Chapter 11
Smart Parking in Smart Cities Using Secure IoT

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ABSTRACT

The city is transforming into the smart city using information and communication technology (ICT), and the major role in economic development is building an infrastructure to enable greater connectivity between citizen service, energy, economics, and government. A smart city can monitor the real-world scenario in real time and support the intelligent services to both locals and travelers. Due to urbanization, people move from village to city. Increase the population in city also causes an increase in vehicles. Here, parking the vehicle securely is a challenging problem. In a smart parking system, all the devices are connected to the internet. Hackers and third parties easily access the user data or sensitive data. Smart parking system application controls the traffic, air pollution, and city functions making it easy to park the vehicle and reduce accidents. Many of the problems arise in the security and privacy of the sensitive data. In this chapter, the authors discuss security and privacy issues in smart parking systems using IoT.

INTRODUCTION

Internet of Things (IoT) devices connected to the internet. In IoT technology all the physical devices is connected to the internet. They can share the information from one to other. And also remotely monitor and control the devices, animals and Human being also monitor. This method is used to capture the theft, criminal from anywhere and monitor their activities. IoT technology is very helpful in Government and Police station also. Due to digital country city is converted into smart city. Smart city means with rising people, economy and infrastructure people moving from village to city, this is create a urbanization (Zhang et al, 2017). One important survey said in 2030 city population reach in 5 billion. So the Government have the responsibility to give the quality life, economy, living quality, smart parking. In 2020 80% of IoT devices is connected to the internet and share the private information through the network,

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this information stored in the cloud storage. It may lead to create the problem for the citizen's. It may provide the security and privacy for the citizen's private information. This is very challenging problem. One important application of Smart city using IoT is Smart Parking System. Finding the parking spot is very challenging problem in city. Many authors proposed different parking management system and give the solution for the problem. In smart parking system is fastest growing field of IoT, and is also provide intelligent, innovative and interactive service to the human (user) using different methods and operations. All the devices are connected to the internet, heterogeneous nature, and dynamic. It may lead to or create security issues and challenges. In this chapter we investigate security issues of smart parking system using several scenarios. We investigate security vulnerability threats, Risk assessment, classified these vulnerability threats based on security objective and identified, evaluated their impact on the overall system. When city become digital, all devices connected to the internet and cloud server, people affected from serious of security and privacy attack due to the vulnerability of smart city applications (Sicari et al 2015). Day by today our cities is coved with mass number of vehicle on the road. Due to this increasing factor traffic and parking is a major issue. In smart transport and parking slot reduce the traffic using automated system. Parking slots are accurately predicted the available free slots are intimated to the driver through speaker. IoT sensors are used to reduce the traffic based on arrival and departure of vehicles. Vehicular adhoc networks (VANET) provide collusion free traffic in the busy road and also it reduces accidents.Challenges in smart Transport and Parking: In smart vehicle traffic and parking system contain mobility. Due to dynamic nature system should guide the traffic and taking final decision about parking slot is very time effective.

Internet of Things (IoT)

Internet of Things contain things(device) that have unique identities and are connected to the internet, many existing device, such as network computer or 4G enabled model phone already some form unique identities and are also connected to the internet. In year 2020 there will be a total of 50 billion devices/ things connected to the internet.

The IoTs allow people and things to be connected anytime, anyplace, with anything and anyone, ideally using any path/network and any service. They are "Material objects connected to material objects in the Internet" (Rodrigo et al, 2017). IoT is not limited to just connecting things(Device) to communicate and sharing data while executing meaningful applications towards a common user or machine goal. Evaluated from multiple technologies are wireless sensor, embedded system, machine learning, instrument control data analytics and automation. 'Things' refer daily objects or devices that communicated with other devices through internet to monitor and control the objects. Smart IoT belong to Information and Communication Technologies (ICT) applications access through IoT devices. Smart cities are developed under prevention of incidents rather than avoidances of occurrences of after the incidents. E.g., fire detection, crime prevention, floods and climate prediction.Smart city is one of the applications of IoT. It contains three parts data generation, data management, and application handling (Ankitha and Balajee, 2016).

IoT Technologies

IoT technology include RFID is known as Radio Frequency Identification, Wireless Sensor Network that is called as WSN and NFC which is called as Near Field Communication (Borgohain et al,2015).