

Automatic Car Parking System Using Microcontroller

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ABSTRACT: In this paper we have shown the concept of Microcontroller Based Automatic car parking system. As we see in the modern world everything is going automatic we have built a system which will automatically sense the entry and exit of cars with the help of microcontroller through the gate and then display the number of cars in the parking lot. We have deployed a microcontroller 89S52 which is used to sense the movement of cars and depending upon whether there is a capacity of cars to enter, it either opens the gate or not. There is also RFID module to provide security as users who have authority can swap the RFID cards and get entry otherwise not. The project is designed for car parking. The goal of this paper is to automatically park the car for allowing the cars into the parking area. LCD display is provided to display the information about the total number of cars that can be parked and the place free for parking. Two IR sensors TX RX pairs are used in this paper to identify the entry or exit of the cars into/out of park. These two IR sensor TX RX pairs are arranged either side of the gate. Whenever the mains are switched on, the LCD panel displays the message parking space for 3 vehicles. The number indicates the maximum capacity of parking in this paper.

KEYWORDS: Microcontroller 89S52, Parking System, IR Sensors, LCD, LED, crystal oscillator.

I. INTRODUCTION

An Automatic car parking system is a mechanical device that effectively uses parking capacity inside a parking lot. Parking systems are generally powered by electric motors or hydraulic pumps that move vehicles into a storage position. There are two types of car parking systems: traditional and automated. In the long term, automated car parking systems are likely to be more cost effective when compared to traditional parking garages. Automatic multi- store automated car park systems are less expensive per parking slot, since they tend to require less building volume and less ground area than a conventional facility with the same capacity. Both automated car parking systems and automated parking garage systems reduce traffic of cars which are not running or circling around while drivers look for parking spaces.

II. LITERATURE SURVEY

Rupali Bhardwaj [1] has introduced the concept of smart parking guidance system. A various factor considered in the decision of the parking choice is done by parking utility function. Driving time and distance, the distance on foot, the cost of parking, traffic congestion by guidance itself and possibility to find vacant parking lot when a car enters. To analyse the effect of considering a factor, six different importance according to the total weight of factor are proposed and evaluated the validation of proposed algorithm is performed by the simulation test. For the multi -level car parking system having the different maximum number of concurrent parking requests, six kinds of preferences putting different weight on various decision factor have been evaluated and compared with the base. Using the proposed algorithm, it has been proven a lot, utilization of parking resources in the city, and traffic congestion can be improved. The proposed system and algorithm enables car drivers to find the most appropriate parking lot and redundant time and energy.

Jo-Hongis Wang and Wando Hey [2] has introduced the project that aims at saving the ground space required for parking. Using the parking system any number of cars can be parked according to the requirement, This Micro controller Based Car Parking System enables the parking of vehicles, by displaying the available slots thus reducing the parking space that is used by users.

III. EXISTING SYSTEM

Past days a person needs to guide drivers to park the car but nowadays we are trying to automate this process. Which means without any guide of person the driver himself knows where the empty slot is there for parking. We are facing many problems for car parking system. As we need to park our car manually and there is no discipline in this process it creates a huge hurdle. People can park their cars anywhere they want to, which creates a mess as people don't follow a 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. This leads to arguments, fights among people which sometimes create traffic jam. This is also an economical lose as we need to repair our damaged car. This chaos also leads to cars consuming extra fuel.

IV. PROPOSED SYSTEM

We proposed a method to automate the car parking system using IR transceiver which will guide the drivers for hassle free parking. By introducing the automated car parking systems we can handle the mismanagement of parking space save time and recover losses caused by the existing system and also earn money by charging money for car parking.

V. WORKING PRINCIPLE

First when a car enters the gate LCD displays empty parking slot that empty parking slot was sensed by the IR sensor we are using object sensor to sense the car in the parking slot. The TX and RX-was kept in the parking slot. If any car parks at one slot the TX-transmits the signal and the RX can't receive any signal therefore display, displays "NOT EMPTY". If the signal is received by the IR receiver, then display displays "EMPTY", through Microcontroller.

VI. BLOCK DIAGRAM

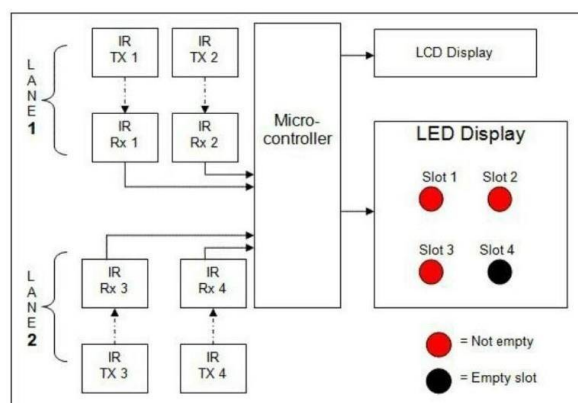


Fig 1: System Architecture

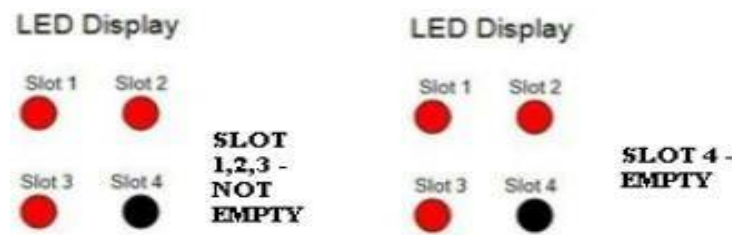
VII. INTEGRATED CIRCUIT [LM339]

An integrated circuit or monolithic integrated circuit (also referred as an IC, a chip, or a microchip) is a set of electronic circuits on one small flat piece (or "chip") of semiconductor material, normally silicon. The integration of large numbers of tiny transistors into a small chip results in circuits that are orders of magnitude smaller, cheaper, and faster than those constructed of discrete electronic components. The IC's mass production capability, reliability and building-block approach to circuit design has ensured the rapid adoption of standardized ICs in place of designs using discrete transistors. ICs are now used in virtually all electronic equipment and have revolutionized the world of electronics, Computers, mobile phones, and other digital home appliances are now inextricable parts of the structure of modern societies, made possible by the small size and low cost of ICs.

VIII. IR SENSOR

An individual PIR sensor detects changes in the amount of infrared radiation impinging upon it, which varies depending on the temperature and surface characteristics of the objects in front of the sensor. When an object, such as a human, passes in front of the background, such as a wall, the temperature at that point in the sensor's field of view will rise from room temperature to body temperature, and then back again. The sensor converts the resulting change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection. Objects of similar temperature but different surface characteristics may also have a different infrared emission pattern, and thus moving them with respect to the background may trigger the detector as well.

IX. EXPERIMENTAL RESULT



X. CONCLUSION

Automated multistoried car parking system allows for an error-free, fast read, non- alternative to the traditional means of site security. With a variety of transponder form factors that can be mounted on or within the vehicle, people can enter a secured area without opening a door or a window to obtain authorization. By automated car parking management system, we can accommodate more cars in less space. This principle can be applied to almost any city in the world. This is probably the prime reasons why automated car park systems are a very attractive alternative to conventional car parking systems by making use of available space in more efficient manner.

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