FACE DETECTION AND TRACKING TO FIND MISSING PERSON USING HAARCASCADE ALGORITHM

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Abstract: Face recognition systems have grown in importance over the last few decades. Biometric processing includes face recognition. Hundreds of people go missing every day around the world. These people are either kidnapped, sold as slaves, or forced to work as children, or forced to beg on railway platforms, in small shops, orforced into prostitution, human trafficking, or other illegal activities. Posts about missing people can be found in our daily lives on social media platforms, news channels, newspapers, and so on. This research project has been proposed to assist them in more easily locating missing people. The proposed tool, "Searchious," tendsto shorten the time required to locate the missing person and improve the process of locating the missing person. While Searchious can look for people who are missing, if a new face, which is not present in the database occurs, a new case can be filed for the same. Searchious has an Android application for the common citizens as well as a desktop software built using Python for the police stations by also including a face recognition algorithm.

Keywords: Track the missing, large crowd gatherings, face detection, recognizeFace, Haarcascade algorithm, python

I. INTRODUCTION

Systems for facial recognition have significantly improved during the past ten years. Biometrics have grown to be a crucial part of every legal action. Biometrics, particularly face traits, have emerged as the most crucial assets for finding the individual in the modern world when kidnapping and human trafficking are frequently in the news. This approach enhances and makes possible the pinpointing and gleaning of facial feature regions around the eyes, nose, and mouth. The watched subject is identified by combining person- and pose-discriminant information from various points in the video. People get suspicious of suspicious people when they see them working hard in places where they shouldn't be working, raising questions about whether they are indeed in that industry.

Ordinary people, however, are unable to become aware citizens of the country due to a lack of resources or appropriate ways to learn about the topic. Each day, tens of thousands of individuals are sacrificed as a result of the negligence of the populace. The world would have thrived if every person had been in charge of every nation and had the power or privilege to save these people. 400 people who were reported missing remain unidentified despite multiple efforts by the government, police, non-governmental organisations, and many other society institutions. And in a nation where children and youngsters make up half of the population, this is a significant issue. Ending the many situations of kidnapping, trafficking is urgently necessary.

But when these situations occur, the cops are left in charge since they lack the knowledge to handle them properly. If we, as citizens, step up and use our common sense to save these people by sharing their pictures on social media or any other platform to connect with the general public and law enforcement in our nation, we can cut down on the time it takes to find these innocent lives and ease the burden on the police force to retrace their steps.

II. Literature Survey

The Author introduced Face recognition in [1] has emerged as an appealing field in computer-based application development in recent decades. This is due to the numerous applications for which it is used. Furthermore, due to the wide variety of faces, face recognition from database images, real data, capture images, and sensor images is a difficult problem and a limitation. Face recognition is related to image processing, pattern recognition, and computer vision. Face authentication technology innovation is a continuous subject to building much stronger face recognition algorithms. Three major feature extraction strategies are discussed in this work to identify a face. As feature extraction techniques, appearance-based, model-based, and hybrid methods are all discussed. A review is also available. Image processing, pattern recognition, and computer vision are relevant subjects to
the face recognition field. The innovation of new approaches of face authentication technologies is a continuous subject to building much stronger face recognition algorithms. In this work, to identify a face.

In[2] Introducing Thumbprint identification is used in Malaysia to identify criminals. This method of identification is limited, though, because most criminals nowadays are skilled at avoiding leaving their thumbprints behind. Since the development of security technology, many public and private spaces now have cameras, particularly CCTV, placed for surveillance purposes. Suspects at the scene can be recognised using the CCTV footage. However, the legislation enforces thumbprint identification due to the restricted software designed to automatically recognise the similarity between the photo in the movie and recorded photo of criminals. This project suggested using the well-known Python programming language an automated facial recognition system for criminal databases. This technology will be able to automatically detect and recognise faces.

The Authors that are introduced in [3] Finding commonalities between data objects is one of the key purposes of content-based multimedia retrieval systems. By using distance functions to approximatively characterise the contents of the data items using flexible feature representations, such as feature signatures, multimedia retrieval systems frequently find similarities between data objects. We assess the effectiveness and usefulness of the most significant current similarity metrics that are pertinent to flexible feature signatures in this study. In order to understand the behaviour of the similarity measures, we also look at their characteristics. Our results can serve as a guide for the design of content-based retrieval apps for many fields.

Introducing. Due to the exponential development in the volume of digital data, retrieval systems in [4], which are necessary to properly and efficiently filter the data and deliver appropriate results, have been confronted with significant challenges. Filtering is a technique that automatically selects features or data instances in order to represent the data, cut storage costs, eliminate redundancy, reduce computation costs, improve model learning performance, and dynamically offer the media. However, utilising some loss functions or similarity metrics, ranking is an essential step in order to obtain as many pertinent results as is practical. This work offers a special retrieval system that consists of weighted subspace-based filtering and ranking components in order to get around these challenges. investigating the relationships between feature categories and concepts using MCA.

In[5] Identification of criminal in Malaysia is done through thumbprint identification. However, this type of identification is constrained as most of criminals nowadays getting cleverer not to leave their thumbprint on the scene. With the advent of security technology, cameras especially CCTV have been installed in many public and private areas to provide surveillance activities. The footage of the CCTV can be used to identify suspects on scene. However, because of limited software developed to automatically detect the similarity between photo in the footage and recorded photo of criminals, the law enforce thumbprint identification. In this project, an automated facial recognition system for criminal database was proposed using known python programming language. This system will be able to detect face and recognize face automatically. This will help the law enforcements to detect or recognize suspect of the case if no thumbprint present on the scene.

The Dlib library is utilised in our face recognition to build our face embedding, which is used for the actual recognition process, in [6]. OpenCV is used for image and video analysis such as facial detection, photo, and video. This uses facial detection to cut down on waste from regular class attendance. A system with powerful, integrated computers that operate quickly and efficiently and have good RAM can be upgraded.

For face detection in [7], the HOG (Histogram Oriented Gradient) technique is employed. The HOG face detector uses a rotating detection window that spins around the image and is used for object detection. It is an unfamiliar method of recognising faces. The HOG-SVM approach takes more time than the Maan cascade algorithm, but it produces results that are more accurate and depend on the characteristics of the objects in the images. Even if contemporary machine recognition systems have developed to a certain level of maturity, the restrictions placed on them by numerous practical applications limit their potential. For instance, it is still difficult to recognise faces in photographs of people taken outside with changing lighting or poses.

Recent years have seen a significant increase in the use of face recognition as one of the most successful applications of image analysis and understanding [8]. At least two variables, including the wide range of business and law enforcement applications as well as the development of practical technology after 30 years of research, can be credited for this trend. Even though modern machine recognition systems have reached a certain level of maturity, the limitations imposed by many real-world uses constrain their potential. For instance, it can still be challenging to identify faces in pictures of people taken outside in dynamic lighting or positions. In other words, current systems continue to be far from what people perceive.

III. Methodology

3.1 Face Tracking for missing person
The operational flow chart diagram is shown in given Fig 3.1 Flow chart for face tracking for missing person. First, start the program and import the modules that are required to run the program. Open the camera to start the application, if the camera is open it will continue to next step. Read the image from the camera and convert that image into gray image by using haar cascade classifier. After that facial feature can be scanned to detect the face. If the face is detected, it should return the detected face otherwise repeating that step to complete the process to be executed.

3.2 Algorithm for finding missing person
Step 1: Start.
Step 2: Open camera.
Step 3: Read frame from image.
Step 4: Convert frame/image into grey image by using haar cascade algorithm.
Step 5: Facial features are recognised to detect face.
Step 6: Then click on the trained model.
Step 7: Draw a Rectangular around the face.
Step 8: Returning the Detecting face.
Step 9: Display person found.
Step 10: End
IV. Experimental Results And Analysis

4.1 Finding the missing person

In this project, we are using python technology to develop this project. The code is written and designed in python language using OpenCV and NumPy modules. In this project firstly we import the libraries which are to be used for further processing the input and the output. The libraries which are used in this project which need to be imported are OpenCV, media pipe, math, types, pycaw, and NumPy. We get video input from our primary camera. Now, here media pipe is used to detect the video as input from our camera. NumPy package is a fundamental package for computing in Python language. It is consisting of several things- powerful N-dimensional array

object broadcasting
tools to integrate C

A. OPEN CV: OpenCV is a library of python that tackles PC vision issues. It is used to detect the face which is done using machine learning. It is an especially important library and is used in several projects to detect the face and recognize several frames also it supports several programming languages. It also performs object detection and motion detection. It also supports several types of operating systems and can be used to detect the face of animals also. OpenCV provides a real-time optimized Computer Vision library, tools, and hardware and the same will be used in our project.

B. NUMPY: NumPy is the module of Python. The NumPy word shows Numerical Python, and it is utilized. This is the module that is written in c language and is said to be an expansion module. NumPy guarantees remarkable execution speed. NumPy is mostly used for performing calculations, and tasks using certain functions it provides like multiply, divide, power, etc.

C. IMAGE FILTERING –HISTOGRAM: Histogram is a type of graph that represents the movement of the pixel power in the portrayal. In this, we filter the images using a histogram and convert them into RGB to process the image in our system. Consequently, the power of a pixel is in the range [0,255].

D. MEDIA PIPE: Media Pipe is a module for processing video, audio, and several types of related data across platforms like Android, iOS, web, edge device, and several applied ML pipelines. Several types of functions are performed with the help of this module, we have used this module in our project to detect the input from them.

- Face Detection.
- Object Detection and Tracking.

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4.3 Police Station Table

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4.4 Missing Child Identification Details Table
4.5 Home Page

4.6 About Page
4.7 Admin Login Page

![Admin Login Page](image)

4.8 Admin Home Page

![Admin Home Page](image)
4.9 Add Police Station Details

![Add Police Station Details](image1)

4.10 Update or Delete Police Station Details Page

![Police Station Info](image2)

4.11 Add and Train the Missing child data page

4.1 Add and Train the Missing child data page

V. Conclusions

This project is presenting an interface that allows the user to perform hand gestures for convenient and easier way to control the software. A gesture-based volume controller does not require some specific type of markers, and these can be operated in our real life on simple Personal Computers with a very low-cost camera as this not requires very high-definition cameras to detect or record the hand gestures. Specifically, the system tracks the tip positions of the counters and index finger of each hand. The main motive of this type of system is to automate the things in our system to make the things easier to control. So, to make it reliable we have used this system to make the system easier to control with the help of these applications. The proposed method
here successfully developed a hand gesture volume control, which can manipulate (max to min) with gesture is performed by the person and accordingly perform the functionality associate with its accuracy.

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