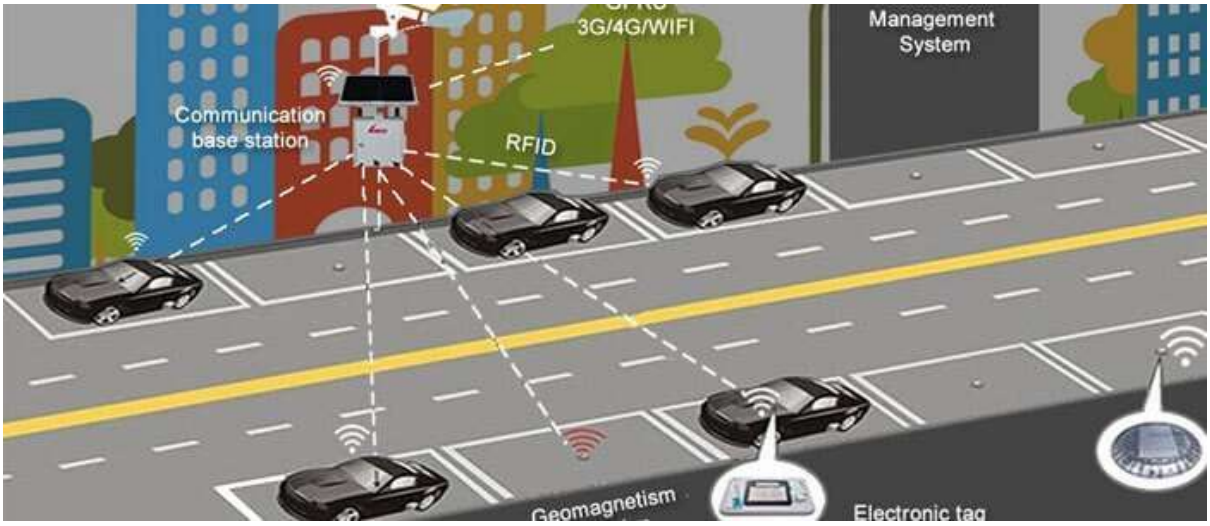
IoT Based Car Parking Management System

Car parking is a major issue in modern congested cities of today. There are too many vehicles on the road and not enough parking space. Finding parking space is a problem for the driver. Sometimes it kills a lot of time of driver to find a parking space. This has led to the need for efficient parking management systems. IoT based project smart parking system brings a solution. A major purpose of this project is to avoid unnecessary traveling by a driver for the parking area. Monitoring the whole area at the run time gives the driver an image of the entire parking area, and the user can select that free parking space.

Here we demonstrate the use of IOT based parking management system that allows for efficient parking space utilization using IOT technology. To demonstrate the concept, we use IR sensors for sensing parking slot occupancy along with a DC motors to simulate as gate opener motors. We now use a WiFI modem for internet connectivity and an AVR microcontroller for operating the system. The system detects if parking slots are occupied using IR sensors. Also it uses IR technology to sense if a vehicle has arrived on gate for automated gate opening. The system reads the number of parking slots available and updates data with the cloud server to allow for checking parking slot availability online. This allows users/drivers to check for available parking spaces online from anywhere and avail hassle free parking. Thus the system solves the parking issue for cities and get users/drivers an efficient IOT based parking management system.



Important Features:

- Sense the parking slot occupancy in a car parking plot of a city
- Location will be tracked by associated GPS sensor
- Collected data will be transmitted to the server in the Internet for storing and processing
- A user/driver can monitor the data using a Mobile App in which data are fed from the server
- A user/driver can inform willingness to reserve a slot in the parking plot
- Inform the user/driver about his booking (time duration and cost) through SMS/Mobile App

- System will sense if a vehicle has arrived on gate for automated gate opening.
- Display the free parking slots in the LCD display placed in every parking plot

Primary Hardware Requirements:

- Few IR Sensors
- Two DC Motors and Motor Controlling Board
- GPS Sensors
- LCD Display
- Arduino
- Node MCU
- Breadboard / PCB
- Adapters, Cables, LEDs, Wires
- Smartphone

Primary Block Diagram: