Introduction

Internet of things (IoT) envisages a deep sense of connectivity and communication between the living and nonliving things. Nowadays, the vision of IoT has expanded to connect everything from industrial equipment, to everyday objects, to living organisms such as plants, farm animals and people. To create a niche for nonliving things to react, respond and work autonomously as and when required and as per their role, position and location in the ecosystem to provide services to the user, IoT is developing rapidly in the industrial settings.

Machine-to-machine communication and smart computing enhances the efficiency and helps minimize control cost of the industrial plants. IoT integrates the physical world with the information world so that every entity/device works for the betterment and in coordination with the other to help save the most valued resources and time. In this book, different approaches of the IoT and IoTPS (Internet of things, people and services) will be discussed.

Objective of the book

In the era before IoT, the World Wide Web, Internet, Web 2.0 and social media made people’s lives comfortable by providing web services and facility to access personal data irrespective of their location. Further, to save time and improve efficiency, there is a need for machine-to-machine communication, automation, smart computing and ubiquitous access to personal devices. This need gave birth to the phenomenon of IoT and further to the concept of IoTPS. This book aims at presenting different aspects of IoT and IoTPS for smart computing, which comprises eight chapters.

Organization of the book

The book consists of eight chapters, and the brief description is as follows:

Chapter 1

Adaptive routing for emergency communication via MANET
Mobile ad hoc networks have emerged in past years due to their wide applicability in the field of disaster recovery, police operations, crowd management, emergency and military operations such as battle fields. Furthermore, through the advent of sensor-enabled intelligent mobile devices, MANETs have become a crucial element
in the framework of IoT and smart city developments. In this chapter, a novel en-
ergy-efficient counter-based scheme is introduced to address network challenges of MANET.

Chapter 2

Partial face recognition using image fusion
The conventional way of taking the attendance of students is strenuous and also lengthy. The lecture normally prolongs the maintenance of the student’s attendance. This technique is ineffective, particularly if it is a lecture with a large number of students. This chapter recommends a novel technique to acknowledge students face to speed up the procedures of attendance in the classroom. The image fusion with the averaging method is used to improve the effectiveness of the system.

Chapter 3

Threat analysis and attack modeling for machine-to-machine communication toward Internet of things
The wide variety of IoT applications demands a secure and efficient communication channel that resists against a variety of modern attacks and fulfills application requirement. There are various IoT threats and challenges that must be addressed to make a communication secure in IoT. This chapter gives detailed analysis of attacks with its behavioral modeling. Furthermore, the chapter proposes a novel security framework, which emphasizes on making secure communication layer with the help of trust management policies, distributed access control framework and privacy-aware protocols.

Chapter 4

Security issues and trust management schemes in Internet of things
IoT is an emerging research field in the network domain and is applied to almost all the applications that can change the people’s lives as smart. The number of security threats related to infrastructure, platform and application of IoT has been increased over the last few years. So, it is necessary to apply proper security solutions that ensure privacy and confidentiality of data. This chapter provides a detailed review of the security challenges and trust management techniques adopted for IoT to secure data in a cloud environment.
Chapter 5

Users’ privacy at online social networks in Indian context: comprehensive multiaged group survey and discussion
Nowadays, social media has become an important part of life. People around the globe use social media for random purposes. However, they do not often realize that they are attracting very serious incidents that can occur due to their posts. Online privacy is one of the crucial points to safeguard our personal information. To provide privacy-aware online social networks, it is important to know user’s awareness about privacy. To achieve this, survey is conducted and from the analysis of survey the user’s awareness and requirements of privacy-aware mechanism is presented in this chapter.

Chapter 6

Early prediction of breast cancer from mammogram images using classification methods: a comparison
Nowadays, deaths of women in the age group of 15–54 are increasing due to malignant cells in breast. It is recognized as the main cause for the deaths of women. Day by day, the number of patients are increasing, because its important factors have not been identified yet, it is unable to prevent. So, the possibility of improvement is only the early diagnosis. This chapter provides survey of techniques that can help the prior detection of cancer using different classification methods such as support vector machine, decision tree, artificial neural network, logistic regression and machine learning-neural network.

Chapter 7

Deep brain monitoring using implantable sensor and microcontroller: a review
The consequent evolution in technologies is reaching toward the development of today’s world. Micro-electro-mechanical system technology is one of the emerging paradigms that signify continuous affection in health-care systems. In hospitals, it is very necessary to constantly examine the health condition, monitor movements and physiological parameters of patients. In this chapter, the deep brain monitoring using implantable sensors and microcontroller is used for treating number of neurological disorders.
Chapter 8

Enhancement path assured transfer protocol to transmit urgent data
Sensor network is designed to provide monitoring services specifically for natural disaster. These natural disasters may affect the lives of human beings directly or indirectly. Congestion is a very important factor in wireless sensor network and also it reduces quality of services. It is very important to control the congestion as it may cause loss of packets or even more utilization of energy by sensor nodes. This chapter presents a protocol that checks for urgent data and gives priority to urgent data, so that this sensitive data will reach destination in time.