

Design and Implement an Automated Based Unauthorized Parking Detection

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Abstract – By Using automatic techniques, the system aims to mitigate the problem of unauthorized parking to reduce human efforts and improve the efficiency of the system using modern technology. All these issues have been addressed by our proposed system that works intending to improve the traffic conditions on the road to avoid unnecessary traffic jams due to cars being parked in the unauthorized parking area. With the help of the system, regular monitoring can be performed with a minimum of human involvement, and more beneficial outcomes can be obtained. Future iterations of the system might include tools for notifying the nearby traffic police station of the location of a car that was parked improperly as well as include suspension of driving license for repeated offenses. In the future, appropriate parking management software that incorporates the suggested framework might be created for the benefit of the general public.

Keywords: Car detection, RFID Tag (Radio Frequency Identification), Sensors

I. INTRODUCTION

Thus systems use an automated based parking management system by using Arduino, RFID module, and GSM module. With the help of RFID and GSM modules, parking slots can be monitored from anywhere in society. The Parking Area has any number of slots based on our requirements. Every slot has one RFID. Each Sensor is used to detect the presence of a car in the slot. This RFID relates to Arduino. So, when a car is parked in the no parking area, the Arduino sends a command to the GSM module, and the GSM then sends the SMS to the owner and the guard room. Thus, the system solves the Parking issue and get users an efficient parking management system.

To prevent unauthorized vehicle parking and Traffic the Features are the Detection of permitted and non-

permitted vehicles in the no-parking zone. Detection of unauthorized vehicle parking in the restricted zone thus sending SMS to authority to act taking fine from the vehicle user. Once a vehicle is parked in a no-parking area and the RFID transmitter comes into the scope of the receiver circuit. The RFID reader scans and reads the transmitter's unique id and can alert the concerned regulating authority with the code of the area so that authorities. An SMS is also sent to the car owner by the system about the fine being imposed on the vehicle. Arduino Uno, GSM Module.

SIM used in It gives an SMS and imposes a fine to a pre-indicated user mobile number when any sort of vehicle is found in its span.

II. LITERATURE SURVEY:

[1] Detection of Unauthorized Parking using RFID. In this paper, we have studied in this paper, we have studied a system that grants and provides an automated detection and alert system for illegally parked vehicles. This system comprises installing an RFID transmitter in every car, jeep, bus, cab, etc. The RFID receiver circuits are established in most places wherein parking is illegitimate. Once a vehicle is parked in a no-parking area and the RFID transmitter comes into the scope of the receiver circuit, the RFID reader scans and reads the transmitter's unique id and can alert the concerned regulating authority with the code of the area so that The technology also sends an SMS to the car owner informing them of the fine being imposed on the vehicle, and authorities may arrive at the scene without delay

[2] Automatic Unauthorized Parking Detector with SMS Notification. This paper deals Thus it is supposed for reducing the range of unlawful parking. It also helps to identify the vehicles parked in non-parking areas and send information regarding those vehicles to the control office. Thus it is supposed for reducing the range of unlawful parking. A Raspberry Pi processor is the main device that manages the whole task Advanced techniques of image processing, using the Support Vector Machine (SVM) algorithm and Optical Character Recognition (OCR), have been used in the model

[3] Automated vehicle parking system and unauthorized parking detector. This paper aims to ensure proper

management of vehicles in public places such as educational institutes, and offices. To prevent unauthorized vehicle parking and traffic. The features include the detection of permitted and non-permitted vehicles on the lot. Before they leave, parking fees are also deducted from the vehicles parked inside the parking lot. Additionally, there are parking lights that turn on when a car enters a particular parking space.

[4] IoT-Based Sensor Enabled Smart Car Parking for Advanced Driver Assistance System. The work proposed in this system addresses the issue of parking in smart cities. The system is implemented using low-cost IR sensors, Raspberry Pi model 3b for real-time data processing, an E-parking mobile application, and Geared DC motor. Users can reserve parking spaces from remote places using the mobile application, and the developed system also offers user identification. It provides real-time information on the availability of parking slots in parking sites. The advanced gadget is examined for different cases such as single-user booking, multiple users booking, the user trying to book a reserved slot, and user authentication. The three parking spaces which make up the system being proposed each have a single infrared sensor with an adjustable detection range of up to 30 cm. The proposed work not only reduces traffic congestion, but also provides authentication of the user, is cost-effective, and real-time, and helps in reducing carbon footprint.

[5] This paper proposes Due to high population growth, car demand has increased at an alarming rate. This leads to an increase in demand for more parking slots, which poses an acute problem, especially, when we are concerned with metro and fairly large cities. A solution to this problem on a priority basis is necessary. People should have to cater to the illegal parking aspect as well. This paper deals with the detection of illegal parking and it also helps to identify the vehicles, which are parked in non-parking areas and sends information regarding those vehicles to the control offices.

III. PROPOSED METHODOLOGY

Define the requirements of the system, including the type of RFID tags needed, the range of the RFID reader, and the location of the RFID reader. You should also consider the type of data that needs to be collected and analyzed, as well as any other features or functionalities that are required.

Step 2: Develop the Central System

Develop the central system that will analyze and process data from the RFID reader. This system will receive data from the RFID reader and determine if a vehicle is parked in a no-parking zone.

Step 3: Develop the User Interface

Develop a user interface for the system that allows users to view the parking status live and receive alerts when unauthorized parking is detected. This can be a mobile app or a web-based interface.

Step 4: Implement the Alert System

Implement an alert system that sends a message through the RFID registered ID number using the GSM module if the vehicle is parked in the same location for more than 5

minutes. If the user is not moving the vehicle from the no parking zone, then the message is sent to the nearby traffic police station, and the vehicle will get towed by the officer.

Step 5: Implement the Fine Payment System

Implement a fine payment system that debits the fine from the user's bank account or online wallet automatically. This will ensure that the fine is paid promptly, and the user will be less likely to park illegally in the future.

Step 6: Analyze the Data

Analyze the data collected from the RFID reader and the fine payments, and other metrics. This data can be used to optimize parking management and improve the overall system performance.

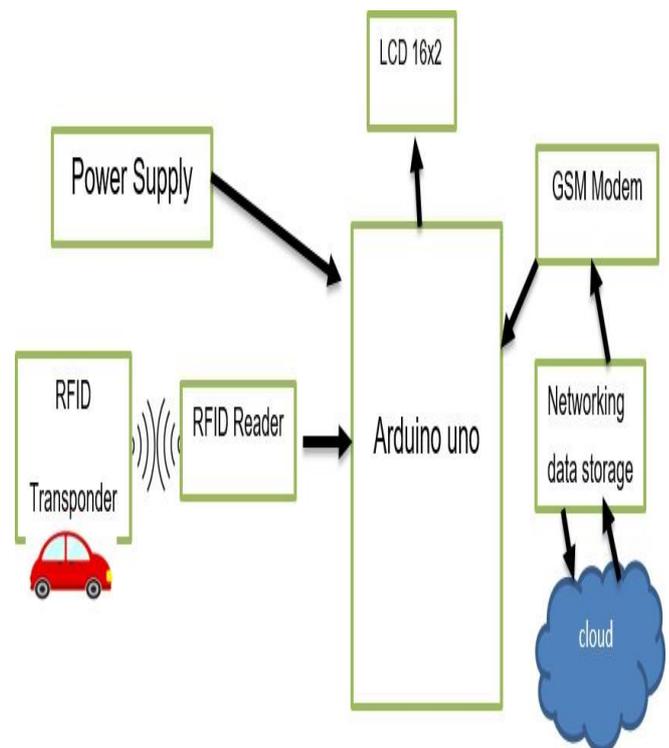
Step 7: Test the System

Test the system thoroughly to ensure that it works as intended. This includes testing the RFID system, the central system, and the user interface.

Step 8: Deploy the System

Finally, deploy the system in the parking lot where it will be used. This may involve installing the RFID reader, configuring the central system, and connecting its platform. The system should be maintained and updated regularly to ensure it continues to function properly.

Fig 01. Block Diagram



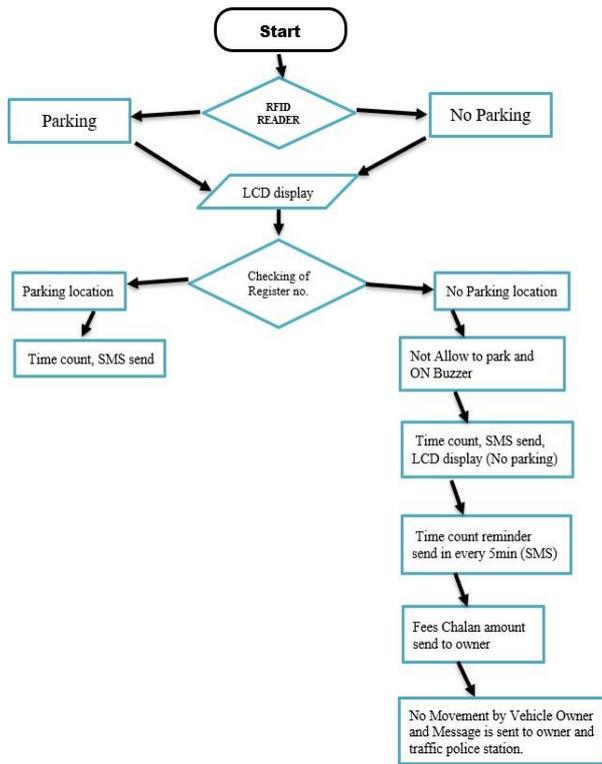


Fig 02. Flowchart

IV.WORKING:

Here we have used the 12V/2A adapter. The 12V is supplied to the Arduino Uno at VCC.RFID and GSM modules are both interfaced with the Arduino. The communication protocol is a UART communication system. The GSM 800L module is used to share the data it is communicating with the Arduino.

A DC-DC buck converter is used. As the IR sensor worked on 5 volts as per a standard specification.

The LCD is directly interfaced with the Arduino, as the power supply and data transfer from the Arduino.

The digital pins of the Arduino are connected to the LCD.IR sensor that the VCC gets from the Arduino.

The analog pins of the Arduino are interfaced with the IR sensor. As the IR sensor is in digital form.

We have connected the sensor pin to the analog pins of the Arduino pin.

As we have the remaining analog pins of the Arduino. RFID EM-18 modules are used. An RFID reader module is used to read the tag card.

The GSM 800L module needs 4 volts from the power source. As the supply voltage is higher than the required voltage, a DC-DC buck converter is used to bring it to the required voltage.

Four IR sensors are used for the four different locations in a particular area. To detect the vehicle. In the demo section, we have three registration tag cards.

A card consists of a coil. As the tag comes near the reader, it reads the information on the tag card. As the tag is for the vehicle only.

And if the owner comes into the unauthorized area, the message will display on the LCD screen. You're in a no-parking area.

REGISTRATION WEBSITE

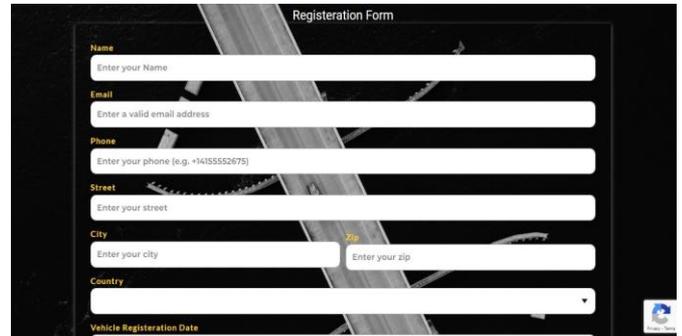


Fig 03. Website Registration Page

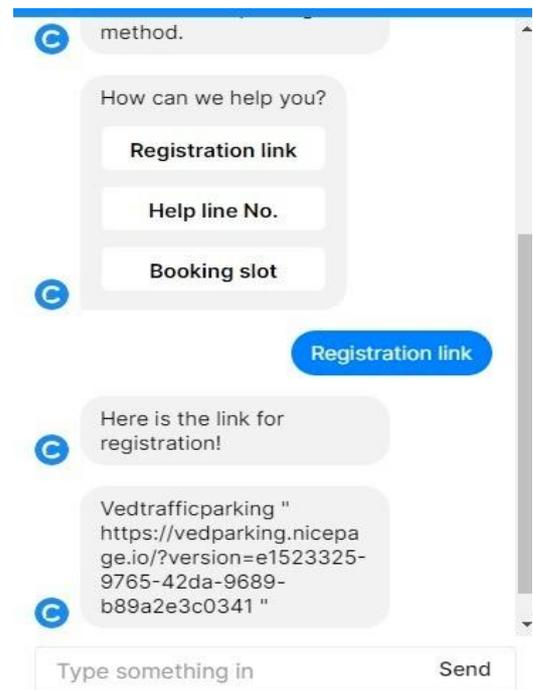


Fig 04. Chatbot

V. RESULT



Fig 05. Welcome Message



Fig 06. Alert Message & Car Detected.



Fig 07. Sending Debited Message to Owner MSG

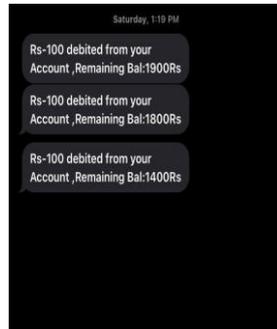


Fig 08. Amount Debited

Once the sensors detect the presence of a vehicle, the system can communicate this information to a central server or database using communication protocols such as Wi-Fi or GSM. The system can also use to analyze the sensor data and determine if the parked vehicle is authorized or unauthorized. If an unauthorized vehicle is detected, the system can send alerts to the authorities or parking management personnel using SMS or email notifications. The system can also use a combination of visual and audio alerts, such as flashing lights or sirens, to notify the driver that they have parked in a restricted area.

VI. CONCLUSION:

As this project is based on an Arduino UNO, EM 18 RFID Module, and GSM 800L. This project involves detecting the unauthorized vehicle and all procedures of the imposing fine will be done automatically. Automated-based unauthorized parking detector is an innovative and revolutionary technology that helps in detecting and preventing unauthorized parking. It helps reduce the number of traffic violations and improve the area's safety. It is also cost-effective and easy to install and maintain, making it an ideal solution for any parking slot.

Automated-based unauthorized parking detector is an effective solution for businesses and organizations or public places to improve the security of their parking slots. It is also compatible with existing parking systems, making it an ideal solution for any parking slot.

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