



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 10, Issue 3, March 2022

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.165



9940 572 462



6381 907 438



ijircce@gmail.com



www.ijircce.com

Autonomous Car Parking System Using GSM and RFID Module

Barath R¹, Karthick Kumar K¹, Karthick R¹, Dr C N Marimuthu M.E.,Ph.d²

Department of ECE, Nandha Engineering College, Erode, India¹

Professor & Dean, Department of ECE, Nandha Engineering College, Erode, India²

ABSTRACT: In this fast-moving world of technologies, everyone finds difficult in some platform. Mainly the people spend most of their time in finding the parking slot areas to park the car. While parking the car in parking slot area, the peoples face some difficulties like spending the time and work. People want to use those time for some other important work. While considering people in parking the car in commercial places like shopping malls, cinema theatres, etc...first they have to find the space, only after that they park the car. We designed the solution for to save the humans time and work by automation technology. This technology would designed by hardware and software. This technology is named as Autonomous car parking system using GSM and RFID module. This project will give the exact solution for people to park the car easily and get the car parking slot with the help of some modules. The Autonomous car parking system enables a vehicle to drive itself and park the car in parking area without any human help. We have designed car parking areas of driverless car for detecting and parking the car automatically. Once the car reached the car parking area, the car will start to detect the empty parking slot and detect the road line based on detecting technology. The car will keep on moving the road as well as it detects the free space in both the sides. Once it detected the available parking slot then, the car gets parked and read the Parking slot number using RFID module. Once it was read parking slot number, the slot number and car current status will share through message to the car owner or car driver using GSM module.

KEYWORDS: Hardware, Software, RFID, GSM Module

I. INTRODUCTION

Even if we find the space for parking the vehicle so much time is wasted in finding the exact vehicle parking slot area. It results in more fuel consumption and it is not environment friendly. If we could automatically detect the exact vacant position of the parking slot, it would be helpful not only for the drivers but also for the society. This concept of autonomous car parking system was driven by two main factors: that is need for car parking space and aware of available land. The Autonomous car parking system uses a mechanical device for transporting vehicles to parking spaces in order to conserve a significant amount of space that would otherwise be spent manual parking. The ACPS technology is also known by variety of other names like Automated parking facility (APF), Real time Car parking system (RTCPS), Smart parking System (SPS). All car parking technology will reduce the car parking spaces and saving the time and human work. We designed car parking system technology. The process is that, when the car enters into the parking area, the driver exit the care and enable the parking mode. Once it enabled the car will entering into the parking area and find the parking slot whether the place is vacant or not, Once it find the parking place, the car will parked automatically. Till the process is already exist. We additionally added some extra features like while parking the car in vacant place, once it parked the car will detect the car parking slot number by the help of Radio frequency identification (RFID) module and send the parking slot number to Driver through wireless medium with the help of GSM Module.

II. LITERATURE SURVEY

1. REAL TIME CAR PARKING SYSTEM USING IMAGE PROCESSING

Car parking areas are an essential concept in a vast scope of traffic and civilian applications. With the massive issue of urban traffic congestion and the ever-increasing scarcity of parking spaces, these car parking locations must be well-equipped with autonomous parking data and guidance systems. The counting of parked cars and finding the available car parking site are two goals of intelligent parking lot management. Using image processing technologies, this research presents a new approach for giving parking information and guidance. Counting the number of parked cars is part of the proposed system. Instead of employing electronic sensors or modules placed in the floor, the auto parking system uses pictures to detect the vehicles. At the entrance to the car parking area, a camera has been installed. The

automobile images captured will be collected. Using image matching, the acquired photos are sequentially matched using a vehicle as a reference image.

2. AUTOMATED CAR PARKING SYSTEM COMMAND BY ANDROID APPLICATION

The objective of this project is to automate both the automobile and the parking area. It outlines a project in which a small model of an automated automobile parking system is given that can control and manage the amount of automobiles parked in a specified location at any one time moment depending on parking spot availability. Automated parking is a technique for parking and exiting vehicles that makes use of sensors. An Android-based application controls the entrance and exit from the parking lot. We looked at some of the current systems and discovered that the majority of them aren't totally automated and require some human intervention or contact in or with the system. Our approach differs from other current systems in that we aim to make it as human-assisted as possible by automating both the cars and the parking lot; most existing systems, on the other hand, require human workers (or the car owner) to park the car manually.

3. SMART PARKING SYSTEM BASED ON INTERNET OF THINGS

Because of the rising number of vehicles on the road, parking has recently become a severe issue that is only becoming worse. In this work, we present an IoT-based guideline for users to monitor and reserve parking spaces for their vehicles, as well as manage and monitor available parking spaces, resulting in an intelligent solution. Its goal is to build a smarter and better parking guidance system that will considerably minimise the difficulties of traditional parking systems. By placing a sensor node on each parking spot, the system can keep track of its condition. As a result, the sensor detects the condition of the parking spot and transmits the information to the server controller for the central node. Data is collected from all sensor nodes and uploaded to a server by the Node MCU. so users may monitor the status of their parking from any location using the internet and any browser. By creating a profile on the site, users may also reserve a parking spot.

III. EXISTING SYSTEM

The existing system for autonomous car parking system, which can be detect available car parking slot to park the car. Recently systems are very complicate and available only in the commercial area. Due to the lengthy process the car will analyse lot of phases like detecting the free space and follow the road, trying to avoid object due to this process, rotate the wheel with absolute path. So this modern approach which comprises of Arduino mega, motors such as to find the both direction whether the parking slot is vacant or not by using two module such as rotate both direction to detect using servo motor and find the vacant place on ultrasonic sensor, to avoid object using IR sensor, display the current status on LCD display, follow the road using IR sensor for both forward and reverse, avoid car theft using vibrator sensor. While entering into the car parking area the system will enabled by the way of enable the parking engine. Once it found the available park slot, it will park automatically and read the parking slot number or ID by using RFID module. Once it was read parking slot number, the slot number and current status will send to car owner or car driver through SMS. These signals can get affected due to several factors including weak signal, no signal and signal distraction. In such cases, the ever-reliable GSM becomes weak and power supply fault. Many modern GSM module work on Solar powers or high battery charge. For most of the time, this works wonders. It sent the current car status and slot number of a parked car.

DRAWBACKS OF THE EXISTING SYSTEM

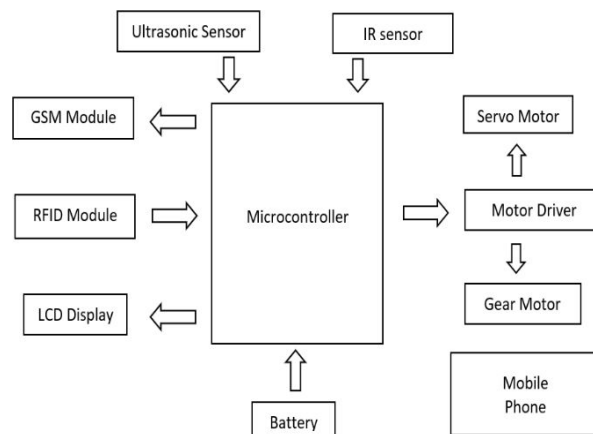
The existing system was designed in such a way that it sends the parking car status and parking slot number to the car driver or car owner. The main drawbacks is that if there is any human object will detect for long time while parking the car, the car does not give the parking status to the car owner or car driver. So, the power will reduce while the car detecting the object without end while parking time, the car may face lot of issue such as power start issue, it indicates low battery alarm, fuel may get reduce, it generates head in the car engine, it disturbing other cars. Some other existing devices senses the parking parameters using sensor like ultrasonic sensor, IR sensor. It also dead some time.

- The accuracy of the sensor in the device can be increased by reducing the car dead.
- In some of the device only detect the vacant parking place but, it does not send any data to the person's car owner or car driver.
- Due to low power supply and low signal, the car will get affected while parking the car to the car parking place.

IV. PROPOSED METHOD

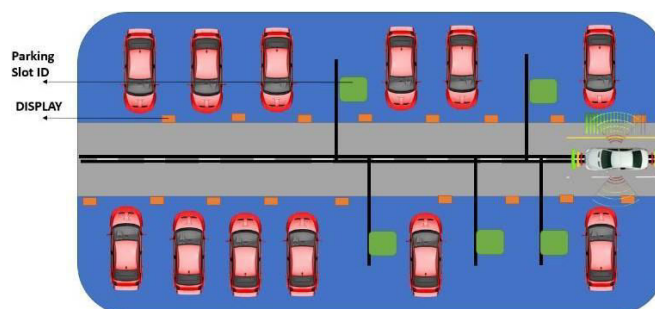
In the present decade, car parking and it's time taken is needed especially for car drivers and car owners. Everyone is concerned about this beloved one who have modern cars. New technologies are making a prominent role in everyone's life. For parking the car and maintaining the car a system is designed. And the cars are developing with new Technology and high security systems so on. But this system will talk about car parking system. A man who parks the car in commercial place, he has wait for a while to park the car in the specific parking slot. If the process will continue. We have to spend some time for this. The people will reach specific place with a given time or rushing up on that situation, we will spend time to park the car in the parking place. So, will may miss some works or something important. But this project if there are any people have this facility in your car, we can save the time and reach the designation on time or in time. The process of this project is mainly targeted for who park the car in commercial place. One you reach the parking place. The car will park itself automatically without human help.

SYSTEM ARCHITECTURE



Block Diagram of autonomous car parking systems

The above figure is to interface all the modules to the microcontroller to control the modules simultaneously. The microcontroller will power up by the help of battery and the modules could power up by the help of microcontroller. the microcontroller can give power supply for all the modules except GSM. Because of it can take little high current and voltage. The ultrasonic sensor will sense the parking slot area whether the place is vacant or not and it will detect the front object whether there is any obstacles present or not with the particular distance. The IR sensor will follow the rode with some scientific factor. The servo motor will hold the ultrasonic sensor, it helps to find the vacant place and both the directions left and right. The gear motor will help to move one place another. The RFID Radio frequency identification will help to read the parking slot number. The LCD display is used to display the current process which will helps to find the current process for user. But it is not necessary in real time implementation. The GSM global systems for mobile communication will helps to send the parking slot number to user through wireless medium.



Parking Area Architecture

The parking area should have some facilities for ACPS technology. The parking area should need proper space for each and every vehicle. It should need parking slot showing display, without displaying the parking slot number, the user feels difficult to find the car which it parked.

V. CONCLUSION AND FUTURE WORK

We had designed to easily park the vehicles in the parking area with the help of ATmega 2560P Microcontroller. This Microcontroller has sense the parking environment to find the car parking space to park the car without human interaction. In this car parking technology, we could achieved to saving the time and reduce the human's work. The people can use that time for some other important work. This project will mainly focus on to reduce the difficulties for people while parking the car in vacant area. This project is working on self-driving technology to drive itself while parking in commercial places like shopping malls, theatres etc...

In future work this project will move to the next level, when the user send the message to the car, the car will come back to car owner or driver. This concept will achieve that the human no need to enter into the parking area.

REFERENCES

1. Sailza Chauhan, Ashish Chauhan, Chitranjan Pramanik, Avinash Patil, Prof. Soumitra Das (2007), Internet of Things Based Smart Vehicular Parking System, 2007 International Journal of Innovative Research in Science, Engineering and Technology.
2. Rohit Sunil Shende, Ketan Suresh Gaikwad, Akshay Sambhaji Kedari, Amol Uday Bhokre (2014), Automated Car Parking System Commanded By Android Application, 2014 International Conference On Computer Communication And Informatics.
3. Mohammed ahamed, wangguangwei "Study On Automated Car Parking System Based On Microcontroller". International journal of engineering research and technology ISSN: 2278-0181, volume-3, issue-1, January-2014.
4. R.J. Oentaryo, M. Pasquier(2014), Self-Trained Automated Parking System, 2004 International Conference on Control, Automation, Robotics and Vision Kunming.
5. Nazia Bibi, Muhammad Nadeem Majid , Hassan Dawood, Ping guo (2017), Automatic Parking Space Detection System, 2017 2nd International Conference on Multimedia and Image Processing.
6. Poonam Mangwani (2018), Smart Parking System Based on Internet of Things, 2018 IEEE International Journal of Applied Engineering Research ISSN.
7. Chi-Hung Chuang, Luo-Wei Tsai, "Vehicle License plate recognition using super resolution technique", 2014 11th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS).
8. Mingkai Chen, "A Parking Guidance and Information System based on Wireless Sensor Network", IEEE International Conference on Information and Automation Shenzhen, June 2011.
9. Minal Patil, Vijay Chakole, Krushna Chetepawad (2020), IoT Based Economic Smart Vehicle Parking System, Proceedings of the Third International Conference on Intelligent Sustainable Systems [ICISS 2020].
10. P.Dhanabalraj, L.Gopinath, G.M.Gowthaman, J.Jashva Sherin, K.Kumar, Car Parking Allocation System using Arduino, Proceedings of the International Conference on Artificial Intelligence and Smart Systems (ICAIS-2021).



INNO  SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.165

 **doi**[®]
CROSS **ref**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details