

An Integrated Criminal Detection System

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ABSTRACT

Face acknowledgment is one of the most testing points in PC vision today. It has applications going from security and observation to amusement sites. Face acknowledgment programming are valuable in banks, air terminals, and different organizations for screening clients. Right now, and speed of recognizable proof is a principle issue. The objective of this paper is to identify people around having some criminal background. The system works on capturing the images of criminals and creating the dataset which later is used to detect them in future in real time. Arrangement is proposed dependent on performed tests on different face rich databases as far as subjects, posture, feelings and light.

Keywords

Biometric, facial recognition, LBPH algorithm, Histogram

1. INTRODUCTION

Criminal record contains individual data about a specific individual alongside photo. Distinguishing proof should be possible by unique mark, eyes, DNA and so on. One of the applications is face recognizable proof. This framework is meant to distinguish the crooks in any continuous situation. Right now, are putting away the pictures of lawbreakers in our database alongside his subtleties. For example, in any public procession, we can search for criminals by scanning all the faces of people attending it by using public cameras even from a certain distance and comparing them with our criminal database. The criminal detection in a real time is mainly being performed manually in present world. Anything that is performed manually is not that efficient. In many cases, manually detection of any criminal is not even possible. For instance, if a person commits a theft in a city A and then flee from the city and moves to a city B. Then, the manual detection of that person in city B is next to impossible task. If we automate the process of criminal detection by using facial recognition technique, we can easily identify the criminal even in the above situation. With the help of automated system, the detection of criminal won't be limited to a locality, town, city, state or even a country. The databases can be shared among organisations handling the security of a particular nation and the criminals can be detected in a real time scenario by matching the images of the person from its criminal record to the image captured in real time.

This system can be used in public gathering involving massive number of people. Manually identifying a person with criminal record becomes impossible in this case. By using automated system, a possible threat can be identified easily and can be tackled accordingly. Security being one of the important issues needs more attention to it. Lot of work is being done in the field of security so as to empower the security organizations and provide them with the tools that can help them to keep the

common people out of impending troubles and dangers. The proposed system

can also be used to provide better security at household level. The system and a camera at the door can be installed at each household and whenever someone is at the door, he could be scanned for having any criminal record in the database. The images present in the database can be matched with the real time image that has been captured by the camera at the door. The system will then inform the person inside the house that whether the person on the door can impose any threat or not. Hence, keeping the members of house safe from robbery, serial killers etc. Automated systems like these will help handle security in a better and efficient way. The methods that were earlier used for detecting the criminals was mainly manual. Manual means that officials from some organizations providing security were present at the entrance of places with huge mass gathering in order to look for the person who might create some problems for the other people or can create chaos. There are several shortcomings in the conventional methods that were being used for security purposes. They are mentioned below:

- Manual security check consumes lot of time. For instance, the election rallies are attended by huge number of people. People gather to see and listen to their favourite leader. With manual security check, the common and innocent people have to wait in queues for the security check. This becomes problematic especially for the ladies and the senior citizens.
- Manual checking is not that efficient as well. It is impossible for a human to know each and every person having some kind of criminal record anywhere in the country. Therefore, the identification of a person having some kind of criminal record is not by humans is not that good option. We can consider it as compromising with the security of the people.
- The previously developed automated system did not work well with the varying illuminations. That is if the illumination was either too bright or too dull the system did not identify the person accurately which affected the performance of the system. Manual systems also get affected by varying illuminations as it is not feasible for human eye to identify people or things under too bright or too dull conditions.
- The automated system that are already existing do not work well with the camera of low resolution. The common people who cannot afford high resolution camera cannot get their hands on the software due to the high cost of camera with good quality. Hence, the accessibility of such softwares gets limited or we can say it gets constrained within less number of people.
- Some of the security systems that is used to tackle unauthorized access are based on fingerprint scanner, iris

scanner and retina scanner. The fingerprint scanner and the iris scanner can be tricked by the use of forged fingerprint or forged eye images. Hence, access can be granted to someone who can misuse the sensitive information.

Why Facial Recognition?

There are many biometric methods that are already available or which are already being used by the organizations in their security systems. Facial recognition technique stands out among all the other biometric techniques available as it works efficiently when it comes to large number of people.

The system we have developed can be used in public gatherings which large number of people attending it. Any other form of identification will take time to check each and every person present in the gathering. On the other hand facial recognition takes very less time to scan all the people that are gathered to attend an event. We just need to fix the camera at the entrance of the place of the event and then people can be scanned to check whether they have any criminal record or not without wasting the time of the innocent people who do not have any such records.

2. OBJECTIVE AND SCOPE

The existing system don't work up to mark with low quality camera. With this paper, we aim at improving the performance of the system even with low resolution camera.

The main functions of the system are as follows:

- To check for the faces in the camera installed.
- To detect the faces in the image captured in the real time.
- Recognise or identify the person in an image on the basis of data that was used to trained the system.
- If the person is recognised by the system then provide the person using the system with the name,age and the type of crime committed by the person. Else, provide the operator with the information that no criminal record was found corresponding to the person.

3. METHODOLOGY

We are using LBPH algorithm, as the intensity of illumination don't affect it. We have a dataset of images and we train our system with this dataset. The Histogram for the image in dataset is compared with the histogram of real time image. Depending on the distance between the two histograms, we can conclude whether the person is a criminal or not.

4. RESULTS & DISCUSSION

The paper works well in varying illuminations as well as with low resolution camera. This system is useful in many places which require high security like airports, banks, ATMs, any huge mass gatherings, etc.

As it was stated that our first module was to generate datasets with the help of various images and train the model according to it. We took various samples of images and saved then in the form of grayscale images. Every criminal's 100 images are taken and then the model was trained accordingly.

Many environment conditions were checked and it was seen that though the person is detected with quite good accuracy but the only drawback is about the quality of the camera used. Better the camera quality better will be the detection and hence better will be the results in recognizing the criminal.

So to get more accurate results it is advised to install a camera of high quality because it will be more precise in comprehending with the intensities of the pixels.

5. CONCLUSION

Nowadays, facial recognition algorithms are becoming more efficient and accurate with each passing day. Dependency on the surroundings and on the quality of the hardware resources like cameras and different sensors is being reduced. Our system could be improved in the future through the development of face detection algorithms and techniques which might help in less incorrectness and failure. As in future these type of systems would become the backbone of the security organizations of many countries.

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