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REAL TIME VEHICLE PROTECTION AND THEFT DETECTION WITH IMAGE CAPTURING AND IOT

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ABSTRACT

This paper focuses on an Anti-Theft vehicle detection system which is an advanced system and can be used in many cars. These days it is a simple thing for people to make duplicates of vehicle keys and because of them vehicle robberies have increased. In order to overcome such problem vehicle anti theft comes up with a solution where system captures images whenever un- authorized persons make use of vehicles. The system also contains a software app which is IOT server where we can monitor everything related to our vehicle. With the help of switch commands we can start and stop the vehicle and the system also contains a push button keypad where a password will be pressed if any un- authorized person gives a wrong password the buzzer starts and it can capture the image of the person.. In this way system helps to secure such intelligent vehicles.

INTRODUCTION

The main purpose of this proposed system is to provide better security guard to the car by using facial recognition method. This IOT based vehicle anti-theft detection and protection system provides us the real time application that can be applied in our daily activities of the drivers. We have also implemented anti-the fttechniques that provides the major functions that are required in advancing the car intelligence and also to avoid vehicles from getting stolen from professional thieves. In the process of handing high security to vehicle system, we are using open CV with haar classifier because the data that is stored in the default system sometimes may not be matched though the driver is authorized because of uneven brightness on the face and irregular face. A modem that accepts the sim card and is operated just like a mobile phone. With the help of this modem the owner can get an alertmessage provided with the

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latitude and longitude data information. This project helps us to reduce the complexity and also improve the security.The result of this experiment shows that it takes few seconds to detect the image. This paper gives more information with more accurate results. Now a day"s everywhere in the world jalopy robbery is increasing day by day. The jalopy builders are trying to improve the surveillance features of their products by introducing advanced technologies to avoid the thefts specially in the case of cars. Generally, biometric and non - biometric methods are used to give security. In non–biometric method, password and personal ID are used to recognise the authorized person, but still the possibility of robbery persists. But in biometric methods no such possibilities involve, because they employ techniques such as voice recognition, finger print recognition, signature recognition, eye retina recognition, iris recognition and face recognition. Among of these, face recognition and detection system is more sophisticated. In this project, we are dealing with design and development of a real time face recognition system using HAAR cascade algorithm. This surveillance system can admit the person who enters in the car and it will check whether he/she is authorized person or not. When an unauthorized person tries to run the car, the relay will provide trauma. The use of cars becomes important everywhere in the world and also protecting it from theft is required. Automobile manufacturers are attaining the security features of their Vehicles by introducing advanced embedded and automated technologies to avoid thefts particularly in the case of cars. Usually, Biometric and nonbiometric methods provide this

type of security features. But, sometimes these system fails due to password hacks and encryption of decrypted data, thus we are approaching these smart hidden vehicle safety device it will be more effective in real time[1]. The main aim of this paper is to offer an advanced security system in automotive, which consists of a face detection system, a wifi module, and an IoT control platform. The face recognition system bases an optimized algorithm and recognizes faces in vehicles especially four wheelers during which nobody should be in the car, and make an alarm loudly. Security in today's world has also become the most advanced because of technology. In

preventing thefts, for instance, various types of security systems have been developed.

LITERATURE SURVEY

The latest car anti-theft system are Car alarm, flashing light manners which makes use of different kind of sensors which can be pressure, tilt and shock & door sensors, but the shortcomings are cost and it only averts the vehicles from theft but can"t be used to trace the thief. Customary car security systems rely on many sensors. When firstly „Car Alarm System" is initiated, this system consists of mostly electromechanical devices. As automation advanced they unfolding into fully integrated microprocessor positioned system using diversed electronics sensors.In , the hardware and software of the GPS and GSM grid wereadvanced.[1]

In, a vehicle tracing system is an electronic device, installed in a vehicle to authorise the owner or a third party to track the vehicle's place. This advanced to Design a vehicle

tracing system that works using GPS and GSM technology. This process is set up based on embedded system, used for tracking and positioning of any vehicle by using Global Positioning System (GPS) andGlobal system for mobile communication (GSM). This pattern will continuously watch a Motion Vehicle and rank the status of the Vehicle onrequest.[3]

Rashed et al. paper describes a GPS based tracking system that keeps track of the locus of a vehicle and its pace based on a mobile phone text messaging system. The system is able to give real-time text alerts for pace and locus. The current location can be latched and the system will alert the owner if the vehicle is moved from its present locked location.[6]

Pethakar et al. paper on RFID, GPS and GSM based Vehicle Tracking and Employee Security System consolidate the establishment of an electronic gadget in a vehicle, with reason planned machine programming to empower the organization to track the vehicle's area. At the point when the vehicle pics the worker; he/she needs to swap the RFID card. The micro controller matches the RFID card no. with its database records and sends the representative's id, taxi id & the taxicab position co-ordinates to the organization unit by means of GSM module. The GSM Modem will get the message through GSM in the organization unit. On the off chance that worker ends up/herself in an issue, he/she will press the catch. Microcontroller will distinguish the activity and sends a sign to the GSM which will arrange with to the organization unit and police.[4]

Authors in [9] proposed a system to track vehicles using Google Earth Application which he incorporated a GPS-GSM framework. The use of GPS was to enable the system to identify the vehicle's current position and the GSM to transfer the data via SMS to a recipient station. After the received GPS coordinates filtered utilizing a Kalman filter to upgrade the precision of measured position, Google Earth application was used to view the current location and status of each vehicle. The objective of this system was to manage fleet, police automobiles distribution and car theft alerts. However, this system was only explored to track down the exact location of a vehicle but not to demobilize the vehicle from a distant place.

EXISTING SYSTEM

The existing vehicle anti theft system are alarm, flashing light automation which makes apply of different kind of sensors which can be force, slope & door sensors, but the shortcomings are cost and it only blocks the vehicles fromthe robbery but can't be used to trace the thief. Traditional vehicle security system hangs on many sensors and fetch is also towering.

PROPOSED SYSTEM

The real time extensile distress system with desktop (or) laptop incorporate image processing control unit and microcontroller to prevent the parked Vehicle from theft. Face detection and recognition system use increased algorithm for evidence The desktop (or) laptop which contains the image processing unit embedded within it performs the face detection and authorizes the person. The acquired image is processed to detect the face using the haar cascade classifier algorithm which effectively uses the cascade object detection. The cascade detector detects the face of the acquired image and the face region is extracted. The authentication based security system has the database which stores the face images of the authorized persons under different environments. When

the image processing unit classifier the person as unknown the unauthenticated face detected. If unknown person is detected, the control unit activates the relay for provide electric shock and prevent the theft of vehicle.

BLOCKDIAGRAM

WORKING METHODOLOGY

Vehicle theft identification and detection system is based on Arduino. Its main aim is to reduce the vehicle theft to a great extent. Today vehicles are being stolen on a large scale and thatis the reason why this system is being introduced [1]. The aim of this system is to track the vehicle, lock the vehicle and also to send the alerts and images to the owner mobile number and registered email. Vehicle tracking system installed in the vehicle, to track the vehicle location and to stop the engine. When the owner starts the ignition of the vehicle by using key switch, then they also need to press the secret button with in the particular

duration of time, 4 seconds to be precise. Then only this system will recognize the owner access.Otherwise, this system will detect vehicle theft and stop the vehicle ignition automatically and also continuously send the SMS along with location details in the form of latitude and longitude values to the owner's mobile through the WIFI module. If at all a theft occurs, this system will continuously send the images to the registered mail id through ESP32CAMERA.

Fig 1 Hardware kit

The proposed system uses Arduino based technology for detecting the vehicle theft. The system makes use of two buttons to recognize if the vehicle is being stolen. If the vehicle is theft mode, then the engine stops and an SMS alert is sent to the registered mobile using WIFI. The ESP32 Camera module helps in capturing the image of the thief and sending e-mail to owner.
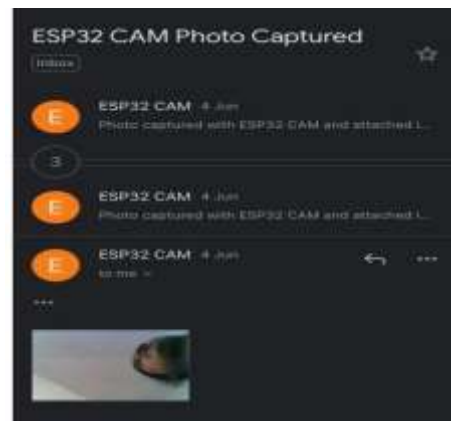

Fig.2 Image capturing

CONCLUSION

In this paper it is explained about anti- vehicle theft security system purpose and its design and working.

WIFI modem, ESP32-cam are the major components that are used to create and implement this security system for vehicles. This system focuses on theft alerting and tracking. Although Arduino microcontroller is used in this project, there still is future scope to further develop this prototype into smaller size by using the ESP32-CAM processor.

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