

Automatic smart parking system using Internet of Things (IoT)

***U. Mohamed Rishan**

*Department of Information Communication Technology,
South Eastern University of Sri Lanka
rishan@seu.ac.lk

Abstract

Internet of Things (IoT) plays a vital role in connecting the surrounding environmental things to the network. The IoT is a system of interrelated computing devices that are provided with identifier and the ability to transfer data over a network without requiring human and computer interaction. These type of technologies are used to connect un-internet devices to the network from any remote location. With the number of vehicles on the roads climbing steeply over the last few years, motorists face problems in parking vehicles in designated slots in the city. In this paper a Smart Parking System is designed which enables the user to find the nearest parking area and provide the information about the availability of parking slot to the motorist. The system mainly focuses on reducing the time of finding the parking area and avoids unnecessary travelling through filled parking lots in a parking area. Thus it reduces fuel consumption and minimizes carbon emissions as well.

Keywords: Automatic smart parking, IoT, Web page, Wi-Fi

Introduction

Internet of things was first introduced in 1999 at auto-ID center and initially used by Kevin Ashton. As an evolving technology, it promises to connect all our surrounding things to a network which communicates with each other with minimal human involvement. Still Internet of Things (IoT) is at an initial stage and still there is no common architecture for it (Atsori et al., 2010). There is lot of research and implementations currently ongoing in many areas, though, there is no guidelines or boundaries to exactly define IoT. Hence, depending on the context, application of the internet of things has different definitions. It is defined as the things present in the physical world or in an environment that are attached with sensors or with any embedded systems and made connected to a network via wired or wireless connections (Karimi and Atkinson, 2013; Albano et al., 2007). These connected devices are called smart devices or smart objects. It consists of smart machines which communicate by interacting with other machines, environment and objects. It also covers connection between machine and a person as well.

The Smart Parking System (SPS) using IoT is a technology that uses any computer or mobile devices to control basic functionality. Its features automatically link through the Internet and thus are easily operable from anywhere around the world. It is meant to save time, electricity and eventually minimize human effort to a great extent. The SPS system differs from other existing system by allowing the user to easily operate and monitor their system's functioning from anywhere in the world through an Internet connection. This paper presents a SPS using Arduino Mega micro-controllers that uses elements like: lights, sensors, and appliances falling within their working range of the designated environment. It also possesses the ability to store all the records and activities for future reference purposes. This system is designed to help its users, by assisting them with their parking of vehicles in the car park lot. The system will automatically provide all the details in the parking areas on