

AUTOMATIC ATTENDANCE USING FACE RECOGNITION

Ms. J.Sangeetha M.E
Assistant Professor
S.A.Engineering College

V.Sanjana
Final Year
S.A.Engineering college

R.Pavithra
Final Year
S.A.Engineering college

Abstract-Automatic updating of details of a person without the need of the manual updating it already has records of person so maintenance made easier. It helps in featured and brightness-based approach for detecting feature of nose, eyes, mouth, edges and all parts of image. It overcomes the biometric old method's iris, fingerprint detection. The purposed system does the accurate face recognition with the help of camera with the convolution neural network and Haar Cascade Classifier algorithm. It also goes matching with suitable datasets and updates whether the person is present or absent, and help in retrieving the record using SQL or Excel.

Keywords: Convolution Neural Network, Haar Cascade classifier, image processing, automatic attendance.

I. INTRODUCTION

Face recognition is the specific method of biometric identification which able to differentiate one people from others with the help of unique features such as eyes, nose, mouth edges, skin color. It compares with the input image given. It overcomes the older biometric applications such as fingerprints, RFID, Iris recognition. In our proposed system classroom, it provides automatic attendance entry it only needs the camera combined web application for easy updation. It can be applied in areas such as multi-national companies for entry, surveillance in public places for providing public safety, in hospital for patient's verification. The aim of our project is to provide an attendance system which enable ease to use for teachers and maintaining students records.

II. EXISTING SYSTEM

The RFID (Radio Frequency identification) algorithm In this RFID based system have been proposed where the students carry their ID card that card has the radio frequency waves with the help of that waves the reader will record the attendance when the card is placed on the reader .By this system any authorized person may use and

enter the classroom or organization. Next using Viola-jones algorithm and PCA algorithm they deployed using raspberry pi and mat lab which help in detecting faces and storing it in database but the accuracy is less and suitable only for one person at a time. The GPS sensor for tracking student's location also not suitable due to lagging in updation of students in database.

III. LITERATURE SURVEY

The paper focuses on student who needs to be ahead of a camera at a minimum distance. The system can find the image of the student consistent with the Eigan face and Open CV algorithmic program converts it into a grey scale and stores it in a very file [1].

The pictures in this suggested method of these videos detect the face and split frames. This functionality is included in the library OpenCV. The facial detector based on DNN used ResNet as its basic network, as the single shot detector (SSD). PCA and LDA for the extraction of functions are used in this method. The collection is subdivided to pictures from trains and tests PCA is a form of dimensional decrease. In LDA human faces in terms of data matrix(X) are represented.[2].

LBP has the picture of face as the CNN input, the CNN network with LBP features is trained and then uses the facial recognition network to eliminate drawbacks from the low stability in CNN gray scale, and more effective identification of the trained CNN network. The centered pixel gray value is the limit, evaluate the value of 8 pixels around it, if the value of the neighboring pixels is greater than the value of the centered pixel, the pixel location is classified as 1, otherwise it is classified as 0. [3].

This paper proposed a web-based student attendance system that uses face recognition. In the proposed system, Convolutional Neural Network (CNN) is used to detect faces in images, deep metric learning is used to produce facial embedding, and K-NN is used to classify student's faces. Thus, the computer can recognize faces. The

first step is to use an area of the image as an input for the filter that made up of the neural network. The second step is to omit false detection in the first step in order to get a better resolution.[4].

This paper consists results of the smart event face data base showed that K-Nearest Neighbors and support vector machine had the best results with more than 0.96 exactness for face recognition and less than 1.5 seconds respectively of performance time. This proposed method employs an image acquisition method to face recognition.[5].

The system is designed to automatically mark attendance and to stop wasting electricity in classrooms without people. Haar cascades are trained in many positive and negative images and therefore are pretty quick and efficient for facing detection. The Siamese neural network Facenet trains millions of data and learns directly to map from the images of the face to the Euclidean space. The similarity of the faces in this space gap between two datasets is differentiated.[6].

For faces we will refer to the 68 references above on your name. The student is registered in the student's database. Utilizing the Viola Jones algorithms for facial bounding and constrained Local Model-based facial tracking, we will make use of the Principle Component Analysis (PCA) to carry out facial recognition in this model.[7].

Together with cloud computing, the proposed system has face identification. To do this, it uses FACECUBE together with used web applications. The face cube provides full-service interface for recognition, detection, and enrollment. It offers online forum for the role of students, teachers, administrators. The system uses IP cameras mounted in front of a classroom regardless of their location to continuously capture the entire class's image at set intervals throughout the lecture period and to send images to the cloud server for processing over the internet. The server processes the images by recognizing / detecting the embedded human faces, extracting the faces and matching them with the encoded face.[8].

IV. PROPOSED SYSTEM

The proposed attendance system consists mainly of five phases: acquisition of images, identification of face, extraction of features, recognition of face, process of attendance.

The system function is represented as follows:

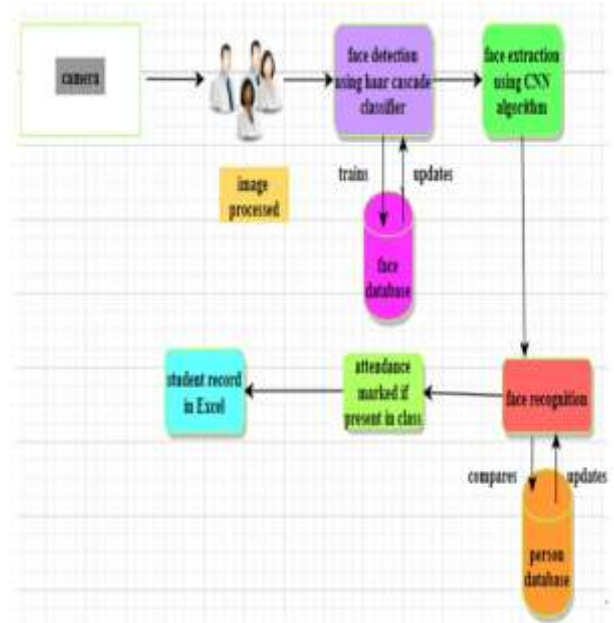


Fig 1. Architecture Diagram

a) Image Acquisition:

The camera is inside a classroom in which it processes the video and images of a person is detected and send next step process such that face detection.

b) Face identification:

In this step the person face alone is detected. It uses a suitable haar cascade classifier which marks with a box and rest of the image is cropped out.

c) Feature Extraction

It plays an important role for differentiating one person from others by extracting the unique features such as eyes, nose, skin color and face structure, mouth edges.

d) Face Recognition

To implement this, we have used a suitable Convolution Neural Network (CNN) algorithm in which it compares with different stored images and retrieve the details of persons who are all present in class.

e) Attendance system

The attendance is marked for a student who are all present in class and retrieved using excel. Therefore, a suitable database is maintained.

V. PROPOSED ALGORITHM

1) CONVOLUTION NEURAL NETWORK (CNN)

The neural network is a deep learning algorithm used to classify objects, to classify images and recognize the face. It consists of the pattern of neural integration in the human brain and the organization of the visual cortex. The visual stimulation of neurons in one part of the region is called a receptive field.

The CNN performs over different parameters and trained with datasets in which value get reduced at the end without losing features to provide a suitable understanding of the image. The Multilayer Perception is a part of the feed forward artificial neural network which implements a suitable supervised learning technique called back propagation method.

The pooling layer also reduces the range of size and is more effective in obtaining the characteristics, such rotational and positional invariant of the trained mode. It consists of the two types: **max pooling** (maximum value of the part of the image), **average pooling** (mean value of the part of the image). The pooling layer is helpful in suppressing the noise.

2) HAAR CASCADE CLASSIFIER

It is also one of the images classifying features used in **object detection**. It works on the RGB pixel value. It consists of rectangular specific region. It only includes the unique features such that face cheek, eyes placed with rectangle box. In this threshold separates from the unknown region. It works with a lot of **positive** and **negative** images. It chooses the feature with minimum error rate. The cascade classifier consists of the collection of stages with commonly like a weak learner. Each stage using algorithm known as boosting. **Adaboost** is one of the machine learning method it selects only the feature that improve predictive power of the model; therefore, it leaves the irrelevant regions.

VI. METHODOLOGY

1) OPENCV

It is abbreviated as open source computer vision and machine learning software library. It consists of the machine learning algorithms which is to detect and recognize faces, identify objects, tracking moving objects and high-resolution image processed from the video. It has c++, python, java, MATLAB as programming interfaces and supports operating systems such as windows, Linux, Mac OS.

2) Keras Library

It is an open source neural network library for deep learning. It has four guiding principles modularity, minimalism, extensibility, python, user-friendly. It runs smoothly on CPU and GPU. It primarily works on the back-end engine. It primarily supporter is google and backend is TensorFlow. The keras consist of sequential and model class used in functional API.

VII. CONCLUSION

The proposed system uses CNN and haarcascade classifier to provide results with 90 percent accuracy. Thus, the purpose of this paper is to capture the students ' video, convert it into frames, relate it to the database to ensure their presence or absence, and mark the attendance of the student to keep the record. The Automated Classroom Attendance Program essentially helps to increase the accuracy and speed to achieve the high-precision real-time attendance to satisfy the need for automated classroom analysis.

VIII. REFERENCES

- 1.Face detection and recognition for automatic attendance system, Amulya.S, Nisarga, Pilli Siva Gowtham,2018.
- 2.Face Recognition based attendance system using machine learning algorithms, Radhika C.Damale, IEEE,2018.
3. Deep convolutional neural network applies to face recognition in small and medium databases, Minjun wang, Zhihui Wag, Jinlin Li,2017.
- 4.Automatic attendance system for university student using face recognition based on deep learning, Tata Sutabri,pamungkur, Ade Kurniawan and Raymond Erz Saragih,2019.
- 5.An Image acquisition method for face recognition and implementation of an automatic attendance system for events, Luis Fung-Lung, Mikael Nycander,IEEE,2019.

6. Surveillance camera using face recognition for automatic attendance feeder and energy conservation in classroom, Dr.Jayakumar Kaliappan, Jain Shreyansh, Mohan Sai Singamsetti, IEEE,2019.

7. Real-Time smart attendance system using face recognition technique, Shreyak Sawhney, Karan Kacker, Samyak Jain,2018.

8. Automated student attendance management system using face recognition, Ofualagba Godswill, Omijie Osas, Orobor Anderson, IEEE,2019.