Face Recognition from Still Images and Image Sequence

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ABSTRACT
The main aim of our project is to keep check on the intruders by identifying their face from the still image or image sequence and matching them with the data stored in our database. As now a days there are many incidents of intruders getting into a highly restricted area and becoming a threat to the nation. Our project focuses on solving this problem and making it easy for the concerned persons to catch hold of them. Our project aims to detect the faces from the live videos at the same point so as to increase the surveillance power of our nation.

KEYWORDS
Face detection, Face Recognition, Biometrics.

1. INTRODUCTION
Now a day the incidents of intruding into *highly restricted areas* by the unwanted persons are increasing day by day which is a matter of great concern. It is becoming difficult for the security to keep check on every person as they cannot keep the complete database with them at every moment. Our project tends to uniform the database throughout so as to keep a check on the suspected people and to catch them. It will help the concerned persons to keep check on everything more easily with just an internet connect and the software on their respective computers.

As there are many purposes for which the CCTV cameras are used. Some of them are surveillance, spying etc. In order to do this more easily and accurately we need our systems to do more work than the earlier. For this purpose we thought to make the systems more useful and to reduce the cases of intruders getting into a *highly restricted area.*

In this paper we have developed a proposal for the face recognition from the still images and from the image sequence. This model is suitable even for the face recognition from the video. This model was developed by keeping in mind the fact that our future plan is to capture and recognize the face from the live video streaming which can even be used in the traffic signals for the surveillance purpose.

This project was proposed to make the working of defense more effective and faster and keeping the restricted areas safer and privatized. There are many more future aspects regarding the project to keep the restricted areas safer.

2. EXISTING SYSTEMS
After going through these set of papers we observed the following detailing about the existing systems in the world. Our surveys on those papers are as follows:

2.1 Image based face detection and recognition.
After reviewing through this paper we came to know that the goal of this paper was to evaluate various face detection and recognition method, provide complete solutions for image based face detection with higher accuracy.

2.2 Face Detection and recognition in an image sequence using Eigen edginess
After going through this paper we came to know that, to process the face recognition by cumulatively summing up the Euclidian distance between the test face images and the stored database which show good discrimination for true and false subjects.

2.3 Smart webcam motion detection surveillance system.
After reviewing through this paper we found that sum goals of this paper collided with our concept for motion sensing with face recognition.

2.4 Motion detection based on multi frame video under surveillance system.

This paper proposed an algorithm which removes the little variance of the real time image with the stored image because there is high probability of little variance in the image captured while the subject is in motion.

3. PROPOSED SYSTEM
Our project is concerned with the use of face detection technique in order to prevent the intruders getting in to the highly secured places. Our project aims to make the make these kind of places more safe and secure. Other problem which our project intends to solve is the problem with the detection of the intruder or the suspected people from the crowd.

Many a times this occurs that the intruders are not visible in the crowd easily and they escape easily. To prevent this we aim to detect the face from the crowd or even from the video. This will help the defense of the country to keep a check on the intruders and the intruders will also have a fear of being caught easily.

Leading from the front, this security system focuses on the better security and makes the highly sensitive places more secure from the attacks. Taking the use of last few researches in to the concern we propose to solve the problems such as detecting the face from the image sequence. Making it all the more easily to detect the face from still image as well as from the image sequence.

Detecting the face and matching it with the database from the image sequence is quite difficult. In order to solve this problem we intend to develop a new algorithm and a process sequence to do the same.

The problems that we faced during the development of the proposal were that we have to remove the distortion from the captured in case of capturing the face from the crowd. This process may also be termed as image de-noising. It is important because if the image is distorted then the values such as distance between the sockets of the eyes may vary from the original and the result may differ and this error may result in failure of the match.

To overcome this problem, we have designed our own set of procedural algorithm. This contains the various steps for the recognition and if the match doesn't exists then it saves the
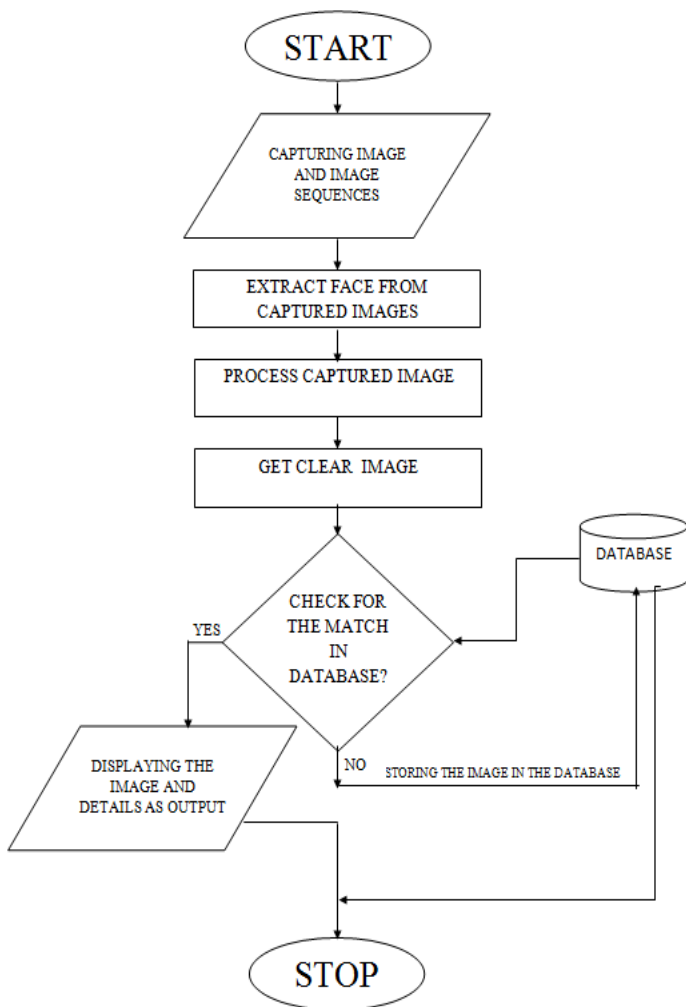

Figure 3.1

Image in the database and waits for the details to be entered manually by the concerned people. The working can be well understood by going through the flowchart. The image after being captured from the image sequence needs to contain only the face at it is only required thing for us. Then the extracted image needs to be de-ionized to carry on with the further process for the recognition. In the next step the de-ionized image is then compared with the images present in the database, if the match is found then the complete details regarding the face is shown. If the match is not found then the image is sent back to the database. The working can be well understood with the help of the following diagram:

This project can be used even for security purpose to authenticate the entry from the door. This can act as a virtual firewall for the restricted areas of the firm and prove to be helpful in many other aspects.

4. EXPERIMENTAL RESULTS

Following are the experimental results obtained after the completion of mentioned phases in the following paper.
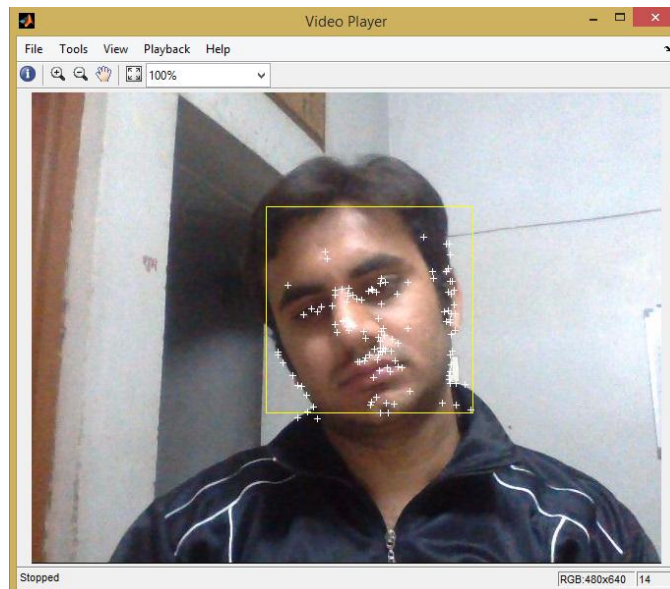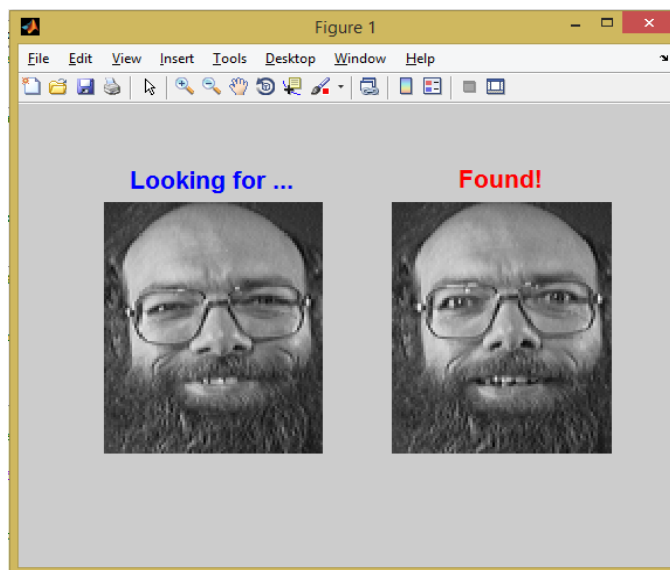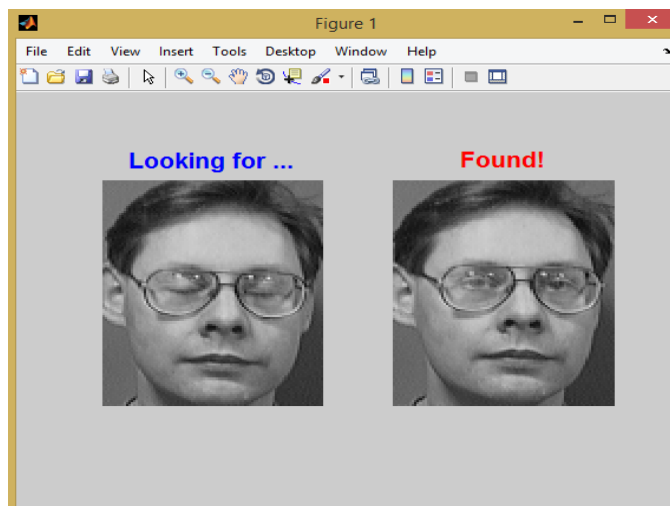

Figure 4.1

Figure 4.2

Figure 4.3

5. CONCLUSION

The main aim of our project tends to the security of the highly restricted areas. The incidents of invading into the restricted areas by the unwanted people or invaders has to be in control. Our focus is on the recognition of the face from the still image as well as the image sequence so as to prevent the invaders.
The main points involved in the project are:

- Recognition from the still images.
- Recognition from the Image sequence.

6. FUTURE SCOPE

Further enhancements will be done the project as stated below

- Criminal face may be of any size.
  Till now we are dealing with the uniform sized image of the criminal. Our future enhancement will be the use of any size of image with any kind of resolution. This will help in making the software more effective and efficient in terms of still image.
- Using a part of image to get the complete detail.
  We will use a part of image to get the details about the criminals at any point of time and not complete part of face will be required for the matching purpose.

7. ACKNOWLWDGEMENT

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