

# Preface

The Internet of Things (IoT) is becoming the next Internet-related revolution. It allows billions of devices to be connected and communicate with each other to share information that improves the quality of our daily lives. On the other hand, Cloud Computing provides on-demand, convenient and scalable network access which makes it possible to share computing resources; indeed, this, in turn, enables dynamic data integration from various data sources. Big Data has emerged in the past couple of years and with such emergence the cloud has become the architecture of choice. Most companies find it feasible to access the massive quantities of big-data via the cloud. However, the intersection of both Internet of things and big-data has created new challenges like data storage, integration and analytics.

All these emerging technologies that are already part of our life. Their adoption and use are expected to be more and more pervasive, making them important components of the future Internet. It is a novel paradigm where Cloud, Big-data and IoT are merged together to solve some real-time problems and seen as an enabler of a large number of application scenarios. Many works in the past have presented cloud computing, big-data computing and IoT separately. All those works were presented their main properties, features, underlying technologies and open issues. However, to the best of our knowledge, those books or works lack a detailed analysis of the new paradigm, which involves integration or convergence of these technologies to address issues or build new applications based on it.

Hence, from the above discussion, one can find the inter-dependency between the three mutually exclusive technologies. Here Cloud computing plays the role of a common workplace for IoT and big data where IoT is the source of data and big data as a technology for data analytics. The IoT generates a vast amount of data and this in turn puts a huge strain on Internet Infrastructure. As a result, it forces companies to find solutions to minimize the pressure and solve their problem of transferring large amounts of data. There are many issues standing in the way of the successful implementation and integration of these technologies. Hence, we need to leverage each of these technologies to find solutions to other problems. To bridge this gap, this book would provide a complete framework for integrating IoT with Cloud or IoT with Big-data or any other combination of these three technologies. It tries to identify open issues and future directions in these fields, which are expected to play a major role in the landscape of the future Internet.

To conclude, the convergence of the Internet of things, big data and cloud computing leverage a new horizon of decision support system. Moreover, the convergence of the IoT, big data and cloud computing can provide new opportunities and applications in all the sectors. This will also give an excellent career scope for professionals who are working on the individual technologies currently. Therefore, this book entitled *Challenges and Opportunities for the Convergence of IoT, Big Data, and Cloud Computing* would provide information on how these three technologies such as Internet of Things (IoT), Big-Data

and Cloud Computing are related to each other and how these can be combined to address the major issues in real-time problems. Also, it focuses on the applications, issues and challenges while integrating these three technologies in real time problem solving.

## **OBJECTIVE**

After reading this book, readers would be able to:

- Store and Analyze the data to discover potential information out of it
- Demonstrate the uses of various algorithms in the real-time data sets
- Apply learned concepts to solve the real-time problems
- Decompose the problem to solve using machine learning techniques
- Carry out their R & D works in an efficient way
- Propose solutions to issues in Integration emerging areas such as Internet of Things, Big-Data and Cloud Computing
- Integrate emerging technologies to solve real time problems/ societal problems
- Interpret data using analytics techniques and tools
- Demonstrate the tools and their Integration for the given problem
- Help alleviate talent gap

## **TOPICS COVERED**

Prevailing knowledge and research issues in the following are covered through the contributed chapters by various authors of specific field expertise:

- Big-Data Data Analytics in Cloud Platform
- Cloud Based IoT and its Applications
- Big-Data Analytics and its Applications in IoT
- Challenges of Internet- and cloud-based IoT applications, and edge computing;
- Big data issues: gathering, governance, GDPR, security, and privacy;
- Machine & Deep learning techniques in IoT and cloud;
- Emerging trends and techniques in Cloud-based data analytics
- Other issues related to Integration of these three technologies- IoT, Cloud and Big-Data
- Real-time problems to be solved by the combination of these three technologies

With Regards

*Sathiyamoorthi Velayutham*  
*Sona College of Technology, India*