


Chapter 18

Security for Smart Vehicle in IOT

Deepa Sethuramalingam
PSG College of Technology, India

Brindha N.
PSG College of Technology, India

S. Balamurugan
 <https://orcid.org/0000-0003-3428-3849>
 QUANTS IS & Consultancy Services, India

ABSTRACT

The smart city is not possible without a smart road. It can provide citizens with smart mobility. In order to overcome the complications handled by the parking system, smart parking has been developed. A model IoT-based parking system that uses a unified component called parking meter to address the issues as well as to provide smart parking management throughout the city is proposed in this chapter.

INTRODUCTION

The IoT is in simple contrast to the internet of people. Instead of people accessing data and interactive with one another, the IoT does the process. The IoT connects not just computers, smart phones and tablets, but also lots of additional things.

This type of networks is developed as part of the Intelligent Transportation Systems (ITS) to bring important development to the transportation systems performance. The goal of ITSs is to improve safety on the roads and to reduce traffic congestion, waiting times and fuel consumptions. The integration of the surrounded computers, sensing devices, navigation systems, digital maps and the wireless communication devices along with intelligent algorithms will help to develop frequent types of applications for the ITS to improve safety on the roads (Miller. 2018).

The types of communication in IoT are satellite, Wi-Fi, Radio Frequency (RF), RFID, Bluetooth and NFC. Satellite allows the devices such as mobile phones to send and receive the data through cellular network. It provides stable connection and universal compatibility, but it has no direct communication

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(Greengard, 2015). Wi-Fi a wireless local area network (WLAN) which offers internet access to devices that is within the range of about 66 feet from AP (access point) which transfers and receives data. Radio Frequency (RF) provides low energy and simplicity for its technology which is not dependent on the new functionality of phones. Radio frequency identification (RFID) is the use of electromagnetic fields to recognize objects which does not require power but highly insecure. Its range is from 10cm to 200cm. Bluetooth is also wireless technology standard for substituting data over short distances (Mangwani, 2016). NFC is a Near-field communication which uses electromagnetic induction within each other's near field.

IoT has become an active area of research, standardization and development because it has incredible potential to improve vehicle and road safety, traffic efficiency and convenience as well as comfort to both drivers and passengers. A lot of IoT research works have motivated on specific areas including routing, broadcasting, quality of service (QoS), safety and security.

The various applications of IoT are smart home, IoT in Poultry and Farming, Smart Wearable's, smart city etc. Over the last few years, the need of the term "smart" has turn into a widespread method at all levels. Presently everyone use smartphones, there is hardly a city that does not seek to be a Smart City, technology tends to become smart in numerous areas, new buildings are smart buildings and even energy is smart. Therefore, there is a need to convert the roads into smart roads in order to develop journey planning with real time data and satellite navigation through traffic management and other measurements like public transport priority measurement, speed and access control management. Traffic management is a critical challenge in most of the metropolitan cities. To calm the problems on road, the smart road concept is needful in the current era. The smart road concept is implemented to overcome the crisis on road accidents and parking. The various security measures for using IoT are helmet detection, accident detection, weather detection and congestion detection.

EXISTING TECHNOLOGY AND ITS REVIEW

The major source of road accidents is humanoid error in the existing system. Even with today's greater prominence on automobile safety, accidents continue to occur. According to survey done by the National Highway Traffic Safety Administration (NHTSA) some of the causes of accidents prevailing in the existing system are listed below:

- **Over Speeding:** The major factor contributing to the increased number of road accidents is speeding. This has resulted in 41% of the total deaths due to road accidents in India in 2016.
- **Drunken Driving:** Even though driving under the influence of alcohol is strictly prohibited, many flaunt this rule, which at times results in road accidents.
- **Ambulance Delay:** At present criteria, detection of accident zone automatically is not existent, leading to the death of an individual by ambulance delay.
- **Inefficient Parking:** Spending excessive time in searching for parking spaces leads to parking at inappropriate places.

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