

Smart Attendance Using Face Recognition

Dr.M. Sambath¹, P.Naveen Kumar², U. Kartheek³, G.Sai Sumana⁴, Dr. Linda Joseph⁵, Dr.K.Padmaveni⁶

¹Assistant Professor, Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai, Tamil Nadu, India. E-mail: msambath@hindustanuniv.ac.in

²UG Scholar, Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai, Tamil Nadu, India. E-mail: pnaveenkumar863@gmail.com

³UG Scholar, Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai, Tamil Nadu, India. E-mail: ukartheek9999@gmail.com

⁴UG Scholar, Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai, Tamil Nadu, India. E-mail: saisumana04@gmail.com

⁵Assistant Professor, Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai, Tamil Nadu, India. E-mail: lindaj@hindustanuniv.ac.in

⁶Assistant Professor, Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai, Tamil Nadu, India. E-mail: kpadmaveni@hindustanuniv.ac.in

ABSTRACT

Digital images and videos are playing increasingly important role in the current information-era, thanks to advancements in computer and telecommunication technologies. In surveillance system image and video database, the human face is a valuable biometric object. In complex settings such as image detecting and locating human faces and facial features in a picture or image series is crucial. Conditions, illuminations, subjects positions, and posture can all change dramatically from frame to frame. An automated system for human face recognition in the context for a college to monitor employee and student attendance. As a result, smart attendance with Real-Time face recognition is a practical option for dealing with workers on a daily basis. Using the data base trained multiple texture dependent features, multiple userfaces are identified and recognised.

KEYWORDS

Face Recognition, Time-consuming Process, Quick Response (QR).

Introduction

Taking student's attendance during each class by university instructors is a time-consuming process, particularly when classes are large. Face recognition is a technique for recognising or confirming an individual's in pictures, videos, or in real time. Employee locations and time of clocking in/out will be tracked by the attendance system and the results are written down. The data will then be processed by the attendance system, which will generate timesheet reports. If attendance is kept by hand, it places a significant burden on students. A smart and automated attendance management system is being developed to address this problem. Face detection is one of the tools for recognizing people and tracking their attendance. The dilemma of proxies and students being labelled present even though they are not physically present can be easily fixed by using this scheme. This way, the device would save not only time, but also the commitment that the teachers were expected to bring in during and lesson.

Literature Review

There has been a lot of studies done so far on the different approaches for implementing an efficient attendance control scheme. The types of input methods used, the types of data processing used, and the controllers used to execute the systems all differ. Face detection is used in a smart attendance system.

Ghalib Al-Muhaidriet al, in the year december 2020 proposed a model for face recognition having limitations of the facial recognition process is a mild and time-consuming process.

MD shajidakbaret al, in the year 2018 proposed a model using RFIDhas limitations of similarities with fingerprint approach and is time consuming process for taking attendance.

Hao yang and xiafenghanet al, in the year July 10, 2020 has proposed a model for taking attendance using face recognition, Neural network and geometric feature method has limitations such as slow image recognition and a low accuracy score.

Asrinuhi, agonmemeti et al, in the year 2020 proposed a model forsmart attendance system with the aim to encourage the potential use of quick response(QR) code has limitations such asIf the attendance system requires some action from the instructor then the class time will be disturbed. Each time the instructor allows some late students into the class.

Harish M and Chetan P et Al in the year 2019proposed a model for building a smart attendance system focused on machine learninghas the limitations such as the problem is that when capturing image some of the faces might get obstructed by another student's face.

Methodology

1. DataCreation: We create dataset using name and roll no of a person the dataset is created, then we create a folder named with the name of a person in the dataset folder. By using the CSV file we can write the names and roll no's of student into the file. Then the camera starts capturing the images of student and recording of video also started store in the dataset. We can capture as many pictures as possible, here we capture 100 images. We created a dataset, by using this method we can record all the details of students in a class.
2. Pre-processing: From the recorded video the images are extracted and face is detected from the image using caffe model, the images are resized to 300x300 size.
3. Training: By using Support vector machine algorithm the dataset is trained. It loads the pre-processing images to train the data, by fitting the data to support vector machine model it can classify the persons.

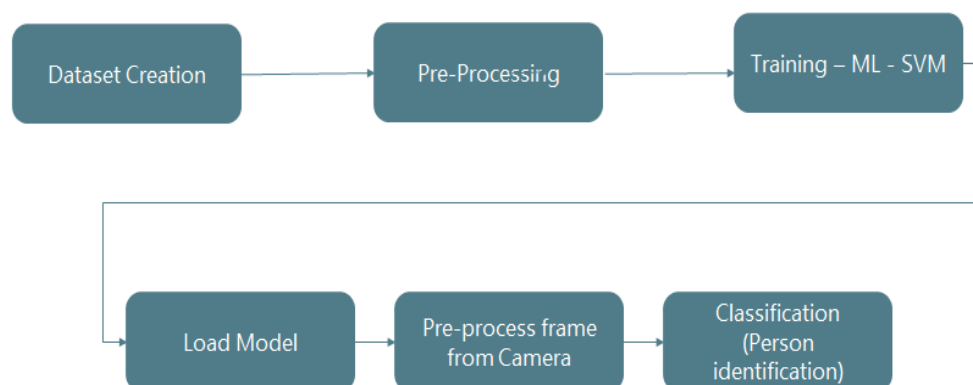


Fig. 1.Block Diagram for Proposed System

4. Recognizing a person: By loading the trained dataset model,it read the video from the camera capturing images it extract the image and compare it with the images available in the database using the trained model. It will display the name of the person.
5. Attendance marking: Once the name of the person is identified and displayed, then the name of person is recorded and displayed in excel sheet to mark the attendance.

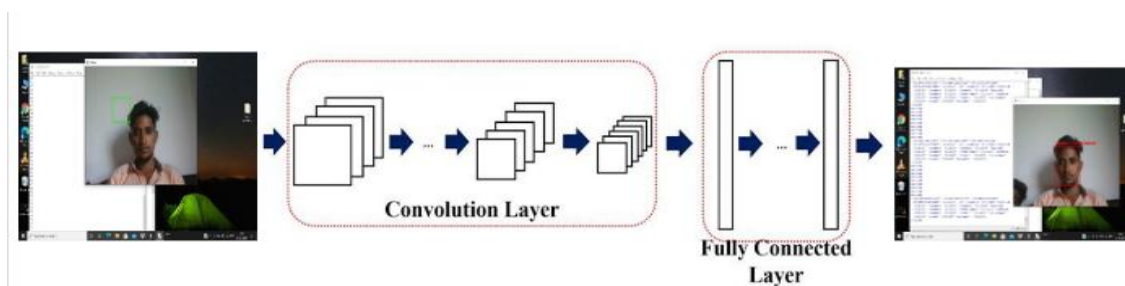


Fig. 2. CNN architecture

Result

Thus the capturing of images from the recorded video and marking the attendance of a person is completed. For better understanding sample screenshots are attached below.

i. Creating a dataset

Start recording the video of the person and store 100 images for each student.

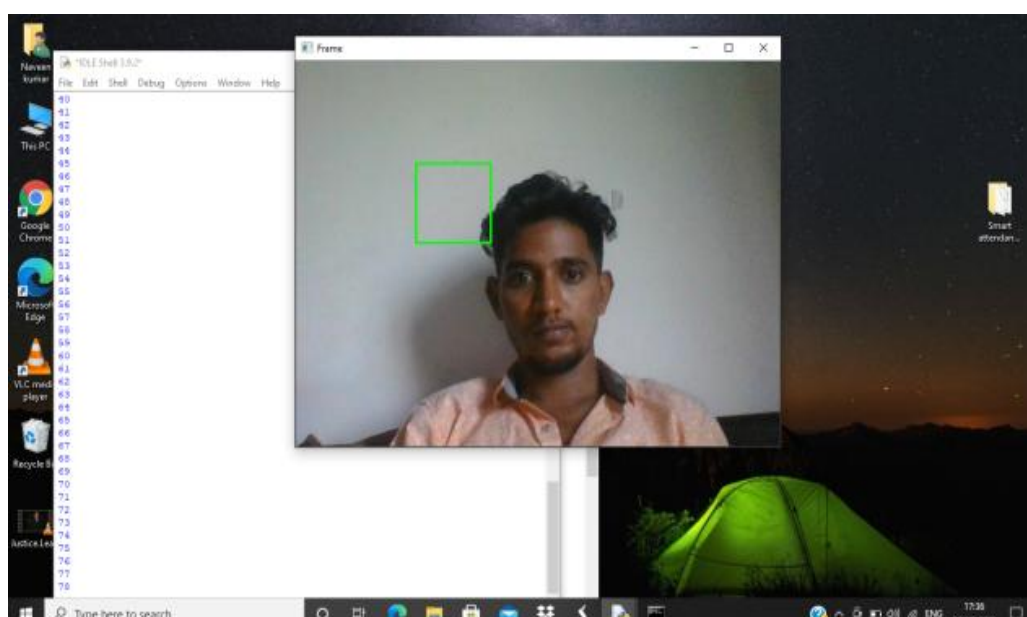


Fig. 3. Dataset creation

ii. Recognizing face

Extract the face image from the camera Compare the image extracted with the images available in the database using the trained model.

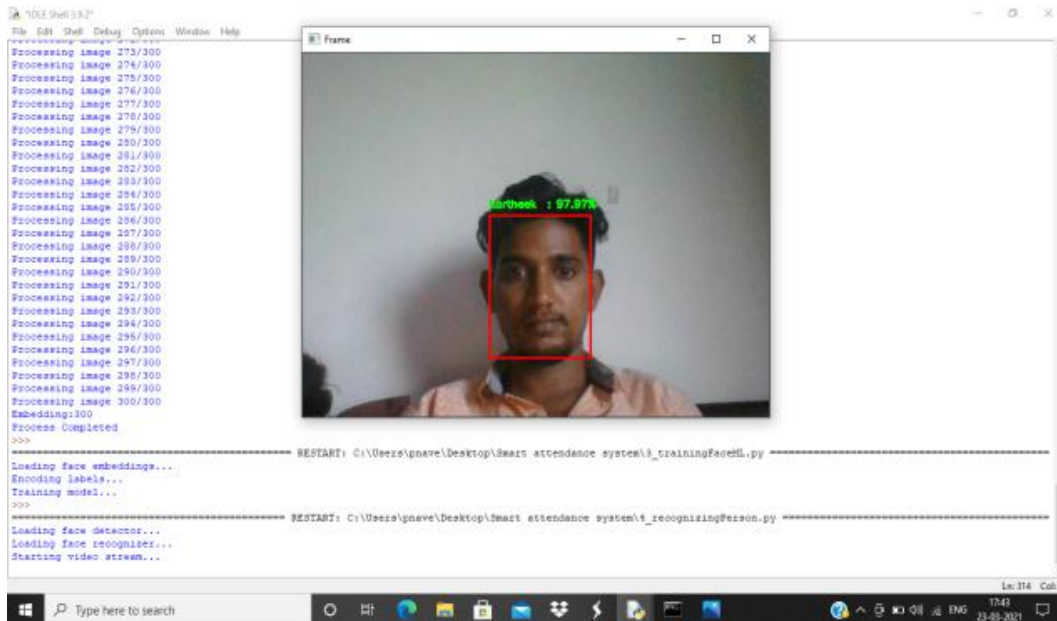


Fig. 4. Face Recognition

iii. After recognizing face from CSV dataset

Compare the image extracted with the images available in the database using the trained model.

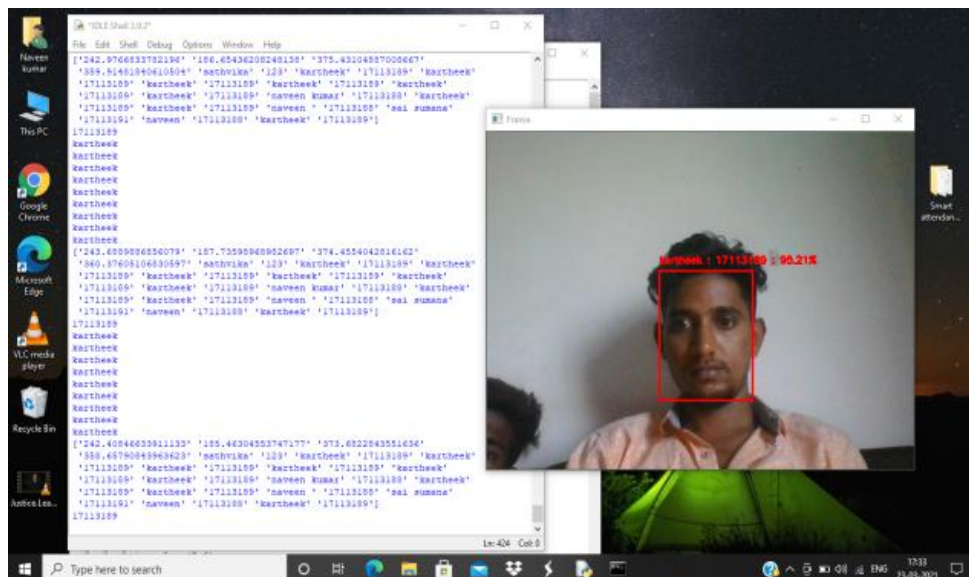


Fig. 5. Face Recognition using CSV file

iv. Automatic data entry in excel sheet

Once the person is identified its name is recorded in the excel sheet to mark attendance



The smart attendance using face recognition model is used to capture the attendance of students, it will be helpful to faculty to monitor the attendance of students and also their in time and out time is recorded. It will be a time consuming process for the faculty if they do it manually. This system

- [1] Harish, M., Chethan, P., Azeem, S. A., & Veena, M. G. (2019, October). A Smart Attendance System based on Machine learning. *In 2019 Global Conference for Advancement in Technology (GCAT)* (pp. 1-7). IEEE.
- [2] Sarker, D. K., Hossain, N. I., & Jamil, I. A. (2016, December). Design and implementation of smart attendance management system using multiple step authentication. *In 2016 International Workshop on Computational Intelligence (IWCI)* (pp. 91-95). IEEE.
- [3] Patel, A., Joseph, A., Survase, S., & Nair, R. (2019, April). Smart Student Attendance System Using QR Code. *In 2nd International Conference on Advances in Science & Technology (ICAST)*.
- [4] Wagh, P., Thakare, R., Chaudhari, J., & Patil, S. (2015, October). Attendance system based on face recognition using eigen face and PCA algorithms. *In 2015 International Conference on Green Computing and Internet of Things (ICGCIoT)* (pp. 303-308). IEEE.
- [5] Akbar, M. S., Sarker, P., Mansoor, A. T., Al Ashray, A. M., & Uddin, J. (2018, August). Face recognition and RFID verified attendance system. *In 2018 International Conference on Computing, Electronics & Communications Engineering (iCCECE)* (pp. 168-172). IEEE.