SMART VEHICLE PARKING

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Abstract— The smart parking vehicle is designed to address the growing challenges of urban parking by incorporating various intelligent features. These features include real-time parking space detection, automated parking assistance, and smart navigation systems. The real-time parking space detection uses sensors and cameras to identify available parking spots. This information is then transmitted to a centralized system or directly to the vehicle, allowing drivers to easily locate and reserve parking spaces before arrival. The automated parking assistance feature assists drivers in maneuvering into tight parking spaces, reducing the risk of accidents and optimizing parking efficiency. Furthermore, the smart navigation system enables the vehicle to efficiently navigate to the designated parking spot using the most optimal route.

Keywords— Smart Vehicle Parking

I. INTRODUCTION

Smart parking vehicles are advanced transportation solutions designed to optimize the process of finding and utilizing parking spaces. Equipped with various technologies such as sensors, connectivity, and automation, these vehicles aim to enhance parking efficiency, reduce traffic congestion, and improve overall user experience. By leveraging real-time data and intelligent algorithms, smart parking vehicles can navigate through parking lots or urban environments, identify available parking spots, and autonomously park or retrieve themselves with minimal human intervention. These innovative vehicles are revolutionizing the way we approach parking, offering convenience, time savings, and environmental benefits. identify available parking spots, and autonomously park or retrieve themselves with minimal human intervention. One key feature of smart vehicle parking is the use of sensor networks to monitor parking spaces in real time. These sensors can be installed in parking lots, streets, or even individual parking spots, and they can detect the presence or absence of vehicles. The data collected from these sensors is then analyzed to determine the availability.

OBJECTIVES

- Improve parking efficiency
- Enhance user convenience
- Reduce environmental impact
- Optimize parking space utilization
- Enable efficient parking management

II. PROBLEM STATEMENT

smart vehicle parking lies in the inefficiencies and limitations of traditional parking systems. These systems often suffer from underutilization of parking spaces, leading to traffic congestion, wasted time, and increased emissions. The lack of real-time information about available parking spots results in drivers circling aimlessly in search of parking, causing frustration and inconvenience.

III. METHODOLOGY

☐ Sensor Deployment: The first step is to deploy sensors strategically in parking lots or on-street parking spaces. These sensors can be cameras, ultrasonic sensors, magnetic sensors, or other types of detectors.

☐ Data Collection and Communication: The sensor data is collected and transmitted to a centralized system or cloud-based platform. This data includes information on parking space availability, duration of occupancy, and other relevant details.

☐ Data Analysis and Processing: The collected data is processed and analyzed using intelligent algorithms. This analysis helps determine the availability of parking spaces, identify parking patterns, and generate insights into parking demand and utilization.

- Information Dissemination: The processed data and parking availability information are made accessible to drivers through various means. This can include mobile applications, websites, electronic signage, or in-car navigation systems.
- Automated Parking Assistance: Smart vehicle parking systems can incorporate automation to assist drivers in parking their vehicles. Using technologies such as cameras, lidar, and advanced control systems, the system can guide the driver through the parking process, ensuring accurate and efficient parking.
- Seamless Payment Integration: Smart parking systems integrate with payment platforms to enable seamless and convenient payment processes. Drivers can make cashless payments through mobile apps, electronic payment terminals, or online payment gateways. Integration with parking enforcement systems ensures proper validation and enforcement of parking regulations.
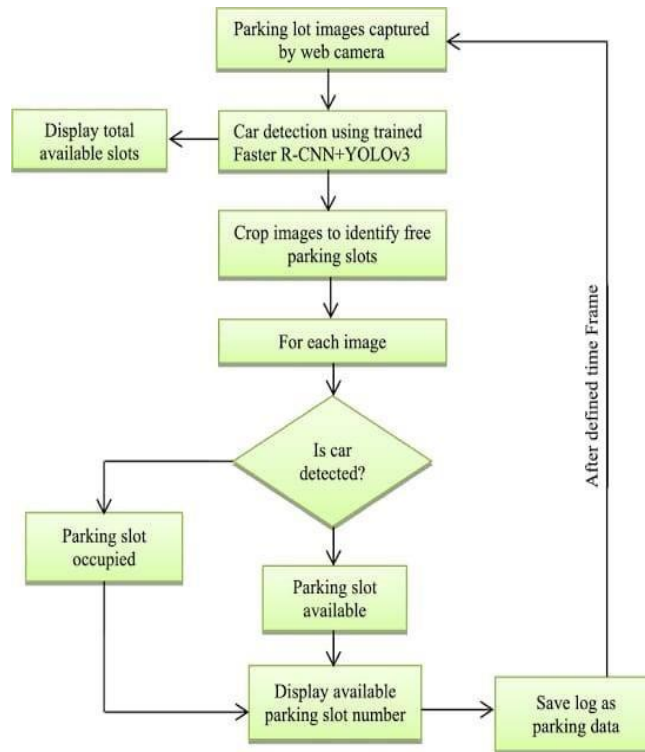

Fig Flowchart

IV.   BLOCK DIAGRAM

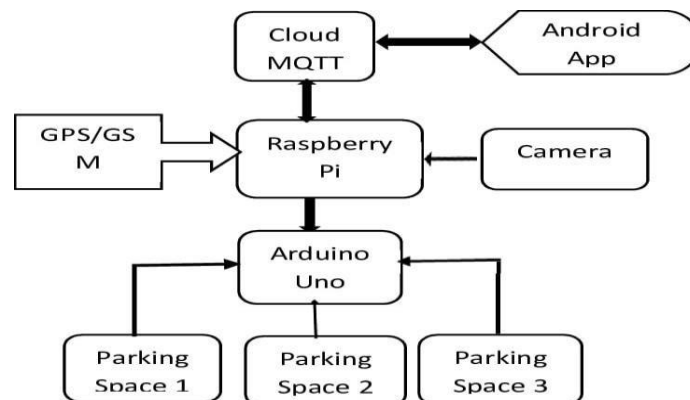The Fig 3 shows the block diagram of the smart vehicle parking.

Fig 3 Block Diagram of the proposed methodology

In this project design, he increasing number of vehicles on the road along with the mismanagement of available parking space leads to the parking related problems as well as increased traffic congestion in urban areas. Thus it is highly required to develop an automated smart parking management system that would help the driver to find out some suitable parking space.

Hardware and Software Requirements

Software Requirements. Hardware Requirements.

- Arduino Microcontroller
- Stepper Motor
- Key Pad
- LCD
- GSM Module

VII. RESULTS AND DISCUSSION

- A brain tumor analysis algorithm using machine learning and Convolution Neural Networks is developed.
- Labeled data from Kaggle from which we get to know the tumor details of the brain is taken.
- The developed model shows the type of tumor if present.
- The details of the tumor will be sent to patient using GSM.

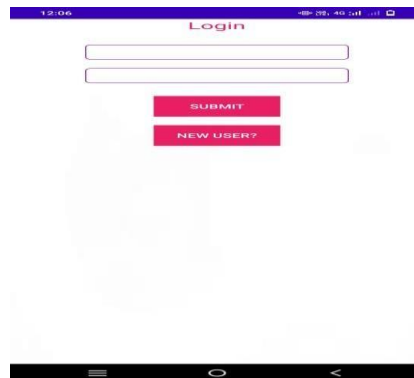1. The Fig 4 shows the login screen

Fig 4 Login Screen

The welcome screen of the app shown in Fig 5

Fig 5 Welcome Screen

Registration Screen of the application is shown in Fig 6

Fig 6 Registration screen
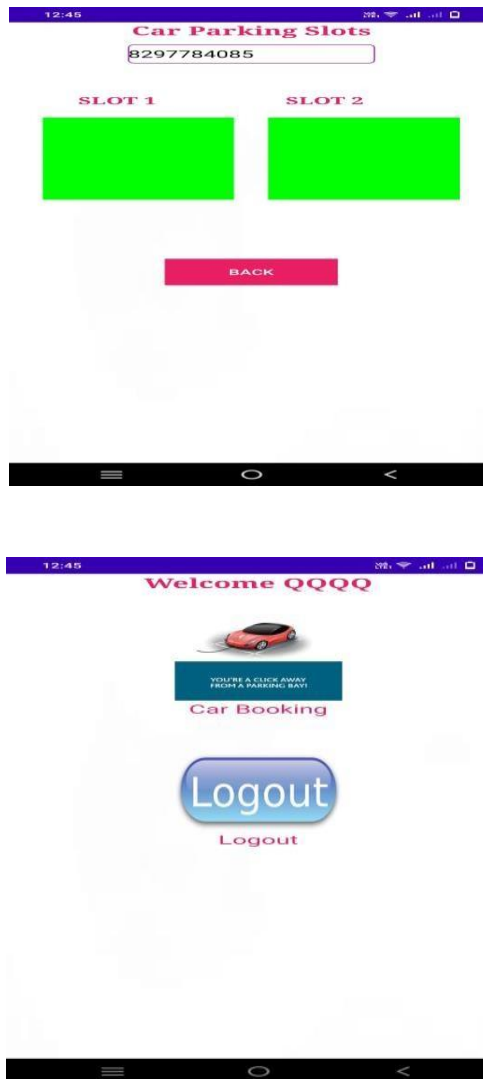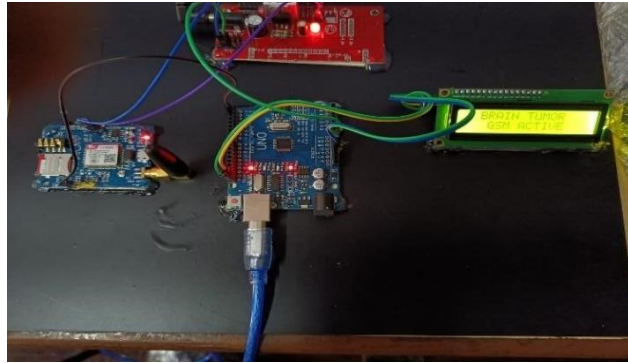
The Fig 7 shows the slot booking

Fig 7 Slot booking

The Fig 8 shows the hardware part of the prototype which is used to book the slot.

Fig 8 Hardware

VIII. ADVANTAGES AND APPLICATIONS

Advantages
- It saves time.
- Newer technology to detect the brain tumor.
- It is the good key for avoiding person death.
- Simple system to detect the brain tumour.

Applications
- It will be best suited application for the Medical Imaging.
- It is used in magnetic resonance imaging.
- It can be used in computed tomography.
- It can be used for 3D printing in tissue engineering.

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