



15EC496L – Major Project

STUDENT ATTENDANCE MONITORING USING DEEP LEARNING IN A CLASSROOM

10th Mar 2021

Batch number:12

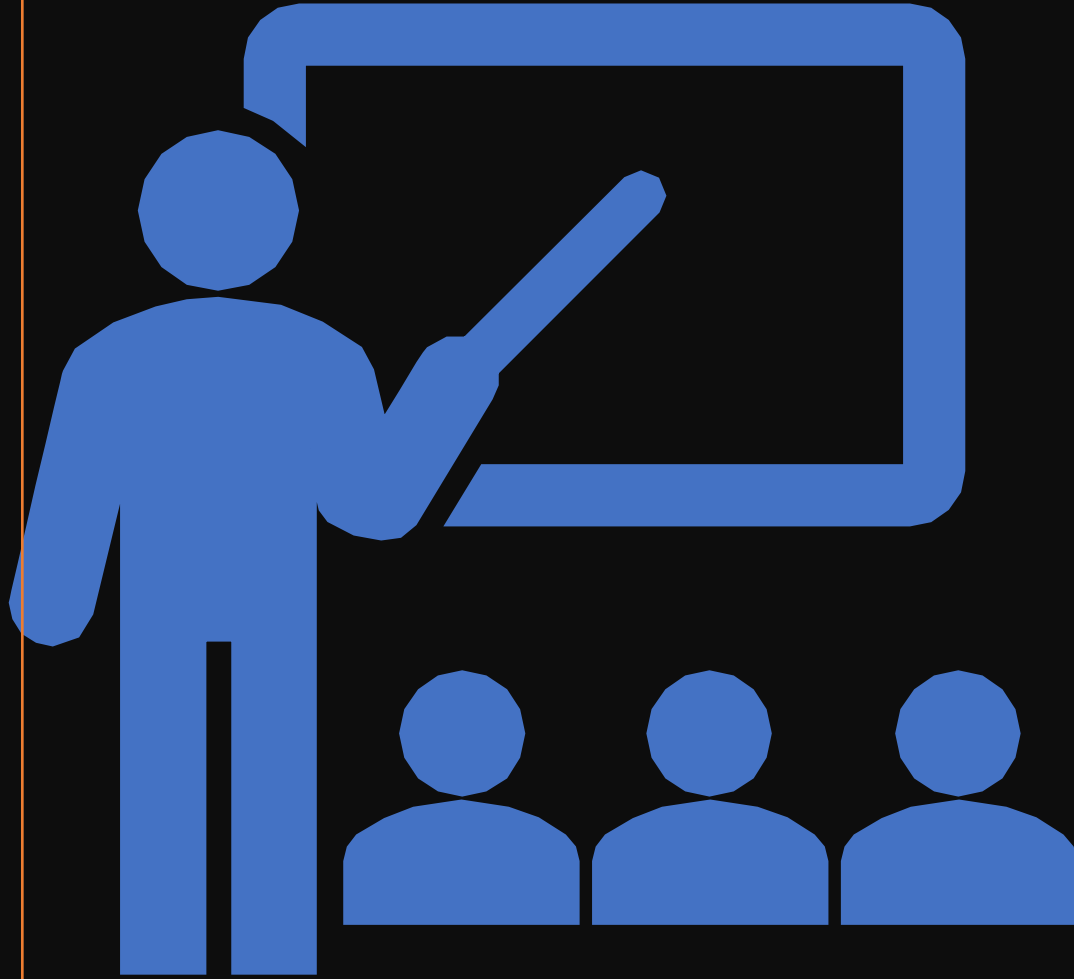
Team members

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Existing problem

- Student's attendance in the physical classroom is a very an important task.
- The existing method of taking attendance consumes a finite of amount of time which can be used for other productive action.
- We are focused on addressing this problem on schools and universities only. But also can be extended for organization.

Objective

- Automatically generates an attendance report for the students present in the classroom with minimal interaction of the teacher as well as student.

An abstract graphic on the left side of the slide. It features a dark blue background. Overlaid on this is a profile of a human face, rendered in a light blue color. The face is composed of a dense pattern of small dots. The outline of the face is defined by a series of thick, curved lines in a vibrant red color. The overall effect is a stylized, digital representation of a human face.

Abstract

- Monitoring the attendance of students is one of the major concerns in many educational institutions. The manual management of the attendance sheets is time consuming. Other existing methods(RFID, Biometrics, etc.) of taking attendance also consumes a finite of amount of time which can be used for other productive action and also has several disadvantages associated with it. Facial recognition solves some of the problems that exist in the previously mentioned attendance systems. We proposed a solution that uses facial recognition and makes sure that there is a minimal interaction between students and the attendance monitoring system.
- Keywords – Deep learning, computer vision, Smart Attendance monitoring.

Motivation



We found this problem in many universities and schools.



We want a reliable system which identifies which student is present in the classroom and gives the attendance based on his presence.



This system must not be complex and very easy to interact with it.

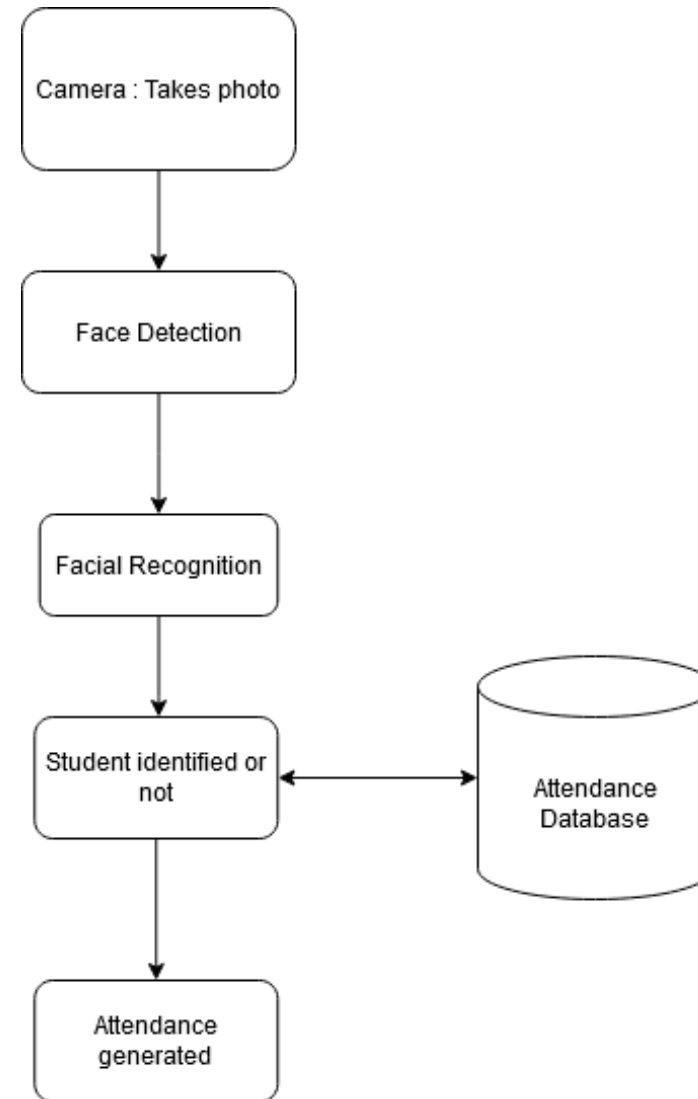
Methodology

- Every first 5th minute of the class period, an alarm goes off, to notify the students to face the camera.
- The attendance report is generated to the staff's registered mail ID at the end of class .

Algorithms

- Face detection
 - HOG (Histogram of Oriented Gradients)
 - As this is fast and can be run on CPU real time
 - Simple to implement
- Face recognition
 - Dlib Algorithm based on Deep Learning
 - 99.38% in the Labelled Faces in the Wild(LFW)
 - Very easy to implement

Flowchart



Photos taken Cls1 and Cls2



Cls3 and Cls4



Cls5 and Cls6_1



Cls6_2 and Cls7



Cls8 and Cls9



After taking photos, we applied HOG face detection



After face detection and face recognition



Cls1



Cls2



Cls5



Cls6_1

After this size the face detection does not detect face



Expected Outcome

References Papers

- [Y. Su, X. Cui, Q. Xi, R. Zhang and J. Shen, "An Industry-Ready Single PTZ-Camera Based Attendance Management System," 2020 IEEE International Conference on Multimedia & Expo Workshops \(ICMEW\), London, UK, 2020, pp. 1-4, doi: 10.1109/ICMEW46912.2020.9105968.](#)
- [https://www.learnopencv.com/face-detection-opencv-dlib-and-deep-learning-c-python/](#)
- [https://www.electronicshub.in/raspberry-pi-8mp-camera-module-v2-india?gclid=CjwKCAiA2O39BRBjEiwApB2Ikjhc_K3Lxq-xtrgZNZA4mhJy12pRj8mdGWV0sX2t-iGZRdeBfWyRBoCfuAQAvD_BwE](#)



Thank You