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Smart Vehicle and Anti Theft System Using IOT

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ABSTRACT: This study aimed in improving the safety and security of the vehicles by integrating the internet of things(IOT).The system focuses on developing a system that will allow vehicle owners to monitor their vehicle's The system will also include an antitheft mechanism that will alert the owner if any unauthorized access to the vehicle is detected.Accident detection and antitheft systems are introduced in smart vehicle by using sensors and camera connected to Raspberry Pi.GPS and GSM/GPRS modules are used to find vehicles is to antitheft and establish a connection between vehicle and its user.When any person except the vehicle owner tries to switch on the vehicle pi camera detect the face of the person and system will send a alert message with the location of the vehicle to the owner.System will turn off the vehicle and lock vehicle.This system introduces more safer and secured vehicle with simple implementation and low cost.

KEYWORDS: Accident Detection, Anti-theft, GSM,GPRS,IOT, Raspberry Pi.

I.INTRODUCTION

Theft of vehicle is a major concern all over the world and accidents on the road , its increasing day by day because of rising number of vehicle.There is a need for an advanced anti theftsystem and accident alert system that can provide more security and safety to the vehicle and owners. Internet of things (IOT) is technique that provides interconnection of objects(things).IOT technology interacts with the devices and the systems. Interacting IOT into the vehicle security data in order for the connectivity for the system. In this proposed system the real time monitoring of the vehicle is possible. The systems uses sensors, GPRS Module, GSM Module , Raspberry Pi for detecting and alerting vehicle theft and accident.Anti theft mechanism that will alert the vehicle owner with a message and the location of the vehicle and it will start to alarm if any unauthorized access to the vehicle is detected. And owner can immediately disable or switch off engine. The vehicle will slow down when an ten meter distance is sensed. It can reduce the chances for accident. Over all the proposed system aims to prevent the theft of vehicle and provide a accident alert system and enhance the security and safety of vehicle. In this paper antitheft, accident alert ,remote monitoring, location tracking are discussed respectively. By this system we can reduce the number of theft.

II.PROBLEM STATEMENT

Increase in the number of vehicles results in theft of the vehicle and accident. The theft and accident usually happens on the parking area and on the road. Some time it is impossible to track the vehicles due lack of security system in the vehicles. Its difficult for the investigators to identify the hijacker .By this proposed system we can prevent the unauthorized access to the vehicle and prevent accidents. We can easily monitor the vehicle. Easy to identify the hijacker by the camera in the system. The system is secure, safer, reliable and efficient. Provide a mechanism for vehicle owners to monitor and protect their vehicles.

III.LITERATURE REVIEW

Vehicle (Car) Theft Detection Using IoT Rajasekhar Kommaraju 1 (and) Boyapati Sravanthi, CherukumalliSrivalli, S. Rama Lingeswararao, and RangacharyKommanduri With this system, we can create a smart car. The Internet of Things (IOT) has various uses in the fields of traffic control, security, and safety as well as navigation, accident detection, smart parking, and vehicle tracking systems. It works by applying the software and hardware stated in the



aforementioned sections, as well as hardware like sensors to gather data, analyze it, and process the results. The RFID card transmits data to Arduino while reading the card and maintaining card power. The owner must enter a genuine key on the keypad after receiving the card before the engine can be started and the buzzer tracked using the items .

IoT-based smart vehicle and anti-theft system MoazAbdeltah, Basma M. Yousef, and Ahmed Nagy are all from the Delta Higher Institute for Engineering and Technology in Mansoura, Egypt. The Raspberry-Pi-based Internet of Things gadget has vibration and ultrasonic sensors. Additionally linked are GPS and GSM/GPRS modules on the Raspberry Pi. A camera was also installed right on the board. First, the system receives training images. The system is then used to extract 128-d embedding and perform face detection. To create a test and evaluate the results, three photographs are entered. If the person gives his name and is the authorized person, the system can identify him. One unidentified person, two authorized individuals. GSM module will send a message to in an unforeseen circumstance.

TRACKING AND ANTITHEFT SYSTEM FOR VEHICLES USING THE INTERNET OF THINGS Sardar Patel College of Engineering, Mumbai, India, H. V. DADWANI, 2R. B. BUKTAR The method was advanced to be implemented in real time on a vehicle (a bike) battery while being concealed inside the vehicle so that it is not visible to thieves. When the system was tested, it sent a warning SMS message to the user when a sensor, proximity sensor, or other sensor was present to gather information on the state and performance of the car and the driver. As a result, this technique is extremely helpful and applicable to all areas of the transportation system. The system created efficiently offers a connected device or Internet application.

SMART VEHICLE MONITORING SYSTEM BASED ON IOT Journal of Advanced Computer Science Research International Guntur, India's S. Kumar Reddy Mallidi Department of CSE VLITS Open source software was used to design every component of the SVMS software. Python and OpenCV were used to put the image classification model into practice on a Linux server. Using Apache, MySQL, and PHP, the web application was created on the same Linux platform. Using a Raspberry Pi (RPi) with an accelerometer and an impact sensor, the IoT device was constructed. Additionally, the RPi was connected via GPS and GSM/GPRS modules. Additionally, it included a camera mounted directly on the board. The Raspbian OS, which includes a Python language, was installed on the RPi. The Python programming language was used to access and manage every component that is attached to the Raspberry Pi.

IV. SYSTEM ARCHITECTURE

Two steps are used to design this structure. The first one is implementing the system to provide vehicle tracking in real time. Then, a design mechanism is designed to detect theft and notify user of theft. The system includes Raspberry Pi accompanied by camera, GSM/GPRS module, GPS module, ultrasonic, vibration and other sensors. The Raspberry Pi is the heart of the system which controls the entire system using Raspberry OS. Facial Authentication initialized using Python Code along with open-cv module. In this system, Raspberry camera is used to scan the face of the owner for unlock the vehicle, and then data are transmitted to Raspberry pi by USB channel. The user database is stored in the Raspberry Pi memory unit. Image processing and detection processes are performed within the Raspberry Pi. It is also used as a control platform for this system. GSM/GPRS module is used for communication between the owner and vehicle. GPS module is used to track the current location of the vehicle. If an unauthorized person tries to drive the vehicle, his photo and the location of vehicle will be sent to the owner's phone through the GSM module.

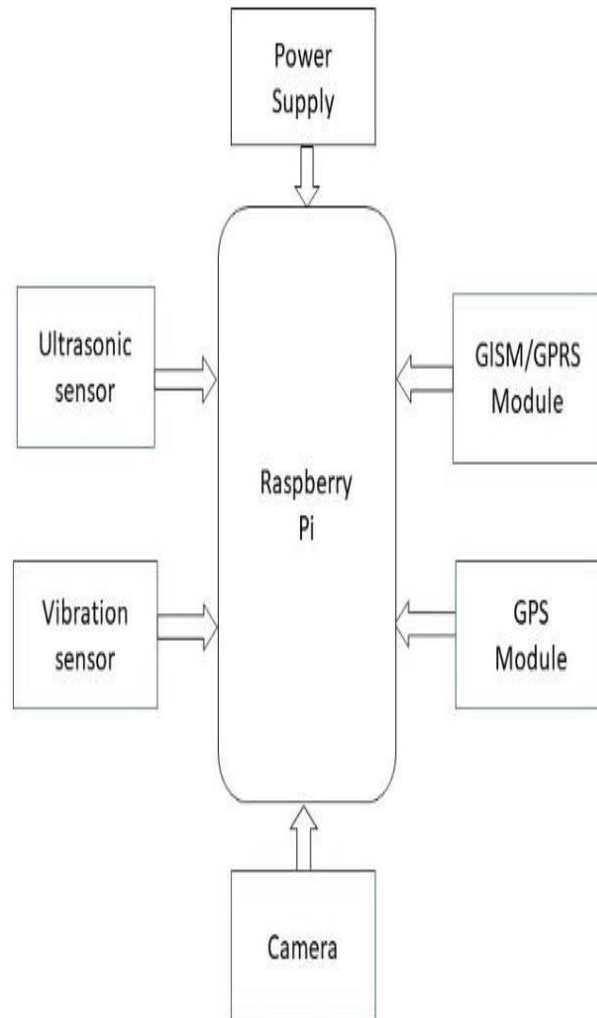


Fig 1: System Architecture

V. ALGORITHM

How our technology detects attempts to start the engine. The engine will start if the owner is there. The system will notify the car owner of any unauthorized access and provide the position of the vehicle if the individual is not the owner. Take urgent action by disabling the vehicle's engine and sounding the alarm. The system's owner has mobile access to control it.

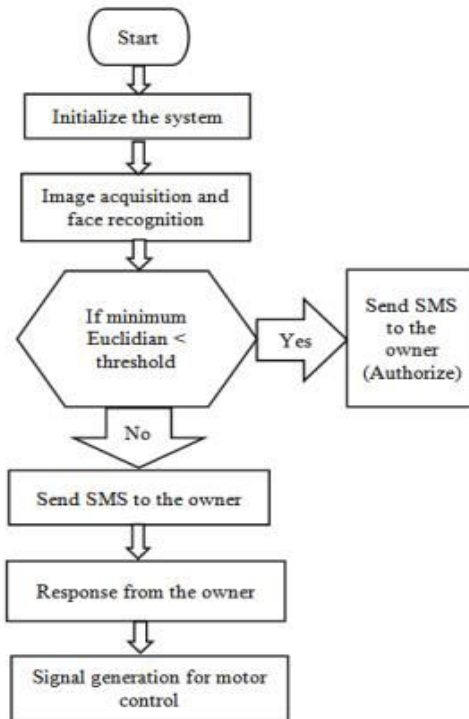


Fig 2 Algorithm for theft detection

VI.HARDWARE AND TECHNOLOGY USED

RASPBERRY PI:These controller boards give customers access to a variety of I/O sticks for use in creating customized circuits. In Fig.3, the model is displayed.



Fig.3RaspberryPi

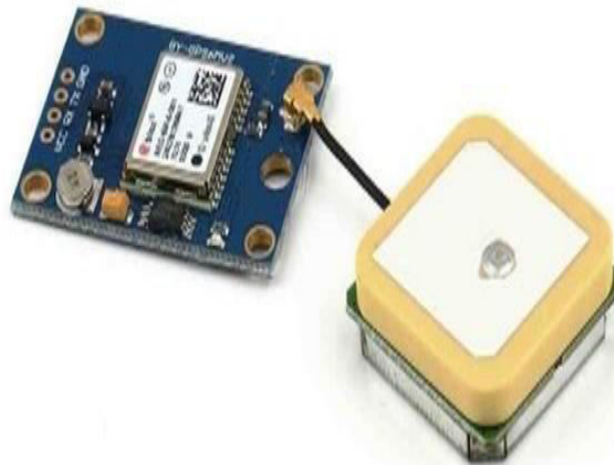
GSM/GPRS MODULE:

In Fig. 4, the SIM800L GSM/GPRS Module is seen.It may be used to place and receive voice calls, send and receive SMS, and more..



Fig.4 SIM800L GSM/GPRS Module

GPS MODULE:



It operates on the principle of satellites, which aid in the detection of geo-areas, and time information sent to the user of the GPS module. In Fig. 5, the NEO-6M GPS module is seen. It provides the most accurate positioning data and has a larger 25x25mm active GPS antenna built-in with a UART TTL connection.

SENSORS

As illustrated in Fig. 6, this system uses various sensors, primarily vibrating and ultrasonic ones, for early accident detection.



Fig.6: a) High Sensitivity Vibration Sensor, b) HC-SR04 Ultrasonic sensor



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VIIIMPLEMENTATION AND RESULTS

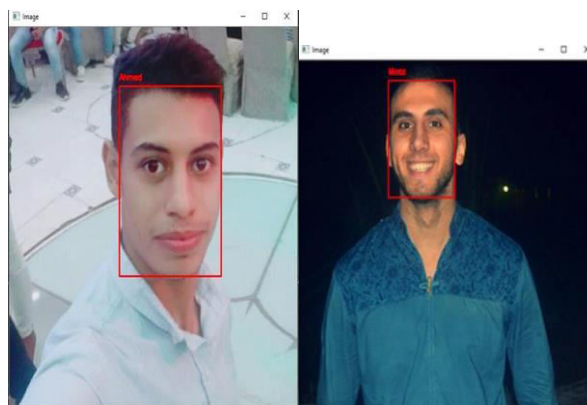


The Raspberry-Pi-based Internet of Things gadget has vibration and ultrasonic sensors. Additionally linked are GPS and GSM/GPRS modules on the Raspberry Pi. A camera was also installed right on the board. As seen in Fig. 7, a training image is first introduced to the system. The system is then used to extract 128-d embedding and perform face detection. To create a test and evaluate the results, three photographs are entered.

If the person gives his name and is the authorized person, the system can identify him. Figure 8 depicts two authorized individuals, and Figure 9 depicts an illegible person. When a case is unknown, the GSM module will send a message with the person's picture and the whereabouts of the vehicle is sent to the owner. Fig. 10 displays an illustration of the message text that will be sent.



(a)
Fig.7 Training images



(b)
Fig.8 Result image for owners



Fig.9 Result image for unknown person

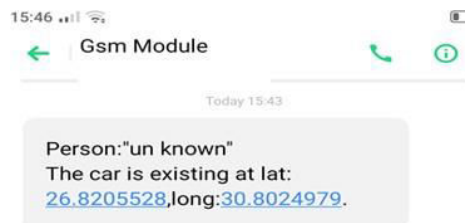


Fig.10 An example message from GSM

VIII. CONCLUSION

The created system successfully offers a connected device or internet of things application in car anti-theft. The system contains a Combined GPS+GSM Module that uses the GPS antenna installed in the vehicle to track the location of the vehicle. As a result, this system combines a number of contemporary embedded and communication technologies.

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