

Automated Car Parking System

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Abstract: This paper has shown the concept of an automatic car parking system. Automatic car parking system is very good substitute for managing car parking. Since in modern world, when space become a very big problem and in the era of miniaturization it's become a very crucial necessity to avoid the wastage of space in modern, big companies and apartments etc. It discuss a project which presents a miniature model of an automatic car parking system that can regulate and manage the number of cars that can be parked in a given space at any given time based on the availability of parking slot. Everything in the modern world is going automatically, we have built a system which can automatically sense the entry and exit of cars through the gate and then display the number of cars in parking log. The automated car parking system reduces the time taken to check the spaces for vehicles by displaying the available spaces for parking on a LCD displayer by using infrared (IR) sensors installed at the entrance and exit. The project is developed using 8051 microcontroller.

Index Terms— Microcontroller 89C52, IR Sensor, LCD Display, MATLAB, Load and Weight Cell

I. INTRODUCTION

Today we all are living in the automatic world where everything goes to be automatic from your Ceiling Fan to your washing Machine. Similarly, the project automated car parking system is one of the example of this automatic world. As we

know the no. of vehicles are increasing rapidly, so in the light of the no. of vehicles rising consistently, there must exist a problem of parking of vehicles. Parking space is becoming major issue in Urban and Semiurban areas. So we have a need to maintain the vehicle park management in order to reduce the wastage of time also. Basically we have two types of parking system i.e. Traditional Car Parking System and Automatic Car Parking System. In the long term, Automated car parking systems are likely to be more cost effective when compared to traditional car parking system. Automated car park systems require less ground area than a conventional facility with the same capacity. Hence it is less expensive in comparison with traditional method.



Traditional Car Parking System



Automated Car Parking System

II. RELATED WORK

1] B.Ramya, A. Monika, G. Gowry Naga Sravanthi, D. DronaAkshay Kumar CH. Papa Rao, "Automatic Car Parking System Using IR Sensors" IJESC Volume 7, Issue No. 4 -2017. "In this paper they atomize the vehicle park for allowing vehicles into the parking. Their components are as follows: 1. Micro //Controller AT89C52, IR

Sensors, Crystal Oscillators, Stepper Motor, L293 Motor Driver, Buzzer, Buzzer Driver, Power Supply."

2] Ankit Gupta, AnkitJaiswar, Harsh Agarwal, Chandra Shankar, "Automatic Multilevel Car Parking", IJESC Volume 3, Issue No. 2 -2015. "This paper basically shown the concept of automatic car parking system, which can automatically sense the entry and exit of the cars and displayed number of cars on the LCD. Components applied are MICROCONTROLLER, Displays Units LCD, DC Motor, IR Sensors, Power Supply and this system mainly required in public parking, airports, hotels, malls and office buildings, etc."

3] Janhvi Nimble, Priyanka Bhegade, SnehalSurve, PriyaChaugule, "Automatic Smart Car Parking System", International Journal of Advances in Electronics and Computer Science, ISSN : 2393 – 2835 Volume 3, Issue No. 3 – 2016. "This paper basically implement the system based on MATLAB and hardware. Here we are using no. of sensors for number of car slot if that sensors is active then that particular car slot is busy. That show in MATLAB screen. In this system, a brown rounded images on the parking slot is captured and processed to detect the free parking slot. A vision based car parking based car parking system is developed which uses two types of images to detect free parking slot. First positive images contain the images of cars from various angle and negative images do not contain any cars in them."

4] R. Jayanthi, R. Jeyabharath, "Safety and Security in RFID Based Multilevel Vehicle Parking System", International Journal of Trend in Research and Development, Volume 3 (2), ISSN: 2394-9333 – 2012. "This paper provide the chain mechanism is used for driving the parking platform. This total prototype is powered by a D.C. motor. The process of accessing the RFID will take time in microseconds. Hence, it's less time consuming techniques. It can be fully automated by integrating with tag and reader, the PIC microcontroller called on respective platform should appear at the ground level. This system can further be made space efficient by designing slots of different size."

5] Supriya S. Kadam, Vijaymala S. Shinde, Priyanka G. Deshmukh, "RFID Based Car Parking Security System Using Microcontroller IC89c52", "This paper is gives idea about technology communication is in between the tag and reader. The tag is object like smart cards and each tag have magnetic strip with the specific code and tag is read by RFID reader module."

III. PROPOSED SYSTEM

The system is basically around microcontroller and sensors. All the blocks are connected with microcontroller. Whenever a car enters the weight of car is weighed by weight and load cell provided in the system. Then IR sensor which is located at the entrance gate, sense the entry of car and provide the signal to the gate motor and motor driver through microcontroller. Motor driver will open the gate by rotating the gate motor in clockwise direction. In this way car enters the parking area. In the parking area we provide LCD screen which shows the available parking slot with the help of IR sensor which are provided at each parking slot and signal through the microcontroller. Here we use PC MATLAB as tool for programming and screen monitoring. Here we also provided with automatic street light at each parking slot in order to provide a way for parking the vehicle at night. For the total operation of the system 12v power supply is required. The exit of the car same as entry except that motor driver rotates the gate motor in anticlockwise direction.

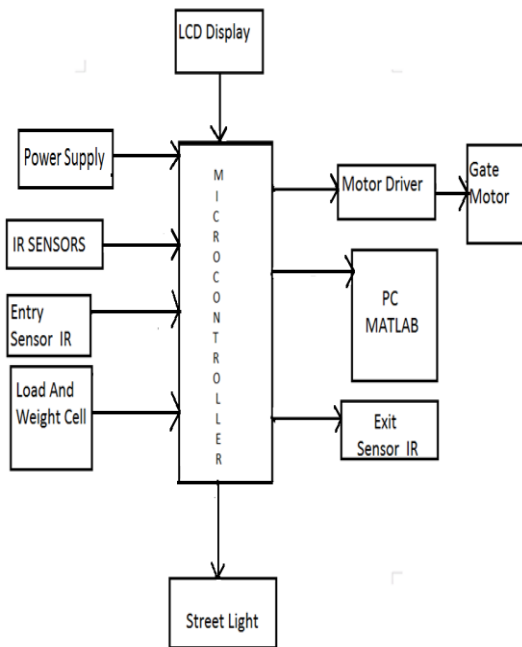


Fig: Block Diagram of Automated Car Parking System

IV. CONCLUSION

Automatic car parking system is very important factor in the traffic area. So by implementing Automatic car parking system using IR sensor we can manage our time and vehicles can be parked easily. The basic aim behind the system is to reduced the human efforts requires for parking public place. The system will provide excellent security, avoid accident in

parking area and get accurate information about parking In this study, the various types of smart parking system and has been presented. From the various examples of the implementation of the smart parking system being presented, its efficiency in alleviating the traffic problem that arises especially in the city area where traffic congestion and the insufficient parking spaces are undeniable. It does so by directing patrons and optimizing the use of parking spaces. With the study on all the sensor technologies used in detecting vehicles, which are one of the most crucial parts of the smart parking system, the pros and cons of each sensor technologies can be analysed. Although, there are certain disadvantages in the implementation of visual based system in vehicle detection as described earlier, the advantages far outweighs its disadvantages.

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