**Face Detection and Recognition for Criminal Identification System**

**Alternative Title:**

 A real time criminal face recognition using an automated surveillance camera.

**Aim:**

 To detect and recognize the face and we can differentiate between citizen and criminals and further investigate whether the identified person is criminal or not.

**Abstract:**

 Face recognition can be considered one of the most successful biometric identification methods among several types of biometric identification including fingerprints, DNA, palm print, hand geometry, iris recognition and retina. Face recognition provides biometric identification that utilizes the uniqueness of faces for security purposes. The problem with face recognition using biometric identification is its lengthy process and the accuracy of the results. This paper proposes solutions for a faster face recognition process with accurate results. The proposed face recognition process was done using a Machine Learning. This improved face recognition approach was able to recognize multiple faces with high accuracy level.

**Existing System:**

 The Existing System is single face recognition system and a new face detection approach using color base segmentation and morphological operations is presented. The algorithm uses color plane extraction, background subtraction, thresholding, morphological operations (such as erosion and dilation), filtering (to avoid false detection). Then particle analysis is done to detect only the face area in the image and not the other parts of the body. This method given result is poor performance and accuracy. So we will move the proposed system.

**Proposed System:**

 The proposed system consists of 4 steps, including training of real time images, multiple face detection, comparison of trained real time images with images from the surveillance camera, result based on the comparison. In our proposed system, the video obtained from the camera will be converted into frames. When a face is detected in a frame, it is preprocessed where noise and redundancies are reduced. The processed real time image is compared with the processed images already stored in the database. If he is criminal/suspect, we get a notification from android through firebase.

**Modules:**

* Dataset Collection
* Algorithm
* Detection

**Dataset Collection:**

In our proposed system, we collect a real time data using open-CV. we collect a data manually and store as a dataset. That collected data will be trained for getting high accuracy result or identification.

**Algorithm:**

 After getting trained dataset, that data will be given to the machine learning algorithm. Machine learning algorithm analyzes the data. Here the data will be analyzing frame by frame to identify the criminal. It compares the real-time footage to trained dataset.

**Detection:**

In the detection process, the live footage will be getting from the open-CV. Then the analyze start from the first frame. It continuously starts comparing the current video frame to trained data set. If the suspect is found, it shows the name, id and wanted label on the screen. After that, the detected value passes to android user via firebase.

**Hardware Requirements:**

* Hard Disk : 500GB and Above
* RAM : 4GB and Above
* Processor : I3 and Above
* Webcam - 1

**Software Requirements:**

* Operating System : Windows 10 (64 bit)
* Software : Python
* Tools : Anaconda

**Architecture Diagram:**

Camera

Pre-Processing

Image

Feature Extraction

Algorithm

Non-Criminal

Criminal

Android Notification

