

CAR PARKING SYSTEM

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ABSTRACT

The analysis and design of an Automated Car Parking System Using Arduino is presented in this project work. The project's major goal is to develop a fully automated car parking system that requires less human interaction. This proposed concept is designed to address the problem of real-time parking in our daily lives. For people, parking space is not a luxury; it is a necessity. Because the population is growing, we need to discover a better way to park our automobile safely in a congested area and avoid traffic congestion. The Automated Car Parking System is a cutting-edge application designed to tackle real-time parking issues. By a large margin, the parking scenario falls short of the country's existing requirements. The problem has escalated to the point that the number of families with automobiles is far greater than the country's capacity to handle. In the parking project, Arduino is used as a control mechanism. An Arduino equipped with sensors and motor is used as the backbone to successfully construct the Automated Car Parking System

Keywords: Automatic car parking, real time parking, Arduino sensor

INTRODUCTION

The automatic car parking system could be used for hotels, offices, shopping centre and show rooms, universities, government buildings, airports, hospitals, and stadium. The advantages of automated car parking are efficient usage of spaces; decreasing the land space and increasing the number of parked vehicles, saving time by taking and delivering car in a few seconds; providing security and safety for the car from theft and damages while parking. As multinational cities is suffering from the lack of available parking spots and expensive land prices, especially in vital areas, we were inspired to create an automated car parking system that can counter such a daily basis problem to make life easier. The main objective of this report is to build a prototype of the automated car parking system to park and retrieve cars automatically in an easy and sufficient way. To easily find an unoccupied parking space in the large car park is a problem for drivers. It is because the car on the road increases every year especially in town. On the other hand, it is more difficult to find the parking space during peak time and holidays because this is the time people want to release their stress and to spend time with family. There are not many existing solutions attempting to address the problem. Thus, it is useful to have some technical solutions that can provide information on parking space occupancy. The efficient parking monitoring system must be designed to overcome the problem.

The objectives of proposed work are as follows:

- 1) Improve on the current parking management systems.
- 2) Monitor the state of a parking slot. The parking slot may be fully in use or free. This system seeks to constantly monitor what is happening in the slot to identify parking spaces that are available or occupied

PROBLEM DEFINITION

Users of automobiles spend a lot of time in the parking slot trying to locate where to park. In today's ever busy working environment, drivers hardly have time to spend in parking bays looking for where to park. In many places, especially around shopping complexes, universities, city centres, and many other busy working

environments, finding parking have been noted as one of the major causes of stress in the lives of individuals who drive. The traditional method of finding parking by the naked eye has a number of irritating situations. In situations

where a driver is walking towards a car or is in the car, the other drivers waiting to find parking often make signs, or whistle or try to do something intending to ask the other whether they are pulling out. Though this kind of asking might help most of the times, it leads to situations which are often inconveniencing to other drivers.

In busy towns and cities, parking management still poses a challenge that keeps growing more complex. The need for efficient parking management systems can't be emphasized enough for such cities. This study thus seeks to provide a solution to the issues above using the latest sensing and telecommunication technology.

METHODOLOGY

The basic concept is, when a car enters the car park through the entry point, if there is an empty parking slot, the barrier will allow access to the car park. Two lights one green & one red is situated at entry which shows green light if parking space is available & red light if parking space is not available. As soon as the car enters through entry, sensor situated at entry gets activated the barrier opens if parking space is available & after car passes through second sensor the barrier closes, if space is not available then driver have to wait for some time. This design requires the use of sensors mounted in parking spaces. This system is usable for the parking slot seeker to know the exact empty parking slot.

This sensor works like a Radar and Sonar. This sensor continuously transmitting and receiving waves. When one of the cars enters and goes through these sensor it shows the information of empty slots. If car is not present in then sensor will send information to microcontroller & LED on the parking space will turn on indicating parking space empty & vice-versa.

RESULT

This study seeks to develop an intelligent parking system that efficiently allows users to locate empty parking slot in the shortest possible time and keeps track of the activity of the parking slot. The purpose of Automatic Car Parking Indicator system is to guide the driver to a suitable parking space if one is available. The system would only allow entry to the car park, when there is space available. The car park system will consist o



Image: Demonstration of the project

f a systematic entry and exit point, which would allow entry depends upon the availability of spaces. The design of the system would also involve the planning of a systematic lane system allowing the optimum amount of the parking slot to be allocated in order to avoid congestion as well as the difficulty in removing ones vehicle. Automatic Car Parking Indicator system proposes systematic entry and exit paths to the car park. A barrier system is implemented at the entry path.

CONCLUSION

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.

