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To Design and Implement vehicle Ignition Control System by using Face Detection & Recognisation System using Raspberry Pi & IoT

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***Abstract* - Enhancement in vehicle technology system is getting increased research popularity and adding a vehicle theft security system in order to avoid getting vehicle theft in the parking and sometimes driving in unsecured places. The proposed system provided security and better theft control by using facial recognition. When the unauthorized person try to start the ignition it will be notified by the IOT application. If owner want to allow user to start the vehicle then by text msg link of webpage is given. The system uses Microprocessor raspberry pi along with a pie cam and a WIFI controller installed in the vehicle the implemented system is very simple with greater security for vehicle anti-theft protection and low cost technique compared to others.**

Keywords: Power supply unit, Raspberry pi, pi camera.

1. Introduction

Providing high security to the vehicle to avoid theft by using facial recognition with the help of data stored in the default program sometime it creates problem because the face could not be match due to irregular face and uneven brightness on the face ,to overcome this issue we are using open CV using haar classifier[1]. GSM is specialized type of modern which accept a sim card and operate just like a mobile phone. it is utilized to provide information to the owner and alert him with a message having webpage which include access information of vehicle. The term Security designates to for fend the conveyance from an unauthorized person. There are many features (both safety and security.) which have been implemented in the earlier years. In the author has implemented a system to provide collision avoidance system utilizing Bluetooth technology as well as sensors, whereas, the author in have endeavoured to implement a system to evade collision due to rash driving and drunken driving.

In the author was controlling the ECS system by utilizing micro controller which communicates with ESC system utilizing CAN bus. The security features which have been implemented earlier have been discussed [4].

2. Related Work

Poushya, k. Rup sari, N. Supritha, K. Hema and R. Tejaswini (Electronics and Communication Engineering), VVIT, AP. they describe about the mechanism of vehicle to avoid theft and send the notification through IOT application, when the unauthorized person try to start the vehicle and simultaneously it track the location regularly [1].

Amritha Nag, Nikhilendra J N and Mrutyunjay Kalmathg (Dept of Embedded system) sense, VIT University their existing a system with the IOT based and describe about a reliable traditional security system using a Raspberry pi under image capture, face detection and recognition. The system was programmed by PHYTON and programming language Both real time face recognition from specific images [2].

Prof K..T. Jadhao and Prashanth Balraj Balla (Electronics and Telecommunication Engineering) ARIET, Thane, Maharashtra. They implement the system with IOT for the particular face with real time variations by using facial recognition [3].

Prabal Deep Das and Sharmila Sengupta (Electronics and Telecommunication Engineering) VSIET, Mumbai. Are proposed a system with MATLAB. Which provide security to the vehicle prevent from the accident under the safety and security using Bluetooth module, camera and sensors avoiding the occurrence of collision as well as the accident control [4].

S.Padmariya and Esther Annlin KalaJames (Department of Production Technology) Madras institute of Technology, Anna University, Chennai. it gives the information of human face color , To detect whether the object facing towards the camera is face or any other object by using an algorithm name as ad boost algorithm. This can be done by converting weak classifier into high classifier.[5].

In this project we using raspberry pi 3 B+ under the micro USB power supply which the input voltage is 5V and the input current is 2A .Depending on peripheral devices [6].

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The elment14 shares the various electronic engineering solutions and the resources over the various components used in the electronics [7].

3. Methodology

A) Block Diagram

The system contain both hardware and software part where as hardware parts contains power supply unit, raspberry pi, pie camera, buttons and software parts include python code ,python IDE, simulator software FRITZING the raspberry pi is the major components of the system which control the action/performance of other devices. The raspberry pi is the heart of the project. It uses the 5v to run the raspberry pi block diagram if the system. Which are shown in the fig below fig (1).

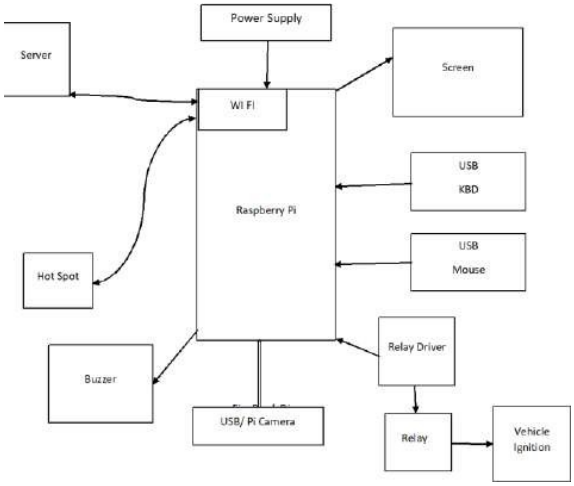

Figure 1 Block Diagram of the System

4. Face Recognition:

It is a Technology which capable of verifying or identifying a person from various digital image. It will estimate and analyze the patterns through person of skin.

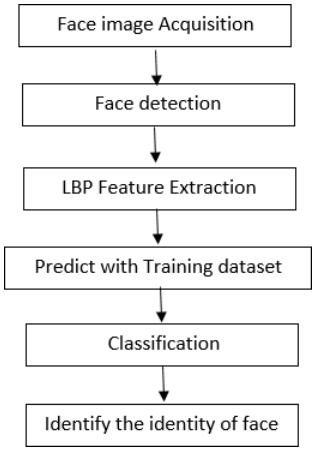

Fig (2): Flow Chart for Facial Recognition

A) Working

The owner of the vehicle is detected by using a pi camera so that the face recognition is implemented and if the unauthorized person is detected the owner get text message with vehicle access web link. If owner allow user by using access link then ignition of vehicle is ON. If the theft is accessing the vehicle then buzzer is ON.

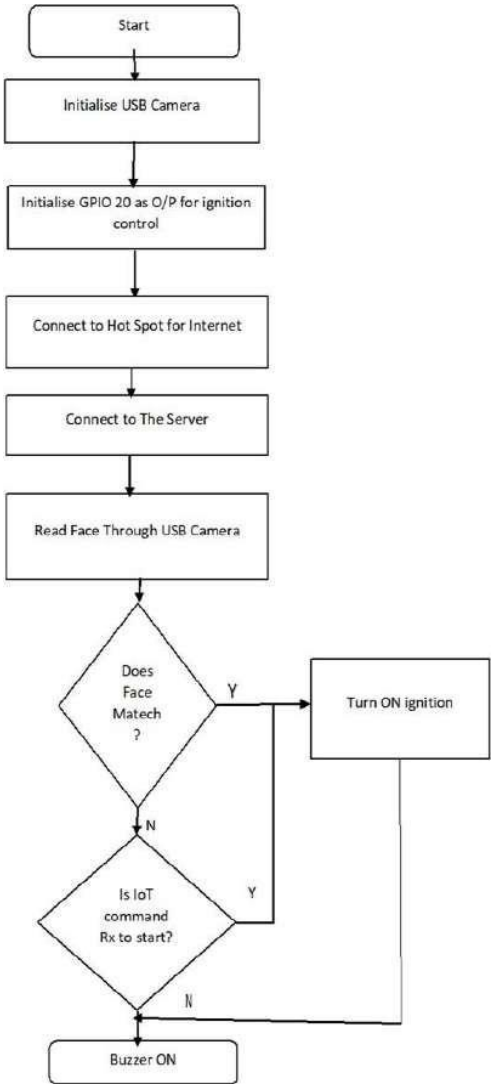

Fig (3): Flow chart

B) Hardware equipments

1) Power Supply

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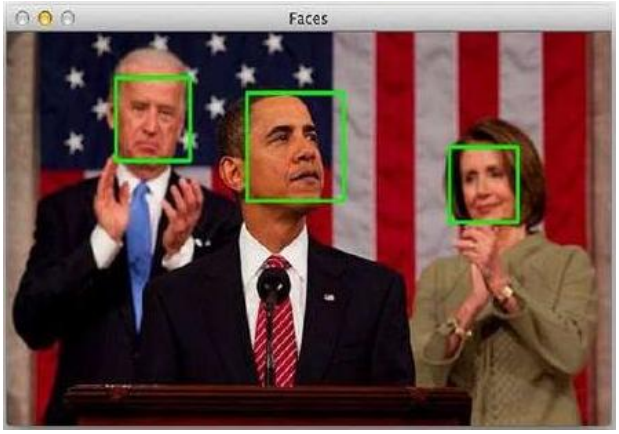
It converts the main AC to low voltage terminal regulated DC power and .it allows +5.1V micro supply and 2.5A power supply. The raspberry pi 3 model B runs at 1.2 GHz[6].

2) Raspberry Pi 3-model B+

This system works on the microcontroller. In this system it supports wireless internet out of box with built in WIFI and Bluetooth. Raspberry pi exist with a series of small single board components with 1.5 GHz 64-bit quad core processor, memory with 1 GB LPDDR2 SDRAM and the power has a USB connector for 5.1V /2.5 A. It has a GPIO Header 40 pin connection. It has four USB 2.0 ports [7]

3) Pi Camera

You are building an "on-site" face recognition system. And you need to have physical access to a particular person to gather example images of their face. Read the next image from the camera. Resize it to have a width of 500 pixels (smaller frames are faster to process). Convert the frame to grayscale.



It captures the various facial authorized and unauthorized person and access the information as data base. The pi camera supports for a horizontal and vertical sub- sampling and have a various effects such as whiteboard, blackboard, film, blur, saturation etc.

It is directly plug into the CSI connector on the raspberry pi. with fully compatible .It is high quality megapixel sonny imx219b sensor .it used a to take a HD videos as well as photographs. Popular with home security applications and wildlife traps [8].

4) Buzzer

It is small with compact 2 pin structure. it the buzzer operates at 5v and as the result from the GPIO pins the output voltage around 3.3v. The volume of the buzzer sound is little strong it normally operates with switching circuit turn on to turn off .it used in the highly automobile electronics and other communication equipments. It found in alarm devices, computers, timers and confirmation of user [9].

C) Software

In this system the PHYTHON IDE and PHYTHON CODE used to program the raspberry pi microcontroller. And for the stimulation we used Simulator software FRITZING.

5. Result Analysis

Fig (4): Hardware Module

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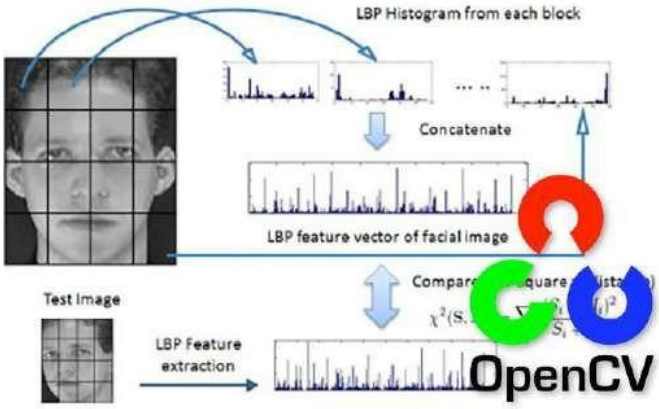

Fig (5): Facial user identified

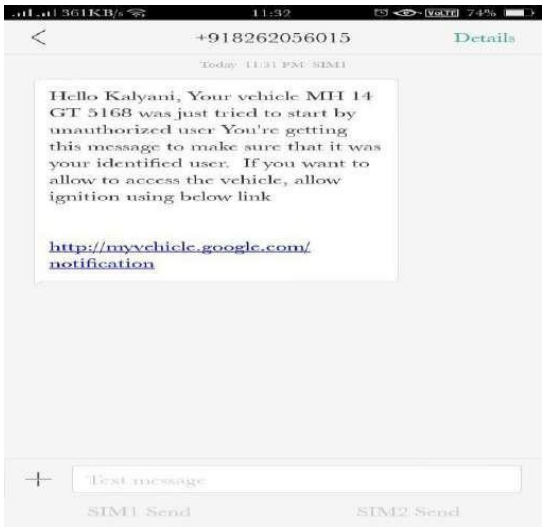

Fig (6): Status of Webpage

By observing all the output, this device is so helpful and provides maximum protection to the vehicle and avoid from being theft .the major function of this system is facial recognition, which detects the face of authorized person of the vehicle and then the door will be open. If anyhow some unauthorized person get in the vehicle and trying to start ignition, the owner get text message having webpage link for accessing the vehicle. So by this major function our vehicle will be safe.

6. Future Scope and Discussion

This project is great example of raspberry pi and pie camera with face recognition system using Python programming language with real time under specific images. And In this project we will used a facial recognition of tracking of vehicles from the theft and in future we will provides a shock system which will give to the authorized person to make it safer and secure from an unauthorized theft. In future this may can provides the best solution for any kind of stolen part of the vehicles.

7. Conclusion

This system design and implementation of real time protection and detection of vehicles with help of wireless communication i.e. IOT notification .By doing this project we will provides the implementation of Anti theft detection and also provides the solution for the theft kind of activities in the vehicles with the help of IOT notification and give the best security system to the authorized person.

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