Covid Control Attendance and Parking Monitoring System

(COCAPS)

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Abstract: This paper delineates the use of Arduino, NodeMCU, and various other sensors for developing the Covid Control Attendance and Parking Monitoring System. This system designed by us aims to bring automation to the day-to-day operations performed in our college campus. When we enter the campus, we encounter many issues like congestion in the parking area, delay while searching for a space to park the vehicle and also wastage of time while taking attendance manually in the class. This project focuses on designing a smart system that will resolve all the above problems efficiently with minimum human interference. Also keeping in mind, the scenario of coronavirus, the system designed by us comes with an additional feature of smart sanitization which will control the spread of coronavirus in the college campus.

IndexTerms – **Smart, Automatic, Covid, Sanitization.**

INTRODUCTION

This project is designed to create a well- maintained monitoring system which will make a record of student's attendance and manage the parking arrangement of the college with minimum human interference, in addition to this it also consists of a mechanism for covid control. Now let us understand each part of the Covid Control Attendance and Parking Monitoring System briefly.

The smart parking system is the very first part of the proposed system. It is designed in a way that will reduce congestion and provide hassle-free parking in the college campus. It will do so by indicating an empty slot for the vehicle to be parked. The person does not need to enter the parking area if there is no empty slot which will save both time and fuel.

Coming towards the next part which is the Smart Attendance monitoring system. It focuses on eliminating the monotonous task of maintaining the entire attendance record manually by automating it using RFID tags, which also reduces the wastage of time during the lecture.

The additional feature that the Covid Control Attendance and Parking Monitoring System provide is an automatic sanitization system that kills the surface virus at the entrance itself. Hence, stopping the virus from entering the campus and making the campus covid free.

RESEARCH METHODOLOGY

Covid Control Attendance and Parking Monitoring System work on the principle of Arduino and Node MCU. This project is divided into three parts and each part uses a different module. Each module is programmed in such a way that it can perform the required task.

The features of this system are as follows:

Part-1: This part is designed to maintain a hassle-free car parking system in the college campus. The components which are used here are Arduino UNO, Servo motor, LCD i2c, and IR sensors.

Part-2: This part provides smart sanitization. It is responsible for maintaining a covid-free environment in the campus. The components which we have used here are L293D motor driver IC, Dc Pump, IR Sensor, nozzle spray, and pipe.

Part-3: This part consists of a Smart attendance system that will help in monitoring the attendance without manual effort which eventually saves time. The components which we have used are an RFID scanner, RFID tag/card, buzzer, and Node MCU.

1. SMART CAR PARKING:

In our daily college life, we face several issues such as inconvenience caused at the parking area due to poor management of parking. It takes a lot of time for a person to find a suitable space to park the vehicle, it also wastes the fuel while finding an empty spot in the entire parking area. This system resolves the above issue by providing details of the empty slot at the entrance itself. When a car reaches the main entrance, the LCD shows the empty slot available. If there is an empty slot, the barrier will open otherwise it will remain close. After which the driver can easily park the vehicle without any difficulty.
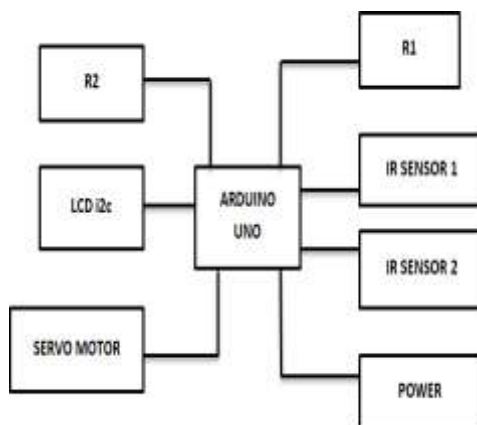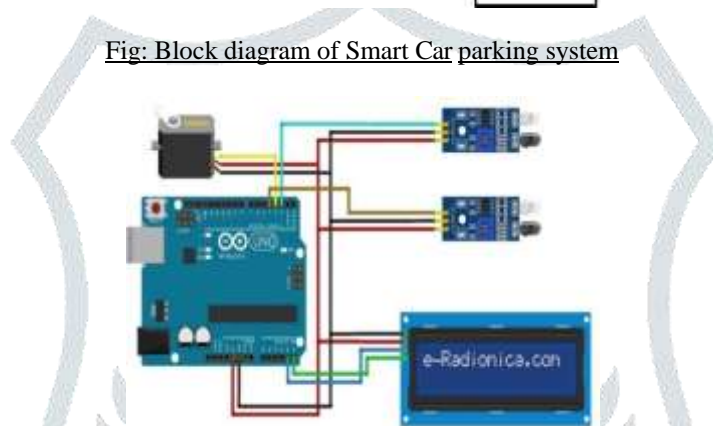

Fig: Block diagram of Smart Car parking system

Fig: Circuit diagram of Smart Car parking system

2. SMART SANITIZATION:

Even though the covid situation is normalizing, it is important to take preventive measures to reduce the virus spread for which we have installed a sanitization tunnel at the entrance. Any person entering the campus has to go through this tunnel will kill the surface present viruses.
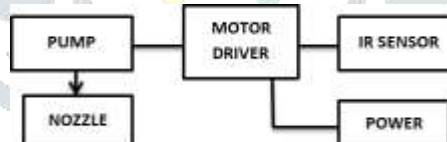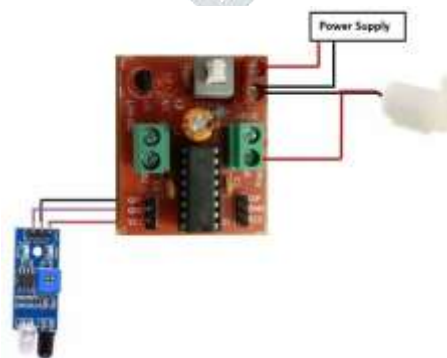

Fig: Block diagram of smart sanitization

Fig: Circuit diagram of smart sanitization

3. SMART ATTENDANCE MONITORING SYSTEM:

After entering the campus and heading towards the class comes the attendance management issue. Teachers have to give at least ten minutes for taking the attendance manually. This time could be used in teaching. This issue can be resolved by using this contactless technology for attendance monitoring to ensure safety from virus spread as well, it can be done by using RFID cards. An RFID card will be provided to every student and faculty. To scan the card there will be an RFID scanner at the gate of the

classroom. This system will generate the attendance of students based on their presence in class using the RFID card. It maintains attendance daily; the faculty will be provided with the attendance data on their phone. The faculty handling the particular subject can easily manage the attendance of all students. Only if the student is present on the particular date, his/her attendance will be calculated. The student attendance report based on daily and weekly presence will be consolidated and generated. As soon as the RFID card is scanned the attendance will be marked on the hardware.
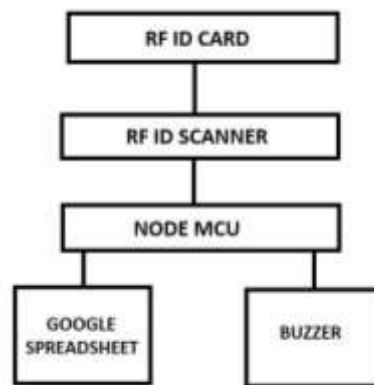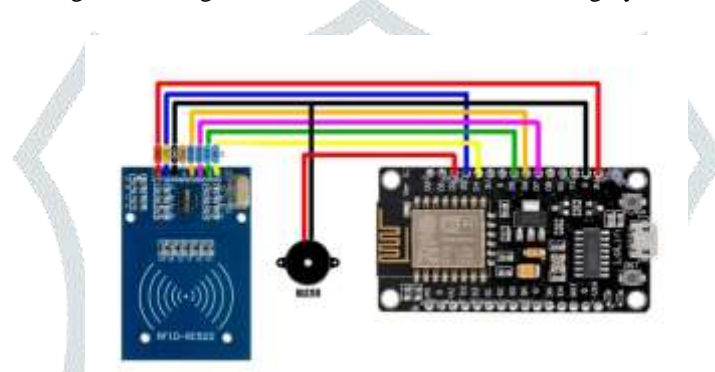

Fig: Block diagram of Smart Attendance Monitoring System

Fig: Circuit diagram of Smart Attendance Monitoring System

CONCLUSION

In this project, an efficient approach for the automation of the campus management system is proposed and implemented. Covid Control Attendance and Parking Monitoring System is a system that includes multiple modules that can be used for a smooth flow of parking, sanitization, and attendance monitoring in the college campus. This idea intends to reduce the manual effort to a bare minimum. The automated car parking system seeks to reduce the time and fuel wasted while searching for an empty slot in the parking area by displaying the empty spot available on an LCD screen. Automatic sanitization aims to eliminate the surface virus at the entrance hence making the campus virus free. Through the proposed smart attendance system using RFID tags, the traditional method of attendance is transformed into an efficient and error-free attendance monitoring system. It saves time and energy and also it helps to manage the data easily. The usage of paper is reduced so it is environment friendly as well.

FUTURE ENHANCEMENT

Sanitization: In place of liquid sanitization, we can use UV rays. UV radiation is capable to destroy the outer protein coating of the Coronavirus. The destruction ultimately leads to the inactivation of the virus.

Parking: Artificial Intelligence-based cameras can be used to find an empty slot. This camera is used for image acquisition, based on the captured images, computer vision algorithms are applied to detect parking spaces. Thi approach provides real-time visual assistance and rich image information, but it could be greatly affected by environmental factors. Also, it is usually computationally expensive and performs poorly in a dark environment.

Attendance Monitoring System: In place of RFID, we can use the following:
- Face recognition: Face recognition is an important application of Image processing owing to its use in many fields. Identification of individuals in an organization for attendance is one such application of face recognition.
- Retina scanning: Iris recognition verification is one of the most reliable personal identification methods in biometrics. With the rapid development of iris recognition verification, several applications have been proposed until now including the attendance system.

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