Chapter 10
Security Issues on Internet of Things in Smart Cities

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ABSTRACT

Many researchers are focusing on IoT in smart cities. It invites researchers to concentrate on simplifying engineering challenges. IoT includes recognition, locating, tracking, monitoring, and management of devices in a reliable manner. There are numerous security challenges that include network security, authentication, security-side-challenge attacks, security analytics, interface protection, delivery mechanism, and system development. IoT needs security analytics to overcome a number of problems in smart cities to prevent unauthorized access. One among the security analytics is streaming analytics, which include all the real-time data streams to detect emergency situations. Threat detection and behavioral monitoring will be done after analyzing the traffic data. The aim is to analyze and predict real-time streaming data to achieve security. Different analytical tools on security will be used to obtain the optimal result in smart cities. Traffic analysis, which is treated as a real-time stream, will be applied in street and traffic lights, transportation, and parking space occupancy and so on. Large volume of data that are received from different sensors and cameras will be given as the input in order to analyze traffic in a smart cities. Intelligent traffic congestion control system will be developed in order to analyze the heavy traffic on roadside. Security in IoT is proposed, which includes encrypting and decrypting the user request, which is further to be processed by the central processing hub, in order to prevent unauthorized access.

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INTRODUCTION

In a day to day life, many researchers are focusing on IoT in smart cities. It invites researchers to concentrate on simplifying engineering challenges. IoT includes recognition, locating, tracking, monitoring and management of devices in a reliable manner. There are numerous security challenges which include network security, authentication, security-side-challenge attacks, security analytics, interface protection, delivery mechanism and system development and so on. The idea of the Internet of things was first proposed by Kevin Ashton, co-founder of Auto-ID centre at MIT in his presentation made to Procter & Gamble (P&G) in 1999. He discovered to link objects with an RFID tag. The concept of IoT evolved as the wireless Internet became widely developed, embedded sensors grew in worldliness. The Internet of Things (IoT) has the power to modify our world. The infrastructure of IoT encompasses interconnected objects, people, systems and information resources. These objects require intelligent services to allow them to process information of the physical and virtual world or hybrid of two and react accordingly. The intelligence of Things is necessary to pervade analytics into our systems (Wu, Chiang, Chang & Chang, 2017) and applications because collecting data alone is not enough.

IoT architecture can be considered as a global network infrastructure of a three-layer system consisting of IoT enabling technologies, IoT software and IoT applications and services. These layers are a collection of numerous active physical objects, actuators, sensors, specific IoT protocols, cloud services, communication layer, users, developers and enterprise layer. IoT has immense applications and consists of many technical and non-technical disciplines such as physical connections, manipulation of data, application interfaces, regulatory issues, and cybersecurity

Importance of IoT

Internet of things provides reliability, security and economic benefits to industries, smart home systems, traffic monitoring, waste management, healthcare systems etc.

Here are some examples of IoT on industries:

- Smart transport solutions speed up traffic flows; prioritize vehicle repair schedules and lower fuel consumption.
- Intelligent electric grids connect renewable resources efficiently which improves system reliability and charge the customers based on smaller usage increments.
- Machine monitoring sensors are used to diagnose maintenance issues, predict near-term stock-outs, and prioritize maintenance crew schedules for repair. IoT can be considered on a more personal level. Connected devices in IoT are making their way from business and industry to smart cities. Consider these possibilities:
- On the way to home from work, an alert message could be sent which is received from the refrigerator when the store is nearby to buy milk.
- Home security system, which enables to remotely control the locks and thermostats, can cool down the home and open the windows, based on the preferences.
- IoT-healthcare systems help doctors to monitor and provide the required services for patients remotely. Using smartphone applications patients get guidance to take decisions suggested by the doctor