IOT Based Car Parking System: Review Paper

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Abstract

Now a day's vehicle parking is an important issue and day by day its necessity is increasing. In the early times the concept of smart cities have gained great popularity. The proposed Smart Parking system consists of an on-site deployment of an IOT module that is used to monitor and signalize the state of availability of single parking space. This paper introduce an IOT based coordinated framework for efficient and easy way of parking the vehicles by checking the availability of slots. The proposed Smart Parking framework comprises of an IOT module that is utilized to screen and signalize the condition of accessibility of single parking spot. The user can able to check the nearest parking place availability and reserve the parking slot using mobile application. The mobile application will act as an interface between the end user and the system. Infrared sensor is placed at the parking slot along with the arduino. Infrared sensor is used to detect whether the slot is occupied or empty and it is updated to the cloud using the GSM. Arduino is used to track the number of vehicles parked in the parking area.

Introduction

This project is for organization, initially the mobile or the monitor will be displayed the number of available slots in the parking. Firstly we have to scan the RFID card , if the slot is available in the parking automatically gate will open after the scanning of RFID card. When RFID card scans at the entry gate the slot counter will decrement by 1 and it will display on mobile as well as wifi module will send the updates on cloud server. We access the mobile phone to see the number of slots available. When RFID card scans at the entry gate the slot counter will increment by 1. It is widely used in organization like IT park, colleges, companies etc. Iot based car parking with RFID card system that helps driver to find vacant slots using sensor. In this paper Infrared sensor is used in every parking slot. The basic principle of Infrared sensor is the waves emitted by the transducer is reflected back from the object and received by the transducer. Most of the cases is unplanned and lack of discipline due to this, people can park their cars anywhere they want to, which creates a mess as people do not follow the particular cue most of the time. As a result of this, a huge traffic jam takes place in that place. While parking in and retrieving car due mismanagement cars can get dent by bumping with each other as there is lack of sufficient space. 2. Headings and Footnotes

Modules

ARDUINO

Arduino/Genuino Uno is a microcontroller board, which is based on the ATmega328P microcontroller. The Arduino Uno is a microcontroller board [4,5]. It is used ATmega328p. Arduino Uno have 14 input/output pins and output pin (PMW outputs as of which 6 can be used) and 6 analog inputs. Again it contains a USB connection, a power jack, an ICSP header and a reset button in short it contains everything needed to support the microcontroller. We can connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. The Arduino Uno circuit acts as an interface between the software part and the hardware part of the project. Arduino board is one type of microcontroller.

Fig.Arduino UNO

EM 18 READER MODULE

Module is the one the most commonly used module for Radio Frequency Identification Projects. It can be directly interfaced with microcontrollers using UART communication. The EM-18 RFID Reader module generates and radiates RF Carrier Signals of frequency 125KHz through its coils. When a 125KHz Passive RFID Tag (have no battery) is brought in to this field, will get energized from it. These RFID Tags are usually made using a CMOS IC EM4102. It gets enough power and master clock for its operations from the electromagnetic fields produced by RFID Reader.

Fig.EM-18 card reader

RFID card

Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically-stored information. RFID is one method for Automatic Identification and Data Capture (AIDC).

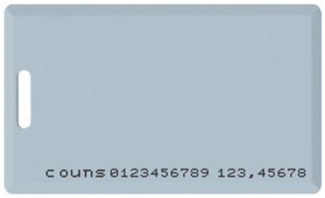


Fig.RFID card

LCD DISPLAY SCREEN

An LED display is a flat panel display, which uses an array of light-emitting diodes as pixels for a display.LED displays are capable of providing general illumination in addition to visual display, as when used for stage lighting or other decorative (as opposed to informational) purposes .An LCD screen is composed of two parts: the actual liquid crystal display and a light source at the back of the screen (called backlight).

Fig.LCD displayer

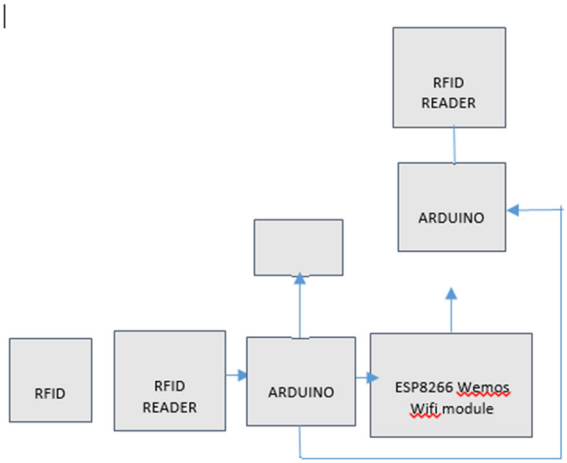
PROPOSED SYSTEM

The proposed system is based on IOT. By using RFID lots of car parking are monitored. The user should login to parking application and it will get a slot for parking. If a parking slot is not vacant then the doar of parking plaza won't get open. It reduces the manpower to maintain the parking system.
The system architecture is based on Arduino Uno microcontroller board, card reader, IR sensor, RFID.

ANDROID APPLICATION

Android is the mobile operating system and it has own operating apps and android software development kit primarily written in Java programming language. We can create our own apps and also we can install in our mobile anyone can use these apps after the registration is completed. User can download the android app for booking parking

slot. User booking parking space is implemented through the android app.



Flowchart

Conclusions

This parking system is a simple, time consuming, cost effective and provides efficient solution to diminish the emission of carbon in the atmosphere. The average waiting time of drivers for parking their vehicles is effectively reduced in this parking system. It also excludes the unnecessary travelling of vehicles across the filled parking slots in a parking area. This project concentrates on implementation of car parking slot detection using Internet of Things (IOT). IR sensor is used to detect the vacant parking slot and it is updated to the user on their mobile application. This project is cost efficient, less power consumption, high accuracy and well suited for real-time implementation.

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