BS Project Proposal

**Car Surveillance Using Image Processing**

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# Problem Statement

As vehicles theft is increasing in present Era, there is an urge to make them more secure. Safety and security of the vehicle is possible only when vehicle is under good monitoring. There are many different techniques used for car security systems some techniques include finger print verification, voice recognition and GPS tracking. To make the vehicles more secure and theft proof.

We employed face recognition techniques for car surveillance system as it is a wide research field .Image processing involving face recognition is a reliable technique as there is less chance of dogging.

A data base of owners/drivers (may be a family) of the vehicle was created, the owners/drivers that wanted to start the car, an image at that instant is taken, and then it is compared with the given data-base, if it matches with given data base the car starts if not the car will not start thus preventing any thief to start the vehicle. Furthermore introduced RFID transmitter and receiver for the guest user.

# Aims & Objectives

Our proposed device is a system application that, with the help of a digital photo or video, has the ability of identifying or authenticating a person. An automated thinking device which would only allow an authorized person to start the car .IP Camera is incorporated in a secure place to take and process the image. Through face recognition system will be able to differentiate between the authorized or unauthorized person and identify the right person and unauthorized use if vehicle. Ignition of car would be entirely dependent on the results of the application system. Another feature, Radio Frequency identification, is also introduced in the car that will increase the easiness of the user.

The salient features can be utilized in the surveillance of vehicles, Automatic teller machines, information security, Data privacy, person identity, home video Monitoring, Remote sensing, pattern Recognition, Remote vision, High quality color representation etc and thus can be productive in the stated disciplines.

# Project Background

From start mankind is trying to make things safe and secure from risk of theft. Our project was to minimize that risk in car. Surveillance of vehicle is done in order to avoid theft of the vehicle. In modern Era, different techniques are present, that are used to avoid the theft of vehicles and make them more secure. Face recognition using Image processing is one of the techniques used for car security system.

Image processing is the technique in which meaningful processing of image is done. It is form of signal processing in which input is an image and output taken is also an image or either required characteristics of image.

Image processing involves two types of methodology, analog image processing and digital image processing. In analog image processing that is in two dimensional, processing is done on an analog signal by analog means. It could be represented in form of a continuous range that would represent the position and intensity. An example of analog image processing is camera and a film. Digital image position and intensity are represented by discrete values. These discrete values in the image are called as pixels or elements of picture. Digital image processing is much better than analog processing as it has wide range of algorithms that allow us to attain more accurate results avoiding error and signal distortion. There are several techniques which could be employed for surveillance some of them are given below:

* Surveillance of vehicle using biometric techniques.

Surveillance means to keep a close eye on. Nowadays biometric techniques are used to avoid theft of cars and other security purposes as it is very reliable source of security. For example finger prints, hand geometry, retina matching, face recognition and palm print is used for surveillance.

Digital image processing is much better than analog processing as it has wide range of algorithms that allow us to attain more accurate results avoiding error and signal distortion.

* Surveillance of vehicle using voice recognition.
* Surveillance of vehicles using portable GPS trackers.

Modern vehicles use GPS trackers to be aware of vehicle location. If the car is stolen then it would be easy for the police to follow the signal emitted to the location. Some of the vehicle tracking systems make it possible to control the locks as well as engine of car in case of theft is in progress.

* Surveillance of vehicle using Image processing.

This minimizes the risk of theft as only when face of owner or person present in database matches with the person trying to start the car. If person is authenticated the car starts otherwise the engine would not ignite.

**Project Description**

For the security there will be a camera in the car which takes an image at that instant when someone try to open the car that input image is sent to data-base for comparison. A data-base was formed by taking numerous pictures of the users in different poses. In order to save space, only useful features were taken from that image and then compared with features of the input images. The process is done in MATLAB program. An extra feature of RFID is also incorporated in the project for the guest user.

# Methodology

The project consist of IP camera with MATLAB software for face detection of family and compare it with data base .Hardware consists of Arduino Uno –R3 for serial interfacing act as backbone of system with laptop or computer .RFID transceiver which is connected with Arduino .

**Arduino**

 Arduino Uno –R3 is faster source of data transferring rate and has easy compatibility and installation like joystick or mouse. Arduino is single board microcontroller intended to make building interactive objects.

**Features:**

* ATmega328 μ controller
* Input voltage is from 7v to12v
* 14 Digital input, output Pins
* 6 Analog Inputs
* 16Mhz Clock Speed

# Circuit Operation

We make the security system for 3 persons of a family .so for using the system we introduced a push button on Arduino for controlling the MATLAB code for recognition of the person. Afterwards when the Matlab code runs it tells Arduino whether the person is authenticated or not by means of taking a pic through IP camera and compare it with data base record which in results will control the switching. The ports will be high or low depends on the results produced on Matlab from which led will be on if its authenticated person and off if person is not then led will not glow.

Now the purpose of having RFID is for giving security system reliability for the guest user (outside the family) ,user will use RFID transmitter in front of receiver which are connected with Arduino which will trigger the Matlab code. RFID transmitter will send a specific code on its receiver and receiver will pass it to Arduino which checks if its the same as we have programmed then it will transmit that to Matlab which will check the authentication of the person.

**FLOW CHART**

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# Conclusion:

Project task was to provide user with security of his car and to ensure the surveillance by using image processing. For this purpose we proposed a solution and achieved the required goal .We make a data base of 4 users 3 having images in the data base and for fourth user we introduce concept of RFID radio frequency identification is introduced in it which will make it more convenient for a user to use this system as they can give the transmitter tagged card to anyone by their own will and the person who is not having any image in database can easily access the car.

# Work Schedual

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Work Schedule | March-2015 | April-2015 | May-2015 | June-2015 | July-2015 |
| Study of Wimax Technology |  |  |  |  |  |
| Data collection |  |  |  |  |  |
| Hardware/Software designing and implementation |  |  |  |  |  |
| Results compilation and thesis writing |  |  |  |  |  |

Proposed starting date:

15th september 2014

Expected completion date:

15th July 2015

1. Resources Required:

**Major Hardware requirement:**

1. Arduino UNO R3
2. Port cable for connecting Arduino with laptop
3. Ip camera
4. Microcontroller Kit

**Software requirement:**

1. Matlab for data base
2. Arduino burner
3. Supervisor’s Comments:

**Signature of Supervisors**