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Finger vein based advanced driving system

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ABSTRACT - - In our life surly everyone faced incident of vehicle theft. Because most of our vehicle have unreliable security system. This less secured system made easy way to steal vehicle. In this project, we used some security-based technology, which gives prevention methods from vehicle theft problems. One of our technologies is RFID based security system. RFID card has license details of person. In vehicle there is RFID reader module was placed. If any unknown person wants access that vehicle without proper RFID card, it does not allow starting the ignition of that vehicle. Another technology is Finger Vein based security system. This system requires finger vein image of person who wants to access that vehicle. That person must insert his finger into appropriate place on Finger Vein security system for accessing that vehicle. That system will detect that person is authorized or unauthorized. If he is unauthorized person, will not allow starting the ignition of vehicle. If that person has both appropriate details to access that vehicle. Both systems allow starting the ignition otherwise it does not allows starting the ignition.

Key Words- Finger vein authentication, IR sensor, PI Camera, Raspberry Pi, RFID.

I. INTRODUCTION

In this technical era, Finger Vein recognition is a biometric authentication that based on images of vein patterns beneath the skin surface. The Camera records

the image, data is digitized and database record of individuals is registered. This technology is used for wide variety of applications in credit card authentication, automobile security, employee time and attendance tracking, computer and network authentication and so on.

However, fingerprints can be cheated by dummy finger fitted with a copied fingerprint, but the finger vein based identification system is highly secure for authentication.

Radio- frequency identification uses electromagnetic fields to identify and track the information automatically. Unlike the barcode, the tags contain electronically stored information. RFID tags with unique serial numbers could be linked to an individual credit card number. RFID technology is mostly used in applications like e-passport, transportation payments, IT asset tracking, government, healthcare, manufacturing and aerospace industries.

RFID and finger vein were interfaced with the help of Camera and Sensors. Sensors are used to sense electromagnetic waves and vein of a finger. Information about the individuals is registered in the database, which includes license information.

II. LITERATURE SURVEY

Biometric systems are the best authentication systems that are used to identify a person. Finger vein authentication is the anti-forged. When a person wants to drive, will just press their finger in the biometric system. When the finger vein are match

automobile get ignited, this will be keyless authentication system. If the matching fails GSM get triggered on and transmits warning message. Same automobile has the facility to detect fatigue and intake of alcohol by the driver. GSM, camera and buzzers are interfaced with Raspberry pi. Raspbian OS is loaded with python and open CV. Arduino is interfaced with alcohol gas sensor. This two embedded boards are bridged by I2C bus. Arduino will turn off the relay ignition system.



1. Finger Vein Recognition Based Driver Authentication and Alertness System Using GSM. In this paper author suggested that with the assistance of biometric framework we can secure our car. We need to begin the motor by squeezing their finger in the biometric framework. There are two conceivable outcomes that finger vein match or neglect to coordinate. In the event that the finger vein is match vehicles begin working appropriately. On the off chance that it neglects to match it cautions the auto proprietor by sending the message through GSM system. This framework additionally alarms about the driver liquor admission and sleepiness. This framework depends on the Raspberry pi innovation.

2. Smart Surveillance Monitoring System Using Raspberry PI and PIR Sensor. In this paper author recommended that keen observation using so as to check framework is actualized Raspberry pi and PIR sensor. There is infrared sensor to identify the vicinity of number of persons in the room. Camera is naturally turned on when the vicinity of individual is distinguished. At that point the data is caught and sends it to the advanced mobile phone of approved individual

through 3G Dongle..

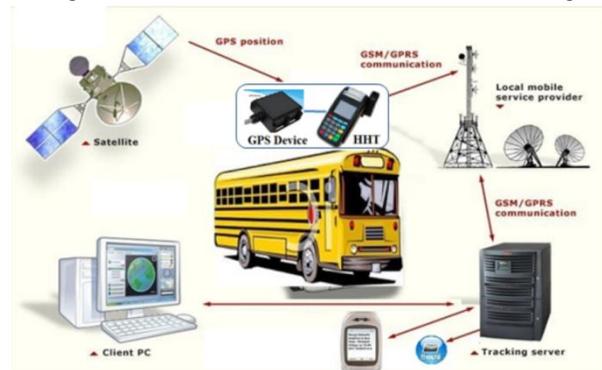


Figure 1: Overview of solar-wind system

GPS MODULE:

Global Position System (GPS) is a space-based satellite navigation that provides location and time information in all weather conditions, anywhere on or near the Earth. The GPS receiver tracks 51 satellites simultaneously. The module is mounted on the PCB along with the 3.3V low drop voltage regulator, transmit, receive and power indication LEDs, Schmitt trigger based buffer for 5V to 3.3V logic level conversion. This GPS receiver gives data output in standard National marine electronics association (NMEA) format. The GPS receiver gives -157dBm.

III. EXSISTING WORK

In existing method we use the MAT LAB for generating the finger vein. Finger vein recognition is one of many forms of biometrics used to identify individuals and verify their identity. This finger vein module directly gives the data of finger vein and will be analyzed using MATLAB-DIP. Here, the data regarding particular person will be compared with the Details of the person already in the MATLAB Software program. Finally, after processing this we will give a command to micro controller through serial communication which follows RS232 protocol. As it has disadvantage of using mat lab as it cannot be implemented in all. TO overcome this method we have used the raspberry pi for vehicle security system by finger vein methodology.

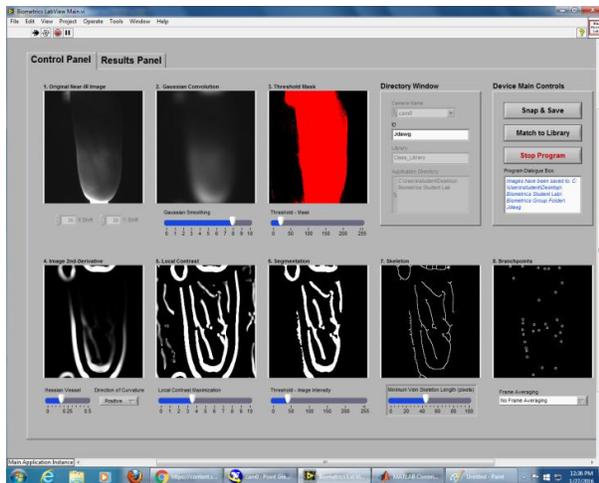


Figure 2:MAT LAB image

IV. PROPOSED METHOD

In our paper we try to merge the both RFID and finger vein recognition for the security purpose by using raspberry pi. The main advantage of this method is the kit can be easily carried and easily implemented and coding is easy. This method proposes the finger vein security system by the use of RASPBERRY PI.

Radio- frequency identification(RFID):

It uses electromagnetic fields to identify and track the information automatically. Unlike the barcode, the tags contain electronically stored information. RFID tags with unique serial numbers could be linked to an individual credit card number. RFID technology is mostly used in applications like e-passport, transportation payments, IT asset tracking, government, healthcare, manufacturing and aerospace industries.

RASPBERRY PI:

The Raspberry Pi is a series of credit card-sized single-board computers developed in England, United Kingdom by the Raspberry Pi Foundation with the intent to promote the teaching of basic computer science in schools and developing countries. The original Raspberry Pi and Raspberry Pi 2 are manufactured in several board configurations through licensed manufacturing agreements with Newark element14 (Premier Farnell), RS Components and Egomania. In our project it is used to convert the finger

vein image captured by the PI camera and save the image automatically and it cannot be deleted automatically. If we want to again search the image we can detect automatically.

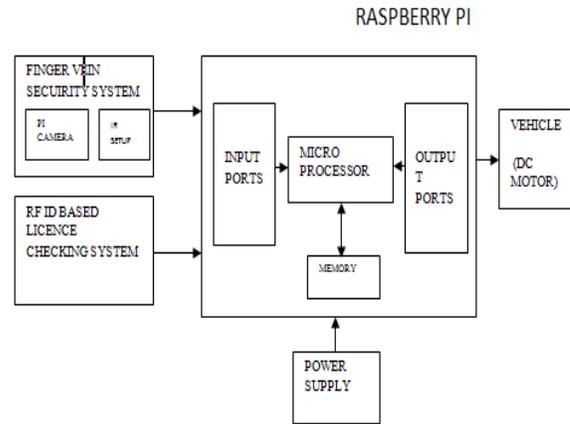
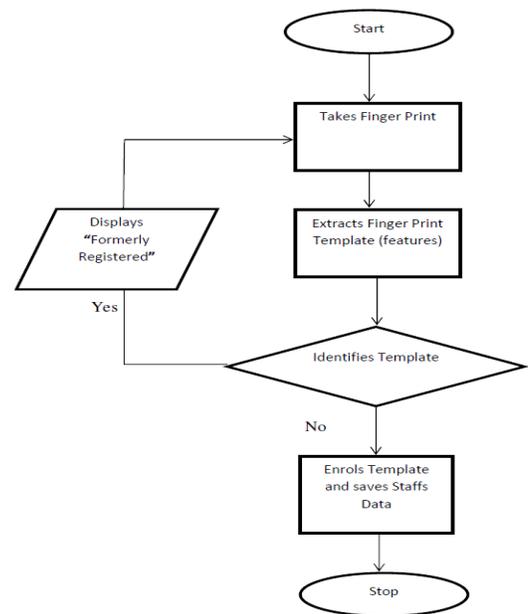


Figure3 : Overview block diagram

V. FLOWCHART



Vein Print Module Setup:

The photographic image of the web camera used in AMISS is shown in the figure 1 and is free from IR filter,

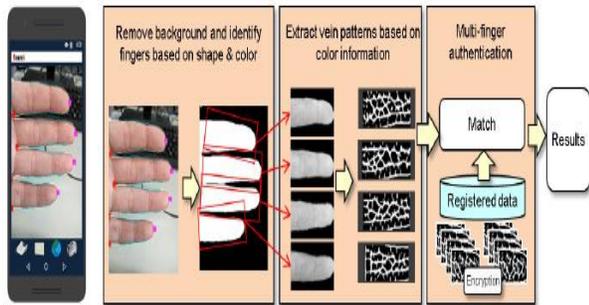
which enables to read the IR signals from the biometric object. Basic idea behind the setup is to get the absorption behavior of hemoglobin is different for different person and the vein prints of the fore finger is captured which is followed by the image processing stage.



Figure 4: IR Filter free Web Camera

The IR platform consists of 14 equally, spaced IR LED is which are serially connected and are powered by the ARM processor. In the present, 9V battery is served as power source.

VI. RESULTS:



VII. CONCLUSION:

A new absorption based vein pattern recognition system. The system is subjected for an attempt to handle issues such as effects of rotation and translation on acquired images, minimizing the manual interruption. The system ensures the accurate extraction of finger vein pattern, which is an essential in developing finger vein, based biometric authentication systems. Finger veins have textured patterns, and the directional map of a finger vein image represents an intrinsic nature of the image. Our method extends traditional image segmentation

methods, by extracting vein object from the oriented filter enhanced image.

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