Preface

Internet of Things (IoT) and Internet of Everything (IoE) have emerged to address the need for connectivity and seamless integration with other devices. However, there are potential challenges ahead meeting the growing need for IoT based applications. This includes design and implementation challenges, various applications, connectivity, data gathering, storing and analyzing in a cloud based solution, and IoT Security and Privacy issues. When we look at some of the benefits of IoT, billions of smart and embedded IoT devices will be immersed in the environment (all devices including travel, entertainment systems, heath care systems, wearables, smart work place, smart public and society, smart communities, smart social-media, smart home, etc.), sensing, interacting, and cooperating with each other to enable efficient services that will bring tangible benefits to the environment, the economy and the society as a whole.

On the other hand, IoT Technology will be extremely diverse and heterogeneous in terms of resource capabilities, lifespan and communication technologies, further complicating the scenario. As a result, new problems and challenges arise spanning different areas: architecture, communication, addressing, discovery, data and network management, power and energy storage, security and privacy, to cite a few. Classic Internet approaches are not sufficient to solve these unprecedented issues, and need to be revised to address the complex requirements imposed by IoT. This paves the way for the development of intelligent algorithms, novel network paradigms, intelligent predictive algorithms can be created with the big data and analytics generated in the peta-byte and tera-byte rate with volume, velocity, and veracity (V3) and new services.

One of the main objectives of this is to provide researchers and educators with basic concepts of IoT technology, and its Development, Tools and Techniques Therefore, we believe this book will provide an insight for researchers and developers. The book consists of two sections.

Section 1," IoT Concepts," provides chapters on:

Chapter 1 provides a historical perspective on concepts, introduction, and landscape of research issues whereas Chapter 2 on "An Approach to Designing IoT-Based Business Models" provides the understanding of the structure of business model elements in Internet of things field. Chapter 3, "Converging Technologies for the IoT: Standardization Activities and Frameworks," focusses on the perspective of technical standardization, the IoT can be viewed as a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies (ICT).

Section 2 on "Internet of Things Development, Tools, and Techniques" provides Chapter 4 to Chapter 10. There are seven interesting chapters. Chapter 4 provides a case study on the spatial cognition of surrounding objects by the B&VI (Blind and Visually Impaired) people using sound patterns and ultrasonic sensing. In this paper, two assistive projects on the spatial cognition by blind and visually impaired (B&VI) people are presented using the sound patterns and ultrasonic sensing. Chapter 5 provides building IoT application with Aurdino processor and Chapter 6 on using model-driven approaches to build IoT applications. Chapters 7-10 provide wealth of applications based on IoT with Cloud computing, Cognitive IoE (Internet of Everything), etc.

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