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MULTIPLE FACE DETECTION AND RECOGNITION USING MACHINE LEARNING

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Abstract — In this background, we have used modes based on machine learning that allows a machine to develop through a learning process, and to accomplish tasks that are difficult or impossible to fill by more conventional algorithmic means. In this process, a face detection algorithm is used for extracting faces from photo frames (training photos) and to create a face database. In the next step, filtering and preprocessing are applied to face images acquired in the previous step. Finally, a collection of machine learning algorithms are trained using as input data the faces obtained in the previous step. Haar cascade classifier is used both for selection and for learning, which is a strong classifier with a cascade classification. Moreover, the classifiers are used for classifying faces obtained from video frames (test videos). The obtained result shows the suitability of this approach for analyzing large collections of videos where previous face labels are not available.

Keywords— Real time face detection,Open CV, Recognition,Automated Students Attendance.

I. INTRODUCTION

With quickly increasing computing capability and therefore the availability of recent detection instrumentality and technologies, of investigation and illustration, computers are getting a lot of and a lot of intelligence. Several analyses come, and business products have incontestable the flexibility of a pc to move with humans in a very natural approach by gazing folks through cameras, listening to voters through microphones, etc. one in each of the elemental techniques that permit such interaction is face detection. Face detection, thus, establishes the locations and sizes of human faces gift in arbitrary (digital) pictures. It detects facial devices and ignores something else, like buildings, trees, bodies, and something apart from the face. Though this seems to be AN insignificant task for individuals, it's a particularly tough task for computers and has been one of every of the foremost studied analysis topics in recent decades. The problem associated with face detection is attributed to numerous variations in scale, location, orientation, pose, facial expression, occlusions, and lighting conditions.

Face recognition is the science of setup the name of an individual based on the physical, chemical, or behavioral attributes of the person. The importance of biometrics in modern society has been reinforced by the need for large-scale identity management systems whose utility depends on the accurate establishment of individual identity in the context of several different applications.

Common face detection and recognition systems contain a single route image acquisition module with one camera. A face recognition system uses information of pictures and compares another image against those to seek out a match if one exists. Machine Learning (ML) could be a branch of applied science that's involved with coming up with systems that will learn from the provided input. Sometimes the system's area unit is designed to use this learned data to higher method similar input within the future. A milliliter algorithmic program is one that will learn from expertise (observed examples) with relation to some category of tasks and perform live. A classification that is additionally stated as pattern recognition, is a

crucial task in milliliter, by that machines "learn" to mechanically acknowledge complicated patterns, completely differentiate to tell apart} between exemplars supported their different patterns, and to form intelligent choices.

II. LITERATURE SURVEY

Attendance system using Machine learning technique:

In this paper, the concept of technology specifically Student Attendance has been enforced with a machine learning approach. This technique automatically detects the student's records like attendance. so the attendance of the scholar will be created by recognizing the face. On recognizing, the attendance details about the scholar are obtained.

Attendance system using face detection:

Automated Attendance System using Face Detection offers that the system is based on face detection and recognition algorithms, which is used to automatically detect the student's face. The system can mark the attendance by recognizing he/she. When it is compared to a traditional attendance marking this system saves some time and also helps to monitor the students.

In this project, the system installed the camera with non-intrusive, which can snap pictures within the classroom and compared the educe face from the image of the camera capturing with faces within the system. This technique also used machine learning algorithms that square measure typically employed in computer vision. we work on a Haar Cascade classifier that is utilized to extract the features of faces. This is mainly an object detection algorithm used to identify faces in a picture. The model created from the training will be available at the OpenCV. These models embrace eyes detection, face detection, etc…

APPLICATION AREAS

This technology is inevitable in several applications in image classification and data retrieval, where it is often used to search pictures containing individuals, automatically associate a face with a name in very web content, determine the most individuals in a very video by the clump. It may be wont to determine a user's attention, for instance facing a screen within the public house, which may additionally, once the face is detected, verify the sex and age of the person to produce targeted advertising. this will even be used to see if a person is present in front of a tv, and if not, place the unit in standby mode or scale back to save to avoid wasting energy. additionally, face detection is the commencement towards additional advanced applications that need facial localization, such as facial recognition, facial expression recognition, the analysis of the age or sex of a person, face tracking, or the estimation of the direction of view and visual attention. Face recognition systems have received substantial attention from researchers in statistics, pattern recognition, and pc vision communities. Their area unit pressing practical for face recognition in many sensible applications, practical security observation, closed-circuit television, and statistics identified system.

* OpenCV has the advantage of being a multiplatform framework;

* It supports each Window and UNIX, and additional recently, Mac OS X..

* OpenCV has several capabilities it will appear at first.

* A smart understanding of however these strategies work is the key to obtaining good results once using OpenCV.

* A smart understanding of however these strategies work is that the key to obtaining good results when using OpenCV.

* Fortunately, only ought to be proverbial beforehand to urge to started.

PROBLEM DEFINITION

Over the past decade, face detection and recognition have transcended from esoteric to standard areas of analysis in pc vision and one in every of the better and in applications of image analysis and algorithmic program based mostly understanding. as a result of the intrinsic nature

of the matter, computer vision isn't only a computing space of analysis, but additionally the item of neuroscientific and psychological studies additionally, in the main as a result of the final opinion that advances in pc image process and understanding analysis can offer insights into however our brain work and the other way around.

A general statement of the face recognition downside (in pc vision) is often developed as follows: given still or video pictures of a scene, establish or verify one or a lot of persons within the scene using keep info of faces.

EXISTING SYSTEM

❖ Many face detection methods have appeared in the last two decades, while the classical methods have been very successful.

❖ Eigenfaces method which is used by several authors.

❖ Neural networks and artificial neural networks are also extensively used.

❖ Improvements in Viola-Jones have also been made.

❖ For false positives filtering, Alpika et.al gives an insight about various color spaces that can be used for filtering the wrong face detections and specify the skin color ranges as well.

❖ For detection of the faces through eyes, Wong et.al provides data to judge the face length and breadth by varied parameters and relationship between totally different parameters of the face.

Disadvantages

❖ The major disadvantage is that they use only 2D facial photos.

PROPOSED SYSTEM

❖ Face recognition and attendance system are proposed in this work.

❖ The proposed system demonstrates how easy is to convert color images to grayscale and then apply a classification algorithm.

❖ In the proposed system LBP (Local Binary Pattern) Histogram Face recognition is used and HaarCascade Classifier is used for face recognition.

Advantages

❖ The use of integral images can calculate the characteristics more quickly.

❖ The selection by boosting characteristics.

❖ The cascade combination of boosted classifiers brings a net gain of execution time.

❖ They are the most admired algorithms for face detection in real-time.

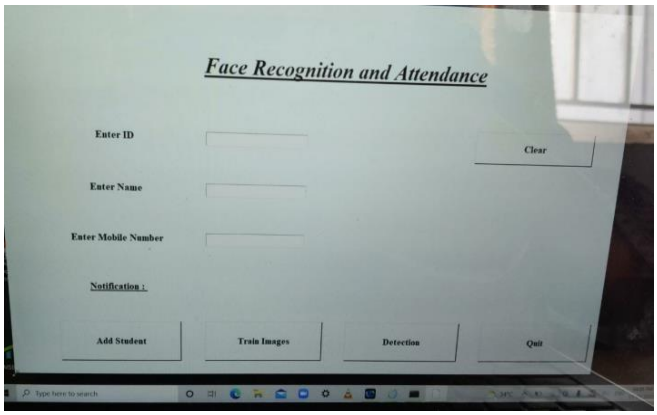
❖ The main advantage of this approach is the uncompetitive detection rate while allowing

a relatively high detection accuracy, comparable to that of slower algorithms.

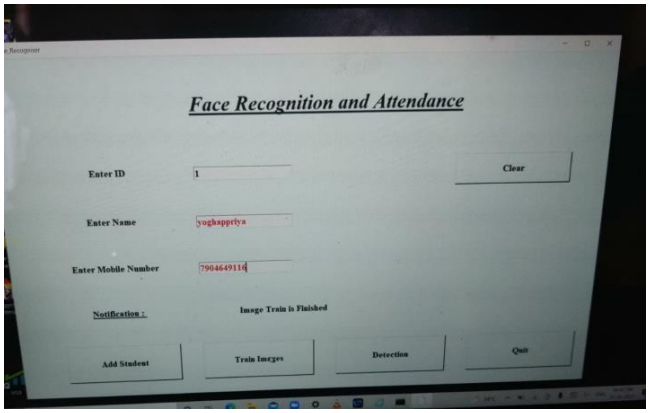
❖ High accuracy. Viola-Jones gives an accurate face detection

RESULT ANALYSIS

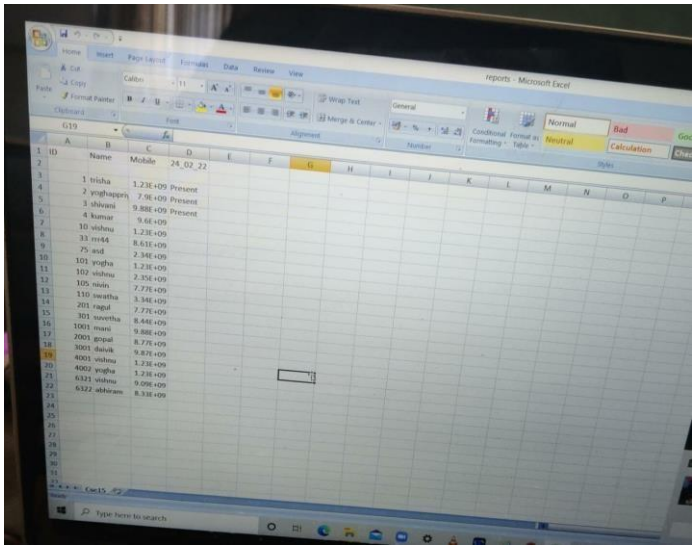
Login Window:



Student Details:



IV. CONCLUSION AND FUTURE ENHANCEMENT



This paper aims to build an attendance system using face detection techniques. The faces will detect from multiple angles. It is to capture the image of the students, convert it into frames, relate it with the information to ensure their presence or an absence, a mark attending to the particular student to keep up the record. It detects the face of the person and detects them and displays the name of the person. A functioning web camera should always be there for the detection and recognition procedure. In addition, it additionally displays the names of the multiple persons that are detected. Multiple persons are recognized and also the number of persons within the frame is additionally displayed that is showed within the expected results.

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