THE SMART PARKING MANAGEMENT SYSTEM

INTRODUCTION

The number of car client's increases was requested more parking spots, and with the growth ofthe internet of things causes smart urban areas to have picked up grind popularity. In this way, issues, for example, traffic blockage, constrained vehicle leaving offices, and street security are being tended to by IoT. So, several parking organization systems have been organized to decreasesuch traffic issues and improve the comfort of car users, it has combined

SMART PARKING SYSTEM

One of the most important problems facing large cities is congestion and parking . So, usingAutomated Parking System Management is an efficient technique using the Internet of Things tomanage the garage . Smart parking is an electronic tool that enables the user to find vacantparking spaces through information technology and by using appropriate sensors

LITERATURE SERVEY

In this section, some related works of smart parking are presented. The System was used sensors, technologies, and interfaces to collect and display information in real-time, which required expensive private infrastructure. The smart parking system delivered user information and accessibility of parking slots through the VMS on the internet. It was classified into off-road and on-road. Google map application, ultrasonic sensors, and cloud-stored data wereused in Smart parking, the Android application map forward data of the empty place of the user.

IMPLEMENTATION & WORKING

The Proposed System

Finding a place to park cars involves three-stage. First, the parking area which has Arduino devices along with the sensors to interact between the user and the parking area.
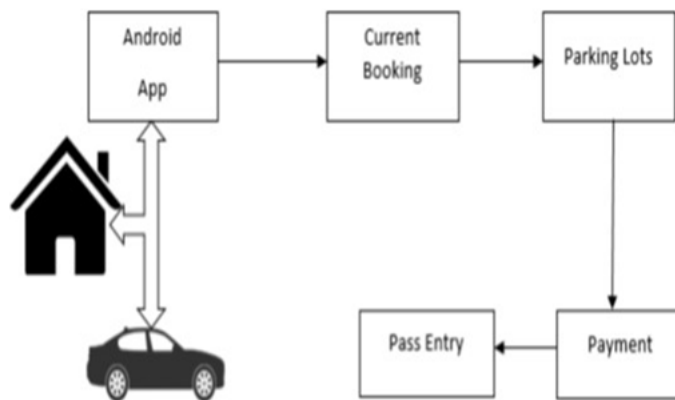
Figure: The architecture of booking for parking.
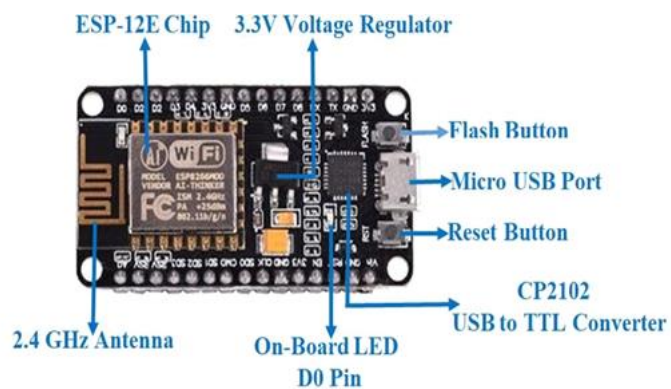
Hardware Components& Circuits


Figure: Arduino UNO Board.

GSM Module

a circuit which is used to set up communication between mobile phones and microcontroller.

It is used to send SMS, MMS, and voice messages through a mobile network .

- 16×2 LCD Display with I2C is an electronic display module that produces a visible image that can display up to 32 characters on a single screen [28]. LCD Display uses many numbers of Pins of Arduino for connecting Inter-integrated Circuit (I2C). It decodes the data received from the I2C Bus into Parallel data that is required for the LCD Display.
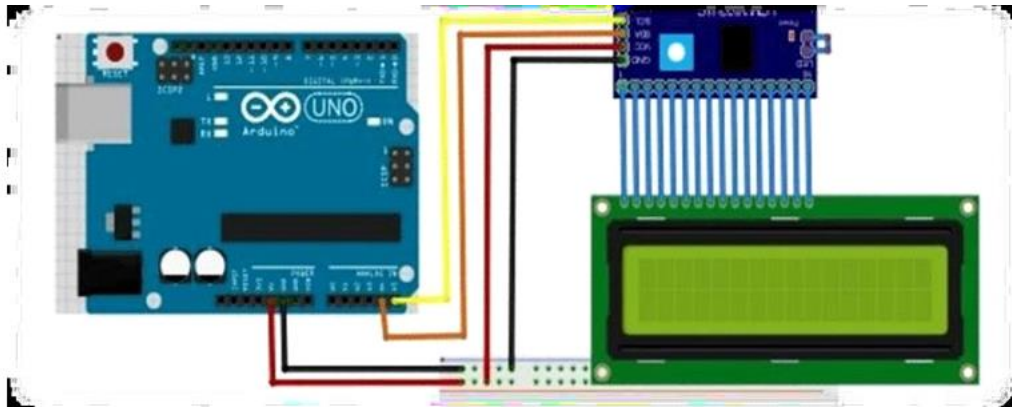
- TCRT5000 Circuit: An Infrared (obstacle sensor) uses to detect the presence of the objector any other reflective surface in front. Its package has a Photodiode that uses to generate an IR signal and a Phototransistor which can be used to read the IR signal that is reflected [29]. The obstacle detected if the reading of the IR sensor is "0".
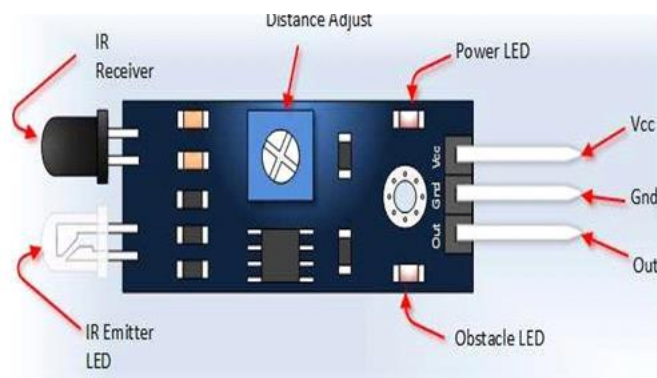
- Aservomotor is a motor with a gearbox and a Shaft transmission that gives motion greater torque and greater precision [30]. When the engine is pulsed at a certain time, the engine rotates the angle according to that time.

Figure: A servomotor

- Piezoelectric Sensor converts physical parameters, for example, acceleration, strain, or pressure into an electrical charge which can then be measured

- **RESULTS**

Hardware Implementation