

# Anti-Theft Vehicle Security System Using Neural Network

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**Abstract-** A major problem now a days for car or bike owners having the fear of their vehicles stolen from the parking lot or from outside their home. Image processing based anti-theft vehicle detection provides the solution for this problem. Anti-theft vehicle system consist of facial recognition system in addition to conventional manual key ignition to avoid the theft of the vehicle. The camera is fixed near the key slot. The image captured is processed Using neural network.

Every time when the key is inserted to the vehicle the camera is activated automatically and checks the registered face The vehicle will not start if it is not an registered face as well the camera will capture and sends the intruder's image through internet also system described in this paper automatically takes the photo of the intruder and sends the image through application, if the owner is busy and sends some other person to take his vehicle the image of the person sends through application and the application consist of two toggle button allow and deny if owner gives allow the bike starts normally otherwise the ignition gets failure.

**Keywords-** Face Recognition, Neural Network.

## I. INTRODUCTION

The use of vehicle becomes important everywhere in the world and also preventing it from theft is required. Vehicle manufacturers are attaining the security features of their products by introducing advanced automated technologies to avoid the thefts particularly in case of cars. Biometric and non-biometric methods usually provide such security features. Sometimes these systems fail due to hacked password and encryption of decrypted data, but it is almost impossible to make replica of distinctive characteristics. Biometric systems are modern and use techniques like fingerprint recognition, iris recognition and face recognition. Of these face recognition and detection system

## II. FACE RECOGNISATION

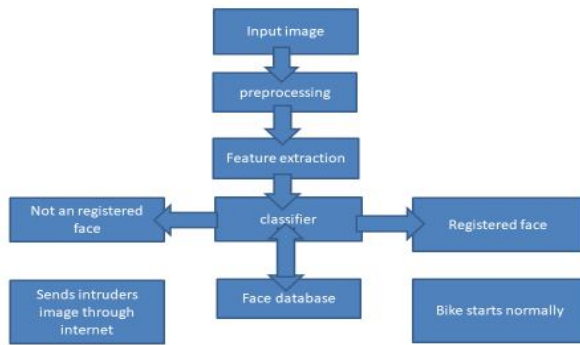
Face recognition can be performed with various algorithms which are feature based or model based. Mostly feature based algorithms are used in the security systems

involved in real time. Principal Component Analysis (PCA) and Linear Discriminant Analysis (LDA) algorithms are efficient in terms of extracting the features to perform recognition. Both algorithms are compared (S K Hese and M R Banwaskar, 2013) and they found to have similar features but Linear Discriminant Analysis (LDA) outperforms Principal Component Analysis (PCA) algorithm when large training sets are involved in recognition. Also, LDA discriminates most of the information present in the image efficiently by computing the intra class and inter class scatter matrices. Using the database which contains normalized face images, the recognition is performed in the vehicle security system through the LDA algorithm. LDA performs the feature extraction of the stored images in the database which are called the training images and the camera acquired face image which is called the test image. The test image is to be compared with the database images and the classifier used in the algorithm decides the image as known or unknown using the Euclidean distance and the threshold value. The Euclidean distance is calculated between the corresponding weights of features and the image which produces minimum distance is best matched with the test image. The person is classified as known or authorized when the Euclidean distance is smaller than the threshold value and the person is classified as unknown or unauthorized when the distance value exceeds the threshold

## III. METHODOLOGY

Using Neural network, Performing data set creation by training several number of images from single person who is considered as owner of the vehicle. Storing the model file to local storage which is created by training dataset. Performing Testing process by capturing the image and verifying image with existing model file.If the image verification is successful the vehicle gets started .If the verification is unsuccessful the alert is sent with the image to owners mobile application. A application is generated in mobile app so that if the Bike Owner Holder can provide access to the Bike for a ride.

### Block diagram



#### IV. EXISTING SYSTEM DISADVANTAGES

It does not send intimation through internet and it takes some long intimation time.

#### V. PROPOSED METHOD

It sends intimation to owner of the vehicle through internet and also intimation speed is increased. In this modern age there is a rapid increase in number of vehicles and the number of car theft attempts locally and internationally with the invention of strong stealing techniques, owners are in fear of having their vehicles being stolen from common parking lot or from outside their home. 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 security system performs image processing based real time user authentication using face detection and recognition techniques and machine learning based control system fixed on board with the vehicle. as the person enters the vehicle overcoming the existing security features, the vehicle activates the camera fixed in appropriate position inside the vehicle. as soon as the image is acquired from the activated camera, face of the person is detected. The extracted face is recognized using the openCV which discriminates much of the features rather than looking for exact pattern based on euclidean distance and also reliable to be used with large samples of data. Performing authorisation involves setting the threshold value and comparing with that of Euclidean distance above which the person is not authenticated. The face of the person which is classified as unknown is sent to dropbox through internet. The owner upon receiving the information commands the system. This would be effective to authenticate the person under different environment and to have an efficient way of vehicle security.

#### VI. CONCLUSION

In this paper, an automotive security system involving face recognition is presented. The system can be used to reduce the increased vehicle theft and allows the owner to identify the intruder thereby having the vehicle under his/her control. The results obtained through the face recognition shows that it can be relied upon to ensure safety of vehicle. The system is also reliable to be used in other authorization applications involving robotics, border management, banking security involving ATMs etc.

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