Finding Missing Person Using Artificial Intelligence

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***Abstract*—Finding a missing person these days is an extremely difficult effort; even if social media keeps us all informed, it still necessitates a lot of paperwork, takes a lot of time, and offers little guarantees that the search will be successful. This project provides a system that streamlines facial recognition searches for the benefit of the public and the police department. In order for this system to function, the appropriate guardian of the missing individual must upload the image, which will then be stored in our database. The next step is for our system's face recognition algorithm to locate a match for that person in the database. If a match is discovered, the police and that person's guardian of that will be alerted. Face recognition is a biometric technology that creates a face print by mathematically mapping a certain person's or individual's facial traits. Using this method, a person's facial information is mathematically or in the form of graphs kept in the database that is used to identify that specific face. Our system's face recognition model will locate a match for that person in the database. The police and the child's guardian will be alerted if a match is discovered.**

***Keywords*—Face recognition, Missing person, Recognition.**

I. Introduction

This project's goal, put simply, is to assist in case investigations and the prompt identification of victims. Time is of the importance thus. In this case, we'll apply the KNN classifier technique. We considered our possibilities and settled on this algorithm because of its capacity for analysis. As a result of the decreases in expenditures for labour, capital, and time, the work at hand becomes simpler. Missing children or any other person is a serious problem that needs to be addressed by society. We made the decision to create a system that will use machine learning, deep learning, and artificial intelligence to help locate missing people by recognising their faces. Finding the missing individual is one of the numerous uses for face recognition technology, and it has several benefits overall.

To make the work of locating the missing person simpler, we intend to create an application that will be used by a few volunteers and allow us to quickly locate the missing person. This will make it simpler for police to find a certain person. In the meanwhile, automation is required to automate the process of locating a certain person by identifying a specific image and comparing that image with another image to determine whether or not both photographs share the same qualitiesBy doing this, we can determine whether the missing person in an image taken from a certain location is real or fake, and if it is, the police can take further action to locate the individual from that spot. As a way for the system to recognise that image data and find the missing individual, our programme will have the capability of saving all the data of the missing person.

II. Related Works

The project's main objective is to find missing persons. Along with Postgres Database, we are using Image Processing and Machine Learning[1]. Face recognition is a biometric-based technique that creates a face print by

mathematically mapping a certain person's or individual's facial traits[4]. Using this method, a person's facial information is mathematically or in the form of graphs kept in the database that is used to identify that specific face[8]. Our system's face recognition model will locate a match for that person in the database. If a match is discovered, the police and that person's guardian will be alerted[10].

We conducted extensive research and came to the following conclusions on the literature review. To start, S. AYYAPPAN and his engineering classmates from the IFET College of Engineering delivered a work that addresses a problem statement and purpose that are comparable to our own. They use a layered convolutional auto encoder and facial feature extraction and matching based on deep learning in their suggested solution (SCAE). A database contains the photos of the missing people. From those photographs, faces are recognised, and a convolutional neural network picks up features. To appropriately identify and label the child, a multi-class SVM classifier was trained using these newly learned features[12]. Shefali Patil and his colleagues from the SNDT Women's University in Juhu, Mumbai, have already published a study that addresses a similar problem statement and purpose.They use the KNN Algorithm, which requires 136 * 3 data points to detect faces, in their suggested system. The KNN method's accuracy, which is 71.28%, is its biggest drawback[13]. The study paper from the Late G.N. Sapkal College of Engineering, which likewise dealt with a related problem description and purpose, was given by Birari Hetal and her classmates. The challenge of finding a missing individual has been made simpler with the creation of an Android app[14,15]. They employ SWFSIFT as the method for comparing two photos in the Android application they have presented[16,17].

III. Methods and Materials

Testing using actual data, rather than on rules derived later, is the most effective way to evaluate an algorithm's predictive power. A common technique for calculating the learning scheme's error rate on the obtained data is cross-validation.A case is opened with a few images and details like name, age, complexion, etc. for every person who goes missing. The KNN Classifier will then be trained using cases that have already been registered.

The prediction algorithm will be applied to every single one of the aggregated photographs. If a match is discovered, it will be shown. There will be a display of every proven case. The ratio of the total number of errors to the total number of test cases, with each instance of the data being used as a test case only once, is projected as the error rate obtained from all the tested cases.

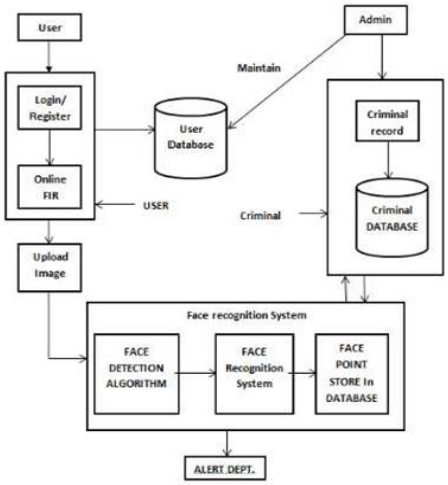

Figure 1:Architecture Diagram

Numerous datasets are taken into consideration and used in the data analysis. Beginning with a primary focus on the video used to gather locations and faces, as well as the face recognition system's knowledge of facial movements and person descriptions, this article's work begins with these topics. Initial recognition of a person's face edges is the most important step in the Robert edge detector method. Then a series of arithmetic operations between the starting frame and the closest frames follows.

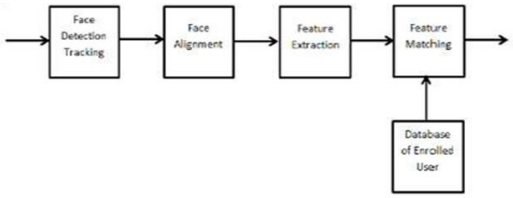

Figure 2:Process Flow

Includes a number of elements, such as a dataset with examples of people who have gone missing and have been found alive or dead, the latitude and longitude of that specific site, the age of the person, the reason they were reported missing, and potential locations (latitude and longitude) information from journalists and specialists.

The crucial thing to keep in mind is that, in some cases, the location of the found object is still unclear, even after becoming aware of reports. Given the location that was determined, the experiment only employed 29 examples in compliance with this work. The Gaussian filtering approach is then used to remove noise and provide more exact just face edges. Then, a logical operation is carried out on the two previous output frames, and a noiseless face contour

frame is created for identifying edges that correspond to face video.

At the conclusion, there are four of these corner sites. Calculate top-top-right-bottom-left-top-right to create a rectangle around the face and identify the facial shape in each frame. The scalar and vector distances between the four corner points of two subsequent frames must be measured in order to track a human face from video. A face's location and placement will change in the next frame if one of the corner points moves.

IV. Experimental Results

A. Registering New Cases

Registration of a new case is the initial stage. The GUI application is created with PyQT5, which enables you to gather all pertinent data and save it in the Postgres database.

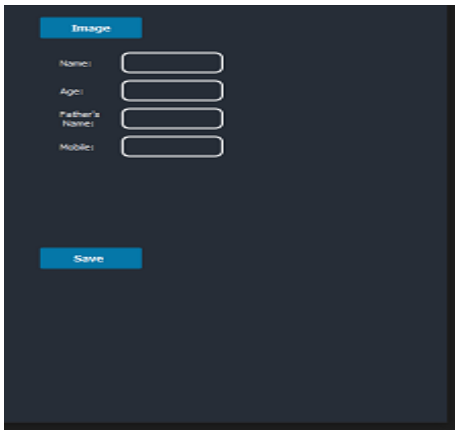

Figure 3:Register New Case

B. Waiting for Users to submit images

We have just discussed "how new instances will be recorded" up to this point; the next task is to match these registered cases, but with whom do we do this? Where our users come in is at this point. These users are regular folks like you and I who wish to alter society. The regular people will use a smartphone application to upload images of persons they believe to be missing or discovered begging while maintaining their anonymity. They value the anonymity because they are concerned about potential trouble from neighbourhood Gundas.

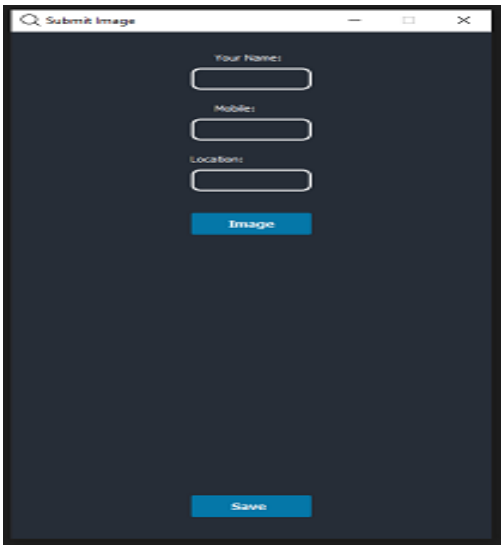

Figure 4:Image Submission

C. Matching Cases

The next step is to match the case images and user submitted images. To match KNN Algorithm is used.

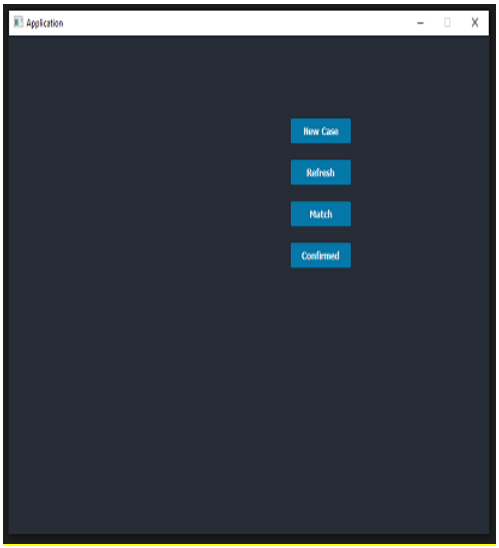

Figure 5:Matching Images

V. Conclusion

One-shot learning has significantly improved the power of image identification. When properly applied, this technology can be useful. It can also be applied to quickly locate criminals in places like hotels and hospitals. The search for the missing people is well underway. Instead of the time-consuming manual process of going through databases for each image to see if it matches, our technology quickly and accurately recognises faces. In the future, we plan to integrate this technology with neighbourhood cameras to enable real-time face recognition. The public cameras will provide frames to our system continuously, and our system will continuously watch the frames.

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