

Crime Detection using Face Recognition

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Abstract— with rapid growth and development in big towns and cities, the crime is also increasing at an alarming rate. Various cases of theft, stealing crimes, burglary, kidnapping, human trafficking etc Many a times there is no identification of the person who was involved in criminal activities. To avoid such situation, we have proposed an effective crime detection system using face recognition. The efficiency of the system depends on the quality, illumination and view of the image captured

Keywords—face recognition, PCA algorithm, face vectors, criminal detection

I. INTRODUCTION

In today's era it is very difficult to find a crime free society. The criminals nowadays use advanced technology to do the crimes and other side the use of technology is increased. It doesn't wrong that humans are addicted to use of technology with various types of applications. Concerning about India, the department of police is the major organization of preventing crimes.

The system of identification & investigation of crime as well as criminal are proceed on paper based system. Due to this the complexity of criminal identification and investigation is increased.

These processes take long duration and maximum human resources to analyzed and finding existence information and identify the suspects for crime incidents. In general, peoples in society also responsible for the crimes happening around them.

Now a days maximum peoples using CCTV cameras to monitor the environment if in case some criminal passes by in the frame of the CCTV footage it's not mapped to centralized server to trigger the information. By synchronizing police side and public side application they get easy way to reduce the crime in society and this system definitely help them to make a crime free society. The most incredible risk for the police department is investigating crimes with the current technologies, because they still use

conventional instruction manual processes to handle crimes that are doing with the use of advanced technologies.

To identify the criminal, we are proposing this project where the data of criminals is stored in centralized server and public and home CCTV cameras are supported by it. This helps police people to keep aware of the criminal activities and also helps police to catch the criminal very easily as our system provide update along with the location. This system can be used for prevention of crime, surveillance of video and other activities related to security purpose. Also it ensures the data accuracy. It reduces the damages of the machines. This system helps in minimizing the manual data entry. The proposed system provides better service with greater efficiency. Also this system is user friendly and interactive. This system provides proper security and reduces the manual work. It tries to eliminate or reduce these difficulties up to some extent. It will help the user to reduce the workload and mental conflict. Our very first aim for designing this system is to computerize the existing manual system.

This will not only speed up the process of searching criminal records, matching the criminal records, identifying criminals in a very secured way and also within a second of time but also reduce the paper work.

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III. DRAWBACKS OF EXISTING SYSTEM

The main drawbacks in the existing system are as follows.

- More man power needed.
- Lot of Time consuming.

- Requires large volume of pare work.
- Manual calculations needed.
- No direct role for the higher officials.
- Damage of machines due to lack of attention.
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IV. PROPOSED SYSTEM

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work. The existing system has several disadvantages and many more difficulties to work well. The proposed system tries to eliminate or reduce these difficulties up to some extent. The proposed system will help the user to reduce the workload and mental conflict. The proposed system helps the user to work user friendly and he can easily do his jobs without time lagging. This software provides facility for reporting online crimes, complaints, missing persons, show most wanted person and also identifies the nearest available lawyer for the process.

A. ALGORITHMS

PCA is a statistical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components.

The steps in computing the PCA are:

- Find the mean vector: ...
- Assemble the mean adjusted matrix: ...
- Compute the covariance matrix: ...
- Compute the Eigen vectors and Eigen values of the covariance matrix. ...
- Compute the basis vectors. ...
- Represent each sample i.e., image as a linear combination of basis vectors.

Algorithm 1 Principal Component Analysis

1: procedure PCA

2: Compute dot product matrix: $XTX = PN$

$$i=1(x_i - \mu)^T (x_i - \mu)$$

3: Eigen analysis: $XTX = V\Lambda V^T$

4: Compute eigenvectors: $U = XV\Lambda^{-1}$

5: Keep specific number of first components: $U_d = [u_1, u_d]$

6: Compute d features: $Y = U_d$

The steps in computing the PCA are:

1. Find the Mean Vector: $S' = (S_1 + S_2 + \dots + S_n)/N$.
2. Assemble the mean adjusted matrix: $S_{mean} = [S'_1 \dots S'_n]$.
3. Compute the covariance matrix.
4. Compute the Eigen vectors and Eigen values of the

covariance matrix.

5. Compute the basis vectors: $EV = [V_1 \dots V_{10}]$

V. EXPECTED ADVANTAGES OF EXISTING SYSTEM

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations. It has got following features

- Ensure data accuracy's.
- Proper control of the higher officials.
- Reduce the damages of the machines.
- Minimize manual data entry.
- Minimum time needed for the various processing.
- Greater efficiency.
- Better service.
- User friendliness and interactive.
- Minimum time required.

VI. CONCLUSION

This system provides proper security and reduces the manual work. It tries to eliminate or reduce these difficulties up to some extent. It will help the user to reduce the workload and mental conflict. The data of criminals is stored in centralized server to keep people aware of the criminal activities.

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