

Video Surveillance System

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Abstract:-

Video surveillance system (IVS) based on image processing is used to effectively avert crimes and provide public security. The system takes snapshots of individuals and then checks if they match with the faces available in the database. Faces are detected and recognized by comparing the face with the face database using Haar-cascade classifier. This information which is being extracted from the camera is vital which can be used for all sorts of security purposes.

The main focus will be on tracking down the criminals and missing people for better investigation. The goal of the system is to ring buzzer if there is a positive match and get location of that corresponding place.

Key Words:- Video Surveillance, Image Processing, Face Detection, Feature Extraction, Face Recognition, Haar Cascade Classifier, Automatic Alarm Assessment.

Introduction

Nowadays crime has been increasing in a fast mode. Due to this the whole world is in panic. The only solution to get rid of this problem is to set up a security system around you. There are lots of kind of security systems available in the market. Every security system has special features and is of different functionality that suits your requirements.

One security system that is CCTV cameras fulfill all requirements and protect you in all manners either you are using it for office or in crime investigation organizations or for home.

CCTV camera security system is mostly used by cops and investigators. It helps a lot to solve any case history.

The software can compare faces to image databases and identify known individuals. Real-time face recognition applications rely on precise camera configuration and uncompressed video

streams to increase the accuracy of the comparison tasks.

Their particular feature set, with the ability to transmit raw image data without loss-inducing compression, a fixed focus, and sensor, guarantees the richest image information required for the most accurate face recognition solutions.

Overall CCTV camera security systems protects you in all manners whether on the spot or afterwards.

2. Aims and Objectives

We have proposed the system where local features are given as the input to the system. First, the face region is extracted from the image by applying various pre-processing activities. The local features such as eyes, nose and mouth are extracted from the face region using haar features. These feature values are given as the inputs to the haar-cascade classifier for face recognition. The output from the classifier is considered as the recognition result. The information extracted from the video images in this system will be valuable resources for helping the suspicious incident analysis such as pre-alarm warning or notification to the server.

The objective is we are trying to solve the following points for making the system more reliable.

1. To increase its accuracy in complex background, environment and situations.
2. Feature changes over time. So, tracking the right person using more efficient feature recognition techniques, could match the face with the database's data and find the correct solution.
3. To minimize shadowing and occluding of objects and make it reliable to compress all data to acquire the correct target.
4. Faster response time in searching and matching faces from the DB

Proposed System:

The working of our system consist following steps:

1. Input face image
2. pre-processing of image
3. Face Detection.
4. Feature Extraction
5. Face recongition

This is the work flow of the entire system. It includes some phases.

VIDEO SURVEILLANCE SYSTEM

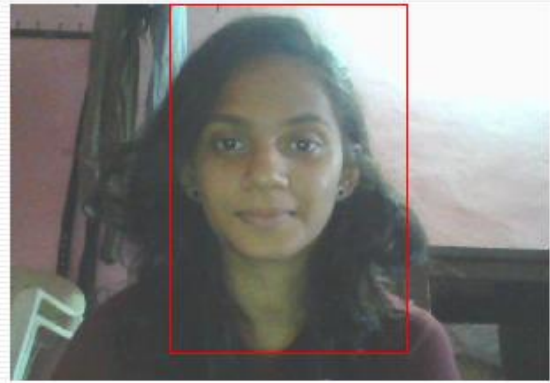


Figure 3: detection of face

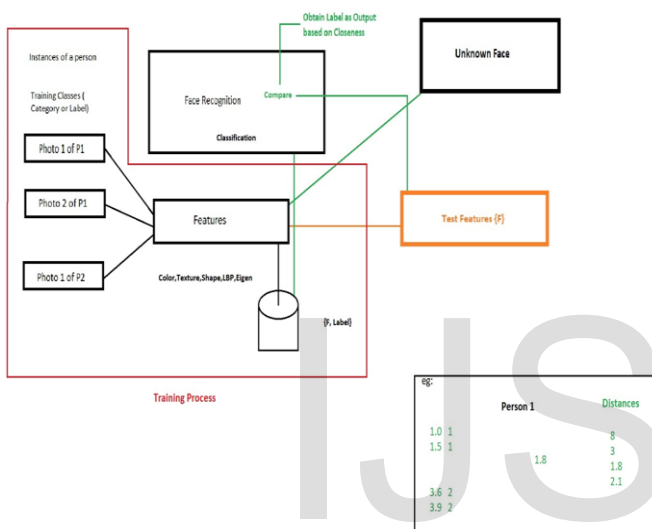


Figure 1: workflow of system.

In the first phase, pre-processing of the all images is done. Here, color input image is converted into binary images and elimination of noise and normalization is done in this phase.



Figure 2: Image Conversion in Pre-processing phase

In the second phase face is detected when it comes in front of web camera or cctv using Haar Features.

In third phase Feature Extraction is carried out by taking the features such as eyes nose mouth, etc. of all stored images in database. Also the features are extracted for the new upcoming image in front of the CCTV.

In the forth phase after extracting the features from the given input image, image is forwarded to face recognizer to recognize the image from stored database. Haar-cascade classifier is used for Recognition of face.

UML Diagrams :

The EER diagram for our system is as follows:

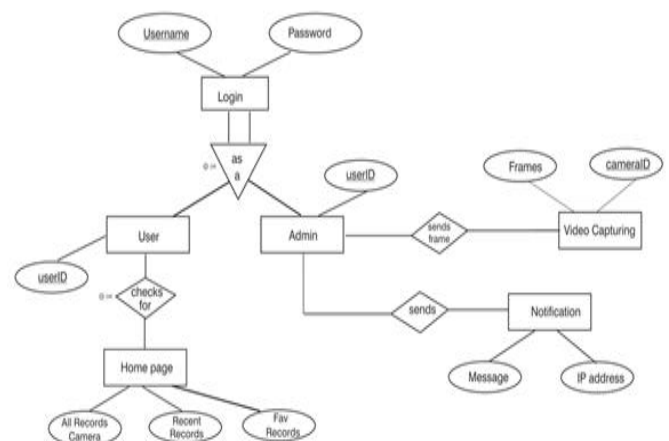


Figure 4: EER diagram

The dataflow of these entities for each other passes through database tables. The DFD diagrams of our app are shown below:

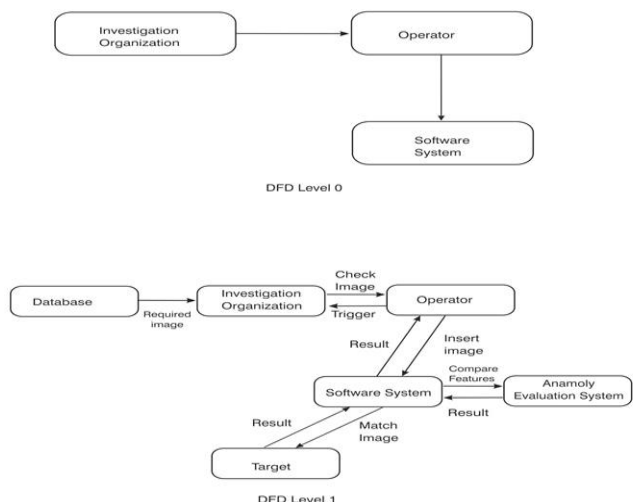


Figure 5: Dataflow diagram

Activity Diagram:

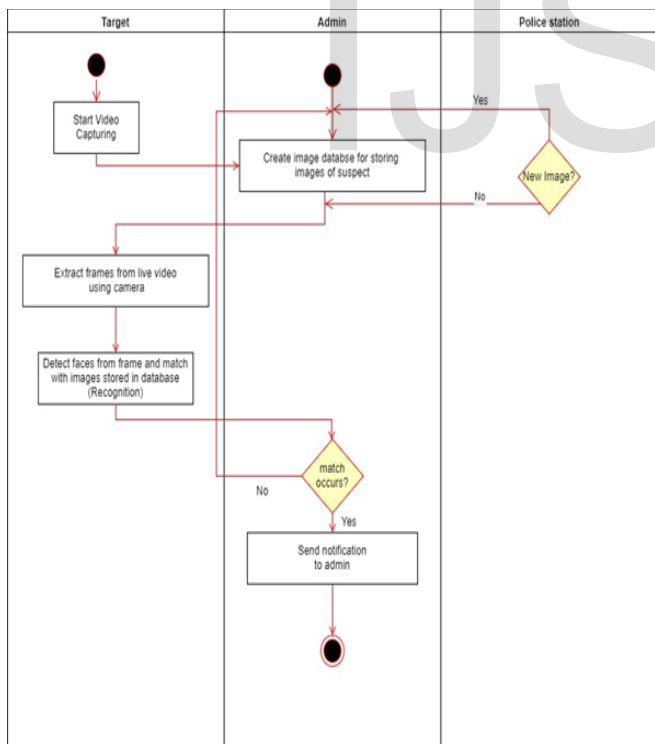


Figure 6: Activity Diagram

Conclusion:

We have proposed a system which provides a more secure feature to an existing CCTV cameras of detecting as well as recognizing faces from the available database. It can track missing people or criminals which are being provided by the police to the server of the system's database. The system can be used in college campuses and companies at the gates to detect those who don't belong to that college or company.

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