Real Time Face Identification in Smart Car Security System

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Abstract – In this modern age, there is rapid increase in number of vehicles and so there is the number of car theft attempts. Thus, the protection of vehicles from theft becomes important due to insecure environment. Real time vehicle security system based on computer vision provides a solution to this problem. The proposed vehicle system performs a image processing based real time user authentication using 'Face Detection' and recognisation techniques and microprocessor based control system fixed on board with the vehicle.

If the car seems to be theft, the owner will be conveyed with the image of thief, and latitude and longitude information through SMS (short messaging service). The SMS will send on owner's mobile periodically and on receiving the SMS the owner has to send a secret code through SMS to the car, then the car will stop immediately; for that a microcontroller has to be placed in the car which will stop the car by using relay system in the car. At the same time system will detect occurrence of any accident. In such a situation the system will send message to the police station, ambulance, owner and nominated cell number by owner. This will provide fast service at the accident place.

Index Terms – Communication, GSM, GPS, Vibration Sensors, ATMEGA16.

1. INTRODUCTION

The main aim of this seminar is to design and develop an advance locking system in the real time environment. The system is used to detect the image of the thief and it controls the start and stop operation. In this modern age there is rapid increase in the number of vehicles and so is the number of car theft attempts, locally and internationally. With the invention of strong stealing techniques, owners are in the fear of having their vehicles be in stolen from common parking lot or from outside their home.

It consists of PC memory unit it stores the different driver image. Using FDS (face detection system) an image is sending to the owner through MMS / e-mail). Owner can trace the location through GPS. In this system owner can identify the theft image as well as the location of the car. Traditional car security systems relay on many sensors and cost a lot. When one car is really lost, no more feedback could be valid to help people to find it back. We put forward the face detection technique to be applied in car security system because this kind of Technique is effective and fast, and one alarm signal could be given to make an alarm or call the host soundlessly with the help of other modules in the system prototype. Face detection techniques have been heavily studied in recent years, and it is an important computer vision problem with applications to surveillance, multimedia processing, and consumer products. Many new face detection techniques have been developed to achieve higher detection rate and faster. Which is considered to be one of the fastest systems? In this smart car security system, FDS (face detection subsystem) aims at detect somebody face in the car during the time in which nobody should be in the car, for example, in the night when the car so owner is sleeping. FDS obtains images by one tiny digital camera which can be hidden easily in somewhere in one car. When FDS detects one face in alarm period, one alarm signal will be sent to the control central of the system.

As the car gets stolen the user can send a status message from his/her cell phone. As soon as the GSM module gets the message, it will check for the user's authentication and if found to be invalid, it will immediately send the details of the location using GPS module. He can stop the car by locking the Fuel lock so; the user can know the exact location of the vehicle. Thus, the car security device that offers the excellent protection to our car.

2. LITERATURE REVIEW

Several securities and Tracking system are design to Assists corporation with a large number of vehicles and several purposes. Since, anti-theft devices reduce the risc of a vehical being stolen. Insurance companies generally give owners a discount on insurance for installing these devices.

When firstly 'Car Alarm System' is introducing, this system consist of mostly electromechanical devices. As technology advanced they evolved into fully integrated microprocessor based system using multiple electronic sensors. The disadvantage of these systems is people can't physically stop the car from being stolen. So that, 'GSM based automobile security system' is developed. This system gives the status of all the sensors via SMS. But sometimes SMS sending gets fail. To overcome this problem, 'GSM and GPS based vehicle tracking system' gets launched which can able to trace the location of the car or vehicle. But in this circuit, only we can trace the position but can't find out the person authentication. So, finally 'The smart car security system using Image

processing' is introduced, which can overcome the disadvantage of GSM and GPS based system. In this system we can able to recognize the face of the theft by the camera used in that circuit. This system introduces and describes the design of mobile controlled car security system offering higher level of car security feature with the information of the thieves.

3. PRINCIPLE SECURITY SYSTEM FOR CAR

Several securities and Tracking system are designed to Assists Corporation with large number of vehicles and several purposes. Since, anti–theft devices reduce the risk of a vehicle being stolen. Insurance companies generally give owners a discount on insurance for installing these devices.

In the car, the system includes with GSM module, door lock system, start and stop controller, buffer, and camera. In this section, the GSM plays the vital role. Because the components above said are controlled with the received messages. The system performs the control operation only for the messages which are transferred from specified owners SIM. Traditional car security systems relay on many sensors and cost a lot. When one car is really lost, no more feedback could be valid to help people to find it back. We put forward this technique to be applied in car security system because this kind of technique is effective and fast, and one alarm signal could be given to make an alarm or "call" the police and the host soundlessly with the help of other modules in the system prototype.

Many new face detection techniques have been developed to achieve higher detection rate and faster. In this embedded smart car security system, FDS (face detection subsystem) aims at detects somebody's face in car during the time in which owner sent a message to on camera.FDS obtains images by one tiny digital camera which can be hidden easily in somewhere in one car. When FDS detects one face in alarm period, one alarm signal will be sent to the control central of the system.

An alarm or a "silent" alarm will be triggered according to the use's settings. In silent alarm pattern, no direct alarm will be made, but several modules are working at inform owner and the police several important data, for example, the precise location of the car. The GPS module obtains the precise locality by parsing received GPS signal. The GSM module can send the information out by SMS (Short Message Service) message, including real-time position of the "lost" car and even the images of "the driver". The precise location of the car The GPS module obtains the precise locality bypassing received GPS signal.

4. PRINCIPLE FOR INTELLIGENT SMART SECURITY SYSTEM

The system consists of two sections

1. Transmitter Section

2. Receiver Section

1. Transmitter section

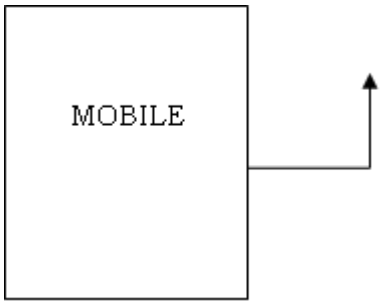

Fig. 4.1 Block Diagram Transmitter

2. Receiver Section

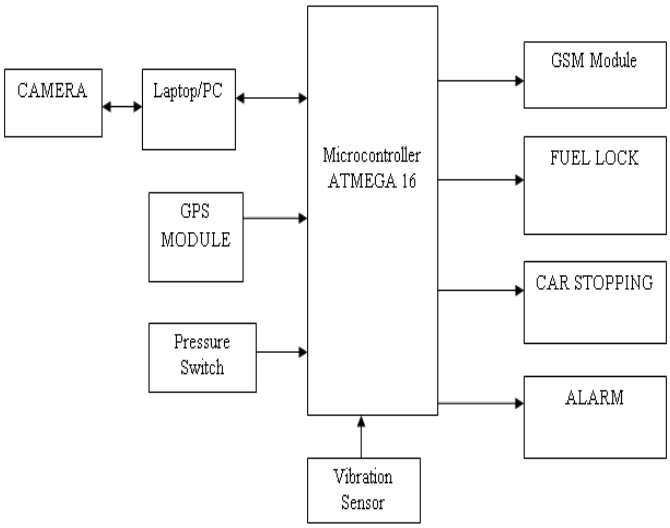

Fig. 4.2 Block Diagram of Receiver

The figure 4.1 shows the transmitter section and figure 4.2 shows receiver section in car alarm system; the main disadvantage is that it has limited range. In GSM and GPS based security system has the drawback of SMS sending, failure due to network error .In this system, it is impossible to get the information of thieves. The car security system using Image Processing avoids this drawback by providing the information which is in the form of that image susceptible person. Thus, the owner gets this image via on E-mail or MMS.

Additionally, the car owner can completely control any of the car features any time at anywhere via a phone call. Based on GSM positioning concept, this system has the potential to provide car location information to assist the stolen vehicle recovery therefore, providing enhancement over the conventional car alarm system. When any known/unknown person is sited in the car at drivers place, switch will get press and controller will detect the signal and it send signal (character a) to laptop using USB to TTL. Microcontroller transmitter pin is connected to receiver pin of USB to TTL. In laptop we made

a MATLAB_GUI. When signal is receive on comport of laptop, the camera of laptop will gets ON. It will capture the image and store it in laptop anywhere, and will send that image (known/unknown) to owner's Mail ID.

As the owner knows the status of the car that is to be stolen, he/she can make a simple call to lock the car using DTMF circuit or technology. DTMF technology has been used to operate control unit which consists of fuel locking unit and ignition control unit via mobile handset. As conventional RF wireless system has distance limitation, DTMF technology has been used here. This signal is detected by DTMF circuit.MT8870 is a 'Dual tone multi frequency' which is used as decoder. It decodes the signal and produce 4-bit digital output. The output of DTMF is connected to the port A of the controller. When owner's press '1' decoded by DTMF is decoded by DTMF IC and gives to controller and gives signal to relay to lock the fuel lock. This system introduces and describes the design of mobile controller car security system offering higher level of car security features with the information of thieves'. Also, as the car gets locked by the mobile phone via a call then the buzzer will start beeping continuously and in this way, these systems does its operation.

5. CONCLUSION

In this seminar, by using Image Processing or recognition techniques we can avoid vehicle theft and protect the usage of unauthenticated users. Secured and safety environment system for automobile user and key points for the investigators can easily find out the hijackers image. We can predict the theft by using this system in our day to day life. Also; the GSM modem provides information to the user on his request.

This is reliable and efficient system for providing security to the vehicle through GSM and GPS.

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