
- Assessing blended information (organized and unstructured) from numerous sources
- Dealing with unusual substance with no clear outline or structure
- Empowering continuous or close constant accumulation, investigation, and answers

## Internet of Things

The Internet of Things (IoT) directs to the next generation of Internet which will be comprising the large number of heterogeneous nodes from small sensors and handheld devices to large web Servers and super-computer clusters (Bin, Yuan, & Xiaoyi, 2010). The terminology Internet of Things was the first to coin by Kevin Ashton. IoT is a great revolution in the history of computing. In IoT concept, everything will be connected to the internet having its identity and everything will be able to communicate with each

## Related Content

### An Overview of RIAs Development Tools
(2015). *Frameworks, Methodologies, and Tools for Developing Rich Internet Applications (pp. 269-302).*
www.irma-international.org/chapter/an-overview-of-rias-development-tools/117387

### Blockchain-Enabled Secured Smart City Services
Vrinda Gupta, Vamsi Reddy Punugotiand Sanath Kalyan Veereju (2023). *Handbook of Research on Network-Enabled IoT Applications for Smart City Services (pp. 205-229).*
www.irma-international.org/chapter/blockchain-enabled-secured-smart-city-services/331334

### Mobile Handheld Devices
Wen-Chen Hu (2009). *Internet-Enabled Handheld Devices, Computing, and Programming: Mobile Commerce and Personal Data Applications (pp. 46-94).*
www.irma-international.org/chapter/mobile-handheld-devices/24699

### Internet of Things Service Provisioning Platform for Cross-Application Cooperation
Shuai Zhao, Bo Cheng, Le Yu, Shou-lu Hou, Yang Zhangand Jun-liang Chen (2020). *Securing the Internet of Things: Concepts, Methodologies, Tools, and Applications (pp. 655-678).*
www.irma-international.org/chapter/internet-of-things-service-provisioning-platform-for-cross-application-cooperation/234967

### Trust Management Model based on Fuzzy Approach for Ubiquitous Computing
Nalini A. Mhetre, Arvind V. Deshpandeand Parikshit Narendra Mahalle (2020). *Securing the Internet of Things: Concepts, Methodologies, Tools, and Applications (pp. 398-412).*
www.irma-international.org/chapter/trust-management-model-based-on-fuzzy-approach-for-ubiquitous-computing/234955