

# Advance Automatic Car Parking System

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**Abstract**— Now-a-days, traffic congestion caused by vehicles is a main problem and it has been growing exponentially. Car parking is a major problem and it has been, still a major problem with increasing vehicle parking in urban cities. Searching for a parking space is a routine and also the frustrating activity for many peoples in cities around the world. This wastes the lots of time and search burns about one million of the world’s oil every day. The paper aims to reduce human efforts as well as fuel and space saving with increase in efficiency. The project wants to increase the automation in parking system and provide security for the vehicles.

**Key words:** Car Parking, Security, Booking App, GSM, Billing, PIC Microcontroller

## I. INTRODUCTION

In every multiplex systems there is a major problem for car parking. There are many lanes in the multiplex system, so to park a car one has to look for all the lanes. Hence there is a lot of human involved in this process for which there is lot of investment. If the lane is full, then he has to park the car outside, where security is not provided. So the need is to develop an automatic system which indicates directly which lane is vacant and book the lane by using the booking app. So the project objective is to develop the system which indicates the vacant lane and automatically park the car. The project involves a system including Patti switches in every lane and a LCD display outside the car parking gate.

## II. EXISTING SYSTEM

In present time, the car parking is not automatic and hence wastes lots of space in parking. Hence there is severe problem for parking the car at correct place, otherwise the scratch or dent is formed by certain angles or other cars parked.

## III. PROPOSED SYSTEM

In this paper, we are proposing a system which is fully automatic without any user interference. This system is having an application, from which we can book the parking slot in advance by paying the amount online. Accordingly the time will start for billing. If he want to cancel the booking, then the 25% of amount will be deducted and remaining amount will be refunded. After reaching the parking system the car will be parked inside the parking slot automatically for which he had booked.

## IV. BLOCK DIAGRAM

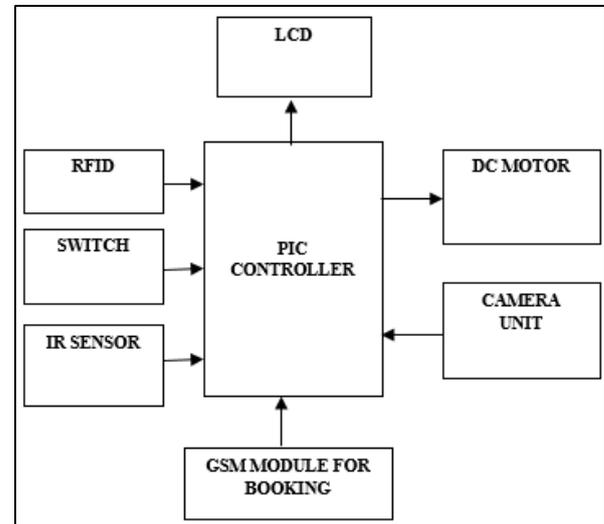


Fig. 1: Block diagram

## V. KEY COMPONENTS

### A. PIC Microcontroller

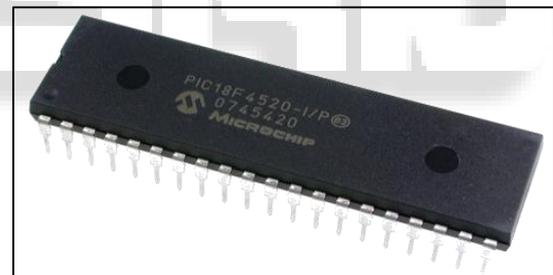


Fig. 2: PIC Microcontroller

- PIC18F4520
- 8 bit microcontroller
- 36 input output ports
- 13 channel ADC
- 4 timers- 1 of 8 bit, 3 of 16 bit
- ROM 32 KB
- EEPROM 256KB
- 40 pin DIP

### B. RFID

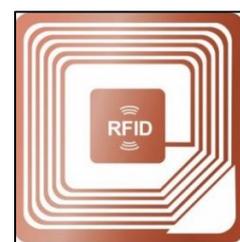


Fig. 3: RFID TAG

- Radio-frequency identification (RFID) is an automatic identification method in which the data is stored on RFID tag and information is remotely accessed.
- The RFID tag is a device that can be used for identification and tracking using radio waves.
- The tag has electronically stored information which can be read from several distance away.
- In our proposed system, RFID tag is used for security purpose.

### C. Camera



Fig. 4: Camera

- Resolution (TV lines): 420
- Horizontal Angle: 120 degree
- System: PAL/ NTSC
- Power Supply: DC 8-12V

### D. GSM Module

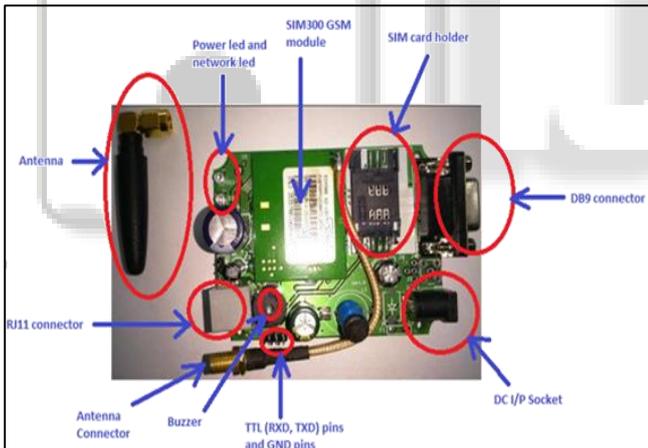


Fig. 5: GSM Module

Global System for Mobile communication (GSM) is the name globally accepted standard for digital cellular communication. In our proposed system, GSM is used for indicating the empty parking and booking the park.

- Dual band 900/ 1900 MHz
- Control via AT commands
- Low power consumption-1.5 Ma
- Operation temperature: -40 c to 85 c
- Uplink frequency range: 933- 960 MHz
- Downlink frequency range: 890- 910 MHz

## VI. FLOW CHART

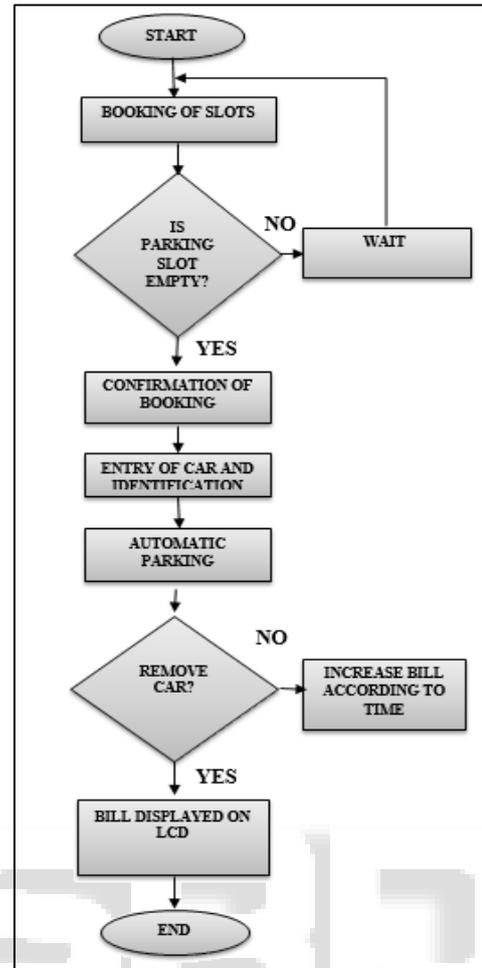


Fig. 6: Flow Chart

### A. Description

- The flowchart demonstrates the working of our project, advance automatic car parking system.
- The user or customer have to book the parking slot through the car parking booking application.
- If the parking slot is empty then confirmation of booking will be done by the user and accordingly the billing time will start.
- If the parking slots are full, then the user can wait for the parking slot to become empty, according to the time given to the user, the user have to park the car in the parking slot.
- After booking process, at the time of entry, for security purpose card will be identified by the RFID and then car will be automatically parked in the parking system.
- If the user don't want to remove the car then billing will be automatically increased according to time.
- And if the user want to remove the car then bill will be displayed on the LCD.

## VII. APPLICATIONS

- In the Malls and Cinema Theatres.
- At Railway stations and Airports.
- In the colleges and schools.

### VIII. ADVANTAGES

- Auto Car Parking System provides car parking solutions accommodating maximum cars in minimum space.
- Auto Car Parking System reduces parking and retrieval time. Saves time spend in searching for empty parking slots and time spend is searching the parked car.
- Auto Car Parking System is cost effective in terms of maintenance over the conventional parking systems.
- Auto Car Parking System provides improved security, safety for the cars.
- Drivers collect their cars from secure waiting areas; thus they do not have to walk through a car park alone and are less vulnerable.

[6] <http://www.engineersgarage.com/electronic-components/ir-infrared-led>

### IX. DISADVANTAGES

- Lights need to be run all day long because of darkness even in the daytime.
- Parking lots are tends to be subjected to contamination.
- Elevators and associated maintenance of those is very costly.
- Concentrated spots of pollutants such as motor oil.

### X. CONCLUSION

In modern world where space has become a very big problem, the control strategy for the traffic flow to the multilevel car parking system carried out using the PIC. With the help of some sensors checks the availability of vacant place. On each floor it can be noticed that the control system for the multilevel car parking system had achieved anticipated performance to regulate the entry and exit of car to or from several floors accurately.

Hence, Auto Car Parking System provides improved security, safety for the cars.

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