

# Advance Driver Assistance System using Artificial Intelligence

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**Abstract** - In the field of machine learning as it has been used vividly for many purposes as an application of artificial intelligence. Based on this paper we are presenting the facial recognition system along with detection of the faces and also the messaging is done in order to have a security for the person who claims the vehicle. The pilfering attempt of any vehicle can be done when they rupture the door and try attempting to start the car or to provide ignition to the engine. In the vision of this concept the solution that has been brought up is such a way as when person enters the vehicle it has an image processing based on the real time user authentication employing face detection and recognition technique along with the intimation to the vehicle claimer in case of unknown user.

**Key Words:** Ignition, Pilfering attack, Artificial intelligence, Image processing, Face detection, Face recognition

## 1. INTRODUCTION

Vehicles have an extensive impact on society for mobility and increase in technology. Due to the rapid increase of vehicles so there are much possibilities to theft of the vehicles. Introducing the face detection in the cars can reduce the thefts of cars. Over the past few year's lot of work has been done in face detection and recognition as it is the best way to identify a person. Face recognition has become a crucial part in our lives. Hundreds and thousands of pictures are stored to identify and verify the person. All the images would be compressed images. Storage space would be reduced by this compressed images. Face images are taken at very high pixels so it will be difficult to extract the exact features from the image. To achieve those exact features we compress the image. The face detection as it is the prior process to be done when a person enters the car. The image processing is done, where the camera is placed near any suitable place of steering bar in the car. It start capturing the image. If the features of the user of the car is differ then it sends a text message to the registered user of the car that some unauthorized user is trying to access the car. The capturing of a person is a major part as the person may vary. Their positions as this there the number of frames of a person are taken. This makes, the feature extraction where local binary pattern histogram is used on comparing the frame, the image on comparing the frames, the image of a person is captured. If an unauthorized users are been detected the system circulates as unknown user and the further process is to let the authorized user have a notification of the theft. The process of mms has been utilized using twilio services and storage links from the database the unknown person's photo link would be sent such that he gets a notification and makes assure that control of the car to not get ignited by unknown person.

The GPS system can be used in order to have an update of location. This makes the unknown person have no idea how to start a car unless the authorized person allow. This advanced automated technology helps to avoid thefts.

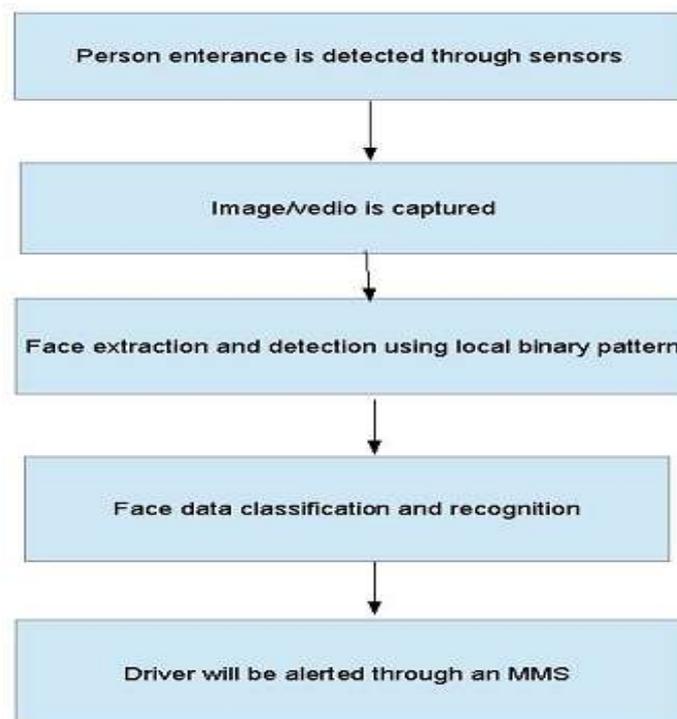
## 2. METHODOLOGY

Real time emergency extendable system has a micro computer, it comprise image processing unit that prevents a parked vehicle from theft. The enlightenment of face recognition in machine learning has been utilized to bring up many advances. Channel algorithm is used for authentication.

The haar cascade classifier has been used for the frontal camera in the image processing. The activation of the camera is a major task when the person arrives. This is done when a person enters the car and gets seated the infrared sensors attached to the driver's seat of the vehicle activates the hidden cameras fixed in the appropriate position inside the vehicle. The image processing based on the current technology can be much effective to capture the persons face. This capturing of the face has an extended version in real time as well. The emotions of the face are detected and the emotions of the face are even captured in the static images. The capturing process will be on a running video of a web cam they will detect in the form of frames and capture the facial expression from ever part of the face such as eye eyebrows eyelids, corners. The deeper parts are noted in the form of binary numbers the feature extraction using local binary histogram pattern. This gives an overall frames to detect whether all the frames are of a same person and it can get an outcome image vision of a person. The non-maxima suppression algorithm can detect many frames and makes as one this captures image and the resulted image from the final model

deployment of frontiers using sliding window is been compared with the results whether the person of unknown user or the registered user. The classification of the image is based on the supervised learning which can batter accuracy. The Amazon web services or similar web services for storage can be used in accordance to save the registered user image and to extract the image for comparison to get known of unknown person. The human detection technology using the sliding window technique. The histogram of orientate gradient. The link of the unknown person is sent to the registered users mobile through multimedia messaging service using GSM services available. When the registered user gets the notification about the situation he should be capable of taking action against this theft. Based on the information received to the registered user he could be able to control the car by allowing to not to get the engine.

2 Ignited and can take further actions on the person. If the person is an registered user or known persons he can allow the access or there could be a message such as "Welcome have a safe journey".



## 2.1 Image Processing:

The micro computer that contains the image processing unit embedded interior in it to perform the face detection in order to have security and authorization of the person The image processing actually involves two main parts of the face detection and face recognition.

## 2.2 Face Detection:

To get the image it is processed to detect the face using the surveillance systems on intelligent vision based human computer interaction. The cascade object detection is also an effective one, the cascade detector is used to detect the face of the image that has been acquired and the extracted face region. As to check the flexibility of the system that work in a Varsity of conditions like lighting and other conditions it is made to run on PC's or mobile phones and effective face detection algorithms are required. The high detection accuracy is mainly employed to achieve high detection accuracy. The security system has a database to store the images of the faces of the unauthorized. Users under various environments. The enhancement of images are done by normalizing to remove the unrelated information as the illumination constraints will occur while acquiring the image and are stored in the database. The research on the video based detection of the face and the recognition is to be considered as the extension of some good results that have been reported. The performance of face detection is been performed with these detected faces.

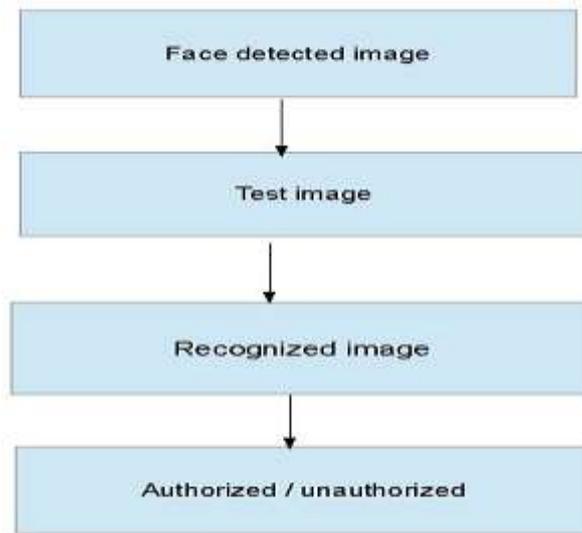


Chart2: steps for face detection purposes.

### 2.3 Face Recognition:

The recognition of face can be performed using various algorithms which are either model based or feature based. Most of the based algorithms are being used in authentication system in real time linear discriminate analysis(LDA) algorithms and the principle component analysis(PCA), these both algorithms are efficient in turn to extract the features. Both the algorithms are compared, from the comparison (Pro. S.K Herry and M.R Banwasker, 2013) it is found that they are similar but Linear Discriminate analysis (LDA) outperforms the Principle Component Analysis(PCA) algorithm in training large sets. The LDA helps to get the information present in the image by computing inter lass scatter matrices and intra class. The database can be used which contains the normalized face images, in order to perform the recognition in the vehicle through LDA algorithm. The training images that are stored and the camera acquired faces are compared. The classifier algorithm is used and decided whether the image is known or unknown. The Euclidean distance is been calculated as per the corresponding weights of the features of the image where it can reduce minimum distance that is best matched in comparison with the test image. If the Euclidean distance is smaller than the person can be classified as the unknown when the distance value has been exceeded the threshold value.

### 2.4 Vehicle Control:

If the unauthenticated face image is found this is sent to the claimer of the car through multimedia messaging service(MMS). The owner can try to operate the vehicle to stop that is in connection to the engine control unit blocks the ignition unit blocks. This results in the block of the vehicle movement.

### 3. RESULT:

The MATLAB is used for security system of computer vision ARMT microprocessor controlling unit. The face extracted from the detection mat is test image and the Linear Discriminate Analysis(LDA) algorithm can be used for recognition of face.

### 4. CONCLUSION:

The main objective of the car ignition to be in the form of secured manner in association with environment of an individual face. The further research on the control and gesture identification can be extended. This is reliable as the application involving authorization burden management etc. The results obtained from the face recognition is relied to ensure safety of vehicle.

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