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Real Time Security System Using Face Detection and Recognition System

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Abstract:
Security systems are becoming the unavoidable systems in today's life because of the increasing criminal activities. In this project work a proposed real time vehicle security system is implemented. If any person starts the car, the security system will check the person's authentication. The proposed system allows only the authorized user to use the vehicle. If it finds any unauthorized person, the proposed Person Authentication System (PAS) will block the person to operate the car and it will send the orbital information and unauthorized image to the system controller. I the system controller wants to stop the car then a password have to send to the PAS. This entire project work uses GPS for receiving the orbital information and the GSM module for the MSG transmission.

Keywords: ***GSM module, Person Authentication System (PAS), GPS receiver***

I.INTRODUCTION

Now a day's hefting is increased in the field of vehicle steal. Mainly in the luxurious system Cars are expensive. Other than a house, perhaps, few purchases we make will compare to a new car. And just like any other expensive asset, a car brings with it a secondary cost. Most of the people are using cars today to make their life well. According to this requirement the manufactures also bring the cost of the car too low. So even a middle class family can also purchase that freely. This improves the car usage among the public.

Increased car usage turns increase the theft also. In this project work a proposed security system is introduced in order to overcome this problem. The PAS block representation will illustrate the function of the entire project work.

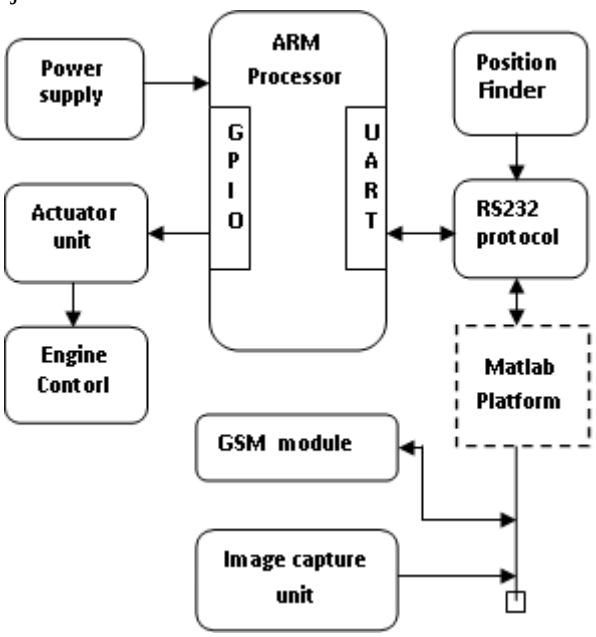

Fig a: Proposed PAS block representation

This project consists of a Processor using ARM core, GSM module and GPS receiver unit as hardware parts and an effective face recognition system using Matlb platform. In this project initially the owner's image or else the driver's image should be stored in the database. Whenever a person is starting the car, the face detection recognition unit will takes the image and it will compare with the database image. If the image is matched then the car will move without any problem. In case if the image is unmatched, then the captured image will be send to the stored Security Mobile Number (SMN). Most case, we can store the owner's mobile number as the SMN. Now, the owner has to check whether it is a known person or unknown person. If it is a known person, then the owner can leave it simply. But if it is an unknown person, then

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owner can send a password to the car to lock the engine. Once the car received this command it will stop regardless the place. Further, if the owner wants to find the current location , then another request command have to send to the car .So that the current orbital information will be send back to the owners number. This will helps to find the car without wasting the time.

II . DESIGN AND IMPLEMENTATION

This project uses two important platforms.
1. Software Platform and
2. Hardware Platform. These platforms are discussed below

Software Platform:

In this project a face recognition system is used which will do the key role in the entire operation. For the face recognition system, we are using the MATLAB and for MMS module and Processor communication VB Platform is used. The image recognition will process in the following way.

For capturing the image we need to use a camera which should support a YUY2_640x480format. Initially we have to take the data base image and should store in the project folder. The supportable camera configuration in the MATLAB is given in the form of the following datafunction vid=videoinput('winvideo',1,'YUY2_640x480');Initiall y ten data base sample image have to be stored in the project folder to get the effective feature extaction.

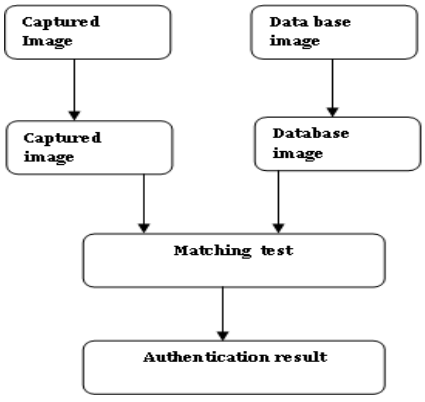

Fig b: PAS Software architecture

Once the camera captured the image means it will be send to MATLAB. Whenever MATLAB readsan image it will convert into grey scale format because for recognition purpose the image should be a single plane. After capturing the image, we need to click on the database. As an acknowledgement we will get the following help dialogue.

Cmd : helpdlg('database successfully added);

Then pre-processing will be done within the captured image and the database image which involves, Similarity is checking and probability finding. Here similarity checking is nothing but the comparison between two images by calculating the distance between the input and data base image. We can do this by an effective edge analysis and pixcel analysis.Using the function function value = euclideanDistance(X, Y), we can find the similarities between the input image and data base image and also the changes in the same input after a particular time period. Finally, pixcel value result will be compared with the mean and median value to find the authentication. Then the result will be shown on the MATLAB.

```
if (cnt1>2 || cnt2>2)

if cnt1>cnt2

    warndlg('Authorised Person is A');

else

   errordlg('Person not Autherized');
```

If the image is matched then there will not be any response to the SMN. But if the image is not authorized then, the captured image will be send to the SMN through MMS modem. This MMS sending will be done through Visual Basic software. The GSM module will be configured through VB . The configuration involves the following commands. So, when the image is unauthorized, GSM will be send through the SMN. If the owner replied a command ‘S’ or ‘V’ , then the GSM module will read the data and

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send to the VB platform which in turns pass the command to the Processor.

Fig c : PAS implement screen

Hardware Platform:

This part consists of ARM core processor as a main unit, GPS receiver system, Ignition unit, PC, GSM module and a camera. This module with designing and implementation technique is given below.

ARM processor is used for controlling the overall system. Here we are using the LPC2148 series, which has two UART. In UART0 we will interface the GPS receiver to get the orbital information and in UART1 we can interface the PC for image processing. Then the ignition driver circuit is connected to the GPIO pin of ARM. Interrupt routine code is used to check whether we are getting any serial interrupt (i.e,) from owner any command is coming or not. For this project we are having two interrupt checking commands 'S' and 'V'.The interrupt routine code for command checking is given in the column below.

When ARM processor receives a command 'S' through UART1, then the processor will shut down the driver circuit. Due to this the engine will be stopped instantly. Next, if the processor receive a command 'V', then UART0 receiver interrupt will be enabled. So, the current value in the GPS will be stored in the ARM memory. Using the coding the Latitude and Longitude values will be filtered from the memory and through UART1 it will be send to the PC for further implementation. This interrupt routine code will be checked by the processor continuously which increases the efficiency of the project. These interrupt checking method needs to configure the vector address. So the vector address configuration for both UART are given below. The Vectored Interrupt Controller (VIC) takes 32 interrupt request inputs and directly programmably assigns them vectored IRQ. VICIntSelect is a register which have the control of all interrupt registers. As we are using the UART0 interrupt and UART1 interrupt we have to just enable the 6th and 7th bit of the VICIntSelect register. After enabling for each interrupts separate slot have to be enabled for processing. So whenever an interrupt is coming from the Owner, then ARM processor can directly jumb to the interrupt routine to processing the command.. Because of this facility ARM can handle the different interrupts from the Owner and can do the respective functions without any fault.

In this project the engine unit will be controlled by a driver circuit. The driver circuit consists of a relay, resistor and a transistor. If the car is started, the engine will be turned ON which means ARM processor will give the bias voltage to the transistor to switch on the relay which in turn switch on the car engine. Meanwhile the processor will check the interrupt routine. Once if it receives the interrupt 'S' through UART then the processor will cut the bias voltage to the transistor. So that, the engine will be turned off.

Wireless Platform:

A) GSM communication:

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves.

A GSM modem can be an external device or a PC Card / PCMCIA Card. Typically, an external GSM modem is connected to a computer through a serial cable or a USB cable. A GSM modem in the form of a PC Card / PCMCIA Card is designed for use with a laptop computer. It should be inserted into one of the PC Card / PCMCIA Card slots of a laptop computer. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate.

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As mentioned in earlier sections of this SMS tutorial, computers use AT commands to control modems. Both GSM modems and dial-up modems support a common set of standard AT commands. You can use a GSM modem just like a dial-up modem.
In addition to the standard AT commands, GSM modems support an extended set of AT commands. These extended AT commands are defined in the GSM standards. With the extended AT commands, you can do things like:

- Reading, writing and deleting SMS messages.
- Sending SMS messages.
- Monitoring the signal strength.
- Monitoring the charging status and charge level of the battery.
- Reading, writing and searching phone book entries.

Sending the message

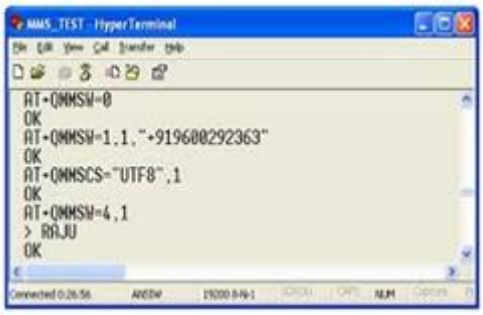

Fig d: MMS test window

To send the SMS message, type the following command:
AT+CMGS="+31638740161" <ENTER>
You can now type the message text and send the message using the <CTRL>-<Z> key combination:
TEST MMS ! <CTRL-Z>
Here CTRL-Z is keyword for sending an sms through modem.

B) GPS system:

The space segment currently consists of 28_operational_ satellites orbiting the Earth on 6 different Orbital planes (four to five satellites per plane).They orbit at a height of 20,180 km above the Earth's surface and Are inclined at 55° to the equator. Any one satellite completes its orbit in around 12 hours. Due to the rotation Of the Earth, a satellite will be at its initial starting position after approx. 24 hours (23_ hours_ 56_Minutes to be precise). All 28 satellites transmit time signals and data synchronized by on board atomic Clocks at the same frequency (1575.42_ MHz). In this project the GPS receiver will get the orbital information and sends to the system controller.

III. Conclusion

From this we have implement person authentication system (PAS) that can provide the important functions required by advanced intelligent Car Security, to avoid vehicle theft and protect the usage of unauthenticated users. Secured and safety environment system for automobile users and also key points for the investigators can easily find out the unauthorized image. We can predict the theft by using this system in our day to day life. This project will help to reduce the complexity and improve security, also much cheaper and smarter than traditional ones.

IV.REFERENCE

(1) J. H. Lee and I. B. Jung, "Reliable asynchronous image transfer protocol in wireless multimedia sensor networks," Sensors, vol. 10, pp. 1486–1510, 2010.

(2)I. F. Akyildiz, T. Melodia, and K. R. Chowdhury, "A survey on wirelessmultimedia sensor networks," Computer Networks, vol. 51, no. 4, pp.921–960, 2007.

(3)S. Checkoway, D. McCoy, B. Kantor, D. Anderson, H. Shacham, S.Savage, K. Koscher, A. Czeskis, F. Roesner, and T. Kohno, "Comprehensiveexperimental analyses of automotive attack surfaces," in Proc.20th USENIX Conf. Security, Berkeley, CA, USA, 2011, pp. 6–6.

(4)R. Pon, M. Batalin, M. Rahimi, Y. Yu, D. Estrin, G. Pottie,M. Srivastava,G. Sukhatme, and W. Kaiser, "Self-aware distributed embeddedsystems," in Proc.

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A Peer Reviewed Open Access International Journal

IEEE Int.Workshop Future Trends Distrib. Comput.Syst., 2004, pp. 102–107.

(5)N. Bird, S. Atev, N. Caramelli, R. Martin, O. Masoud, and N. Papanikolopoulos,"Real time, online detection of abandoned objectsin public areas," in Proc. IEEE Conf. Robot. Automat. 2006, pp.3775–3780.

(6)D. Li, Y. Jiang, and G. Chen, "A low cost embedded color visionsystem based on SX52," in Proc. IEEE Int. Conf. Inf. Acquisit., Aug. 2006, pp. 883–887.