

# **AUTOMATIC ATTENDANCE MONITORING SYSTEM**

## **literature REVIEW**

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Paper1-[\(PDF\) A Review of Student Attendance System Using Near-Field Communication \(NFC\) Technology \(researchgate.net\)](#)

In this project the image input is taken by a camera and the accuracy of this system would highly depend on the quality of image and the resolution.

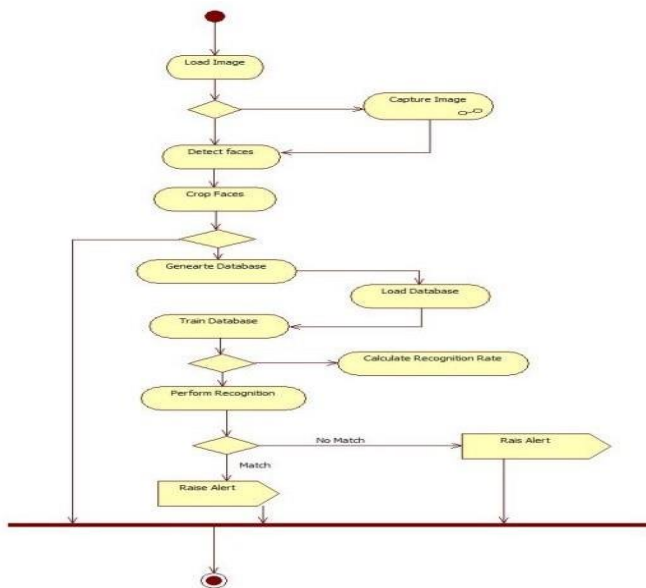
For GUI they have used MATLABS GUI design which could be accessed via GUIDE.

The camera will take the images as input. In this stage the number of faces in the image will be detected and the cropping of the images is done for the necessary size required for feature extraction, after that they will be stored in memory. The system should be able to automatically count the number of faces detected on the image.

The face detection part of the project is done by making use of viola- jones algorithm.

The second part is face recognition where we will match faces from the stored dataset to that of from the camera input in step one. The recognition part of the system has been implemented using Hidden Markov Model with Singular Value Decomposition (SVD). The second phase of the system will involve the training of images on a dataset that are to be used for recognition.

The features are extracted using SVD. This is because the coefficients have continuous values and build observation vectors. As these values are continuous, it is clear to encounter an infinite number of possible observations vectors that cannot be modelled by discrete HMM. Quantization is used to model the probability density function by distribution of prototype vectors. It processes by dividing the large set of vectors into groups of approximately the same number of points that may lead to information loss. If there is no match it will raise a alert informing there is no match. Recognition rate is also calculated



paper2)

[https://www.itmconferences.org/articles/itmconf/abs/2020/02/itmconf\\_icacc2020\\_02001/itmconf\\_icacc2020\\_02001.html](https://www.itmconferences.org/articles/itmconf/abs/2020/02/itmconf_icacc2020_02001/itmconf_icacc2020_02001.html)

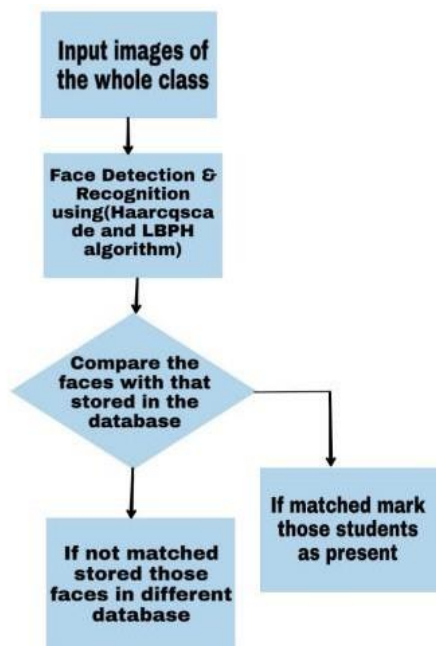
The original database containing the images of the students is created by taking a live real time video of the students, and splitting the video into thirty frames, converting them to gray scale and storing only the faces of the students as images. The software used for splitting the video into frames is Open-CV.

The professor will capture a real time video of the class room or lecture hall by means of their own mobile device and making use of the DroidCam application.

once the video has begun capturing, simultaneously the Haar Cascade algorithm is applied to the video to get individual faces of the students and obtaining the distinct features of their face only the regions of interest or important features will be stored rest will be cropped out.

The comparison of the captured image against the stored images in the database is done by making use of the LBPH algorithm (Local Binary Pattern Histogram), each image stored in the database has it's histogram value calculated and is cross checked against the calculated Histogram value of the images extracted from the captured video feed. The name of the student appears above and the number indicates the confidence. Lower the confidence number higher is the accuracy.

If the uploaded image matches the image stored in the database, then the attendance is marked present for that lecture and saved, but if any student goes unrecognized then that particular image is stored in the secondary database and an alert is generated for the admin.

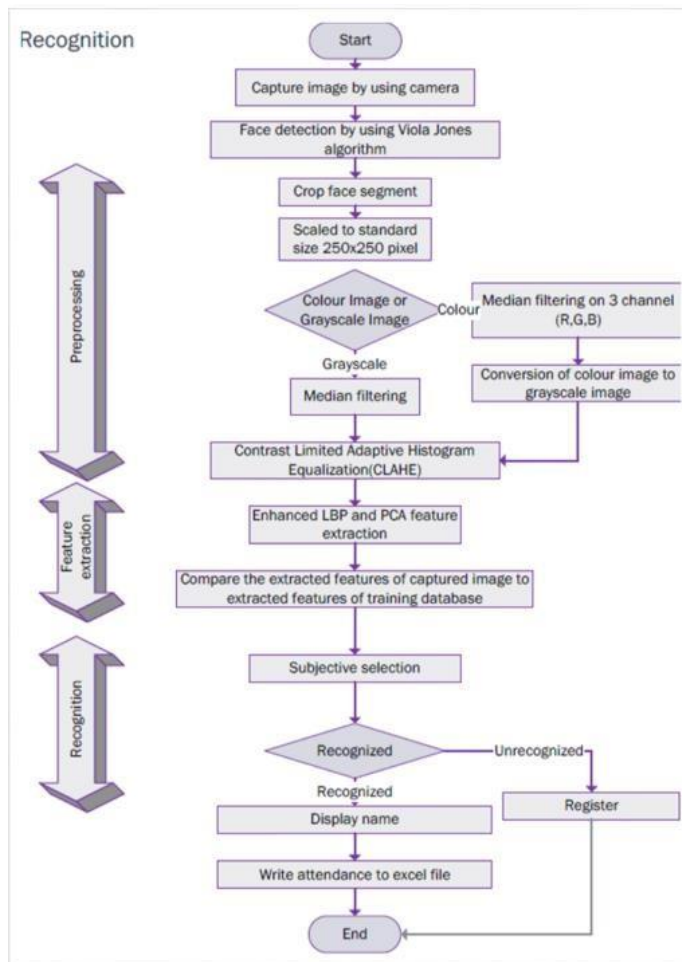


Paper3)

<http://eprints.utar.edu.my/2832/1/EE-2018-1303261-1.pdf>

The approach performs face recognition-based student attendance system. The methodology flow begins with the capture of image by using simple and handy interface, followed by pre-processing of the captured facial images, then feature extraction from the facial images, subjective selection and lastly classification of the facial images to be recognized. Both LBP and PCA feature extraction methods are studied in detail and computed in this proposed approach in order to make comparisons. LBP is enhanced in this approach to reduce the illumination effect. An algorithm to combine enhanced LBP and PCA is also designed for subjective selection in order to increase the accuracy.

The project is completely built in MATLAB with OpenCV libraries implemented in it.



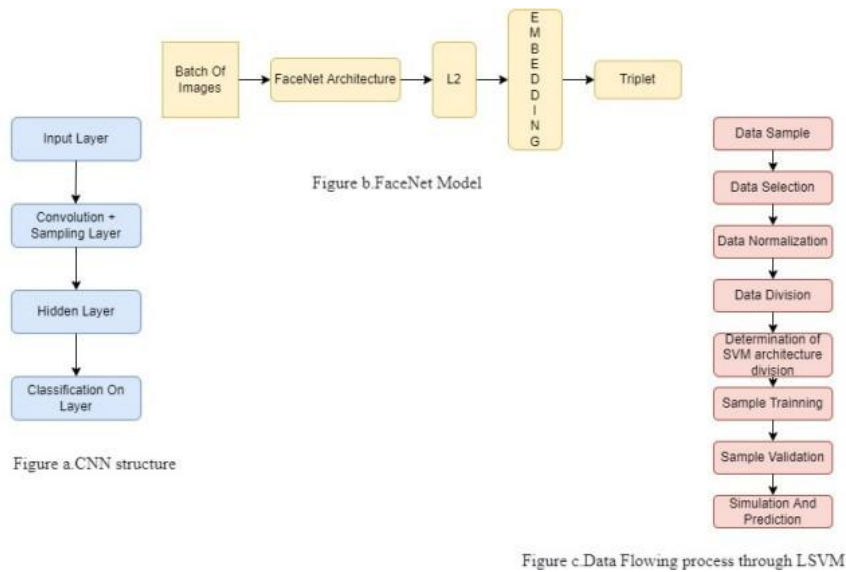
#### 4) [\(PDF\) Automatic Attendance System Using Facial Recognition \(researchgate.net\)](#)

They have used three algorithms which are CNN, FaceNet, LSVM. Combining these three algorithms the whole system will work smoothly. Moreover, the Basic of FaceNet model is dependent on CNN and LSVM is a Classifier.

The input picture will be scanned and if there is a face it will be detected by CNN

After Detecting face, the images pass through the FaceNet algorithm and FaceNet learns a mapping from face images to a compact Euclidean Space, where distances correspond directly to a measure of face similarity

LSVM Classifier along with CNN decides if a student can or cannot enter the classroom. If he belongs to the class then his or her picture will be in the database and if not then it will not match and the system will deny access to the class.



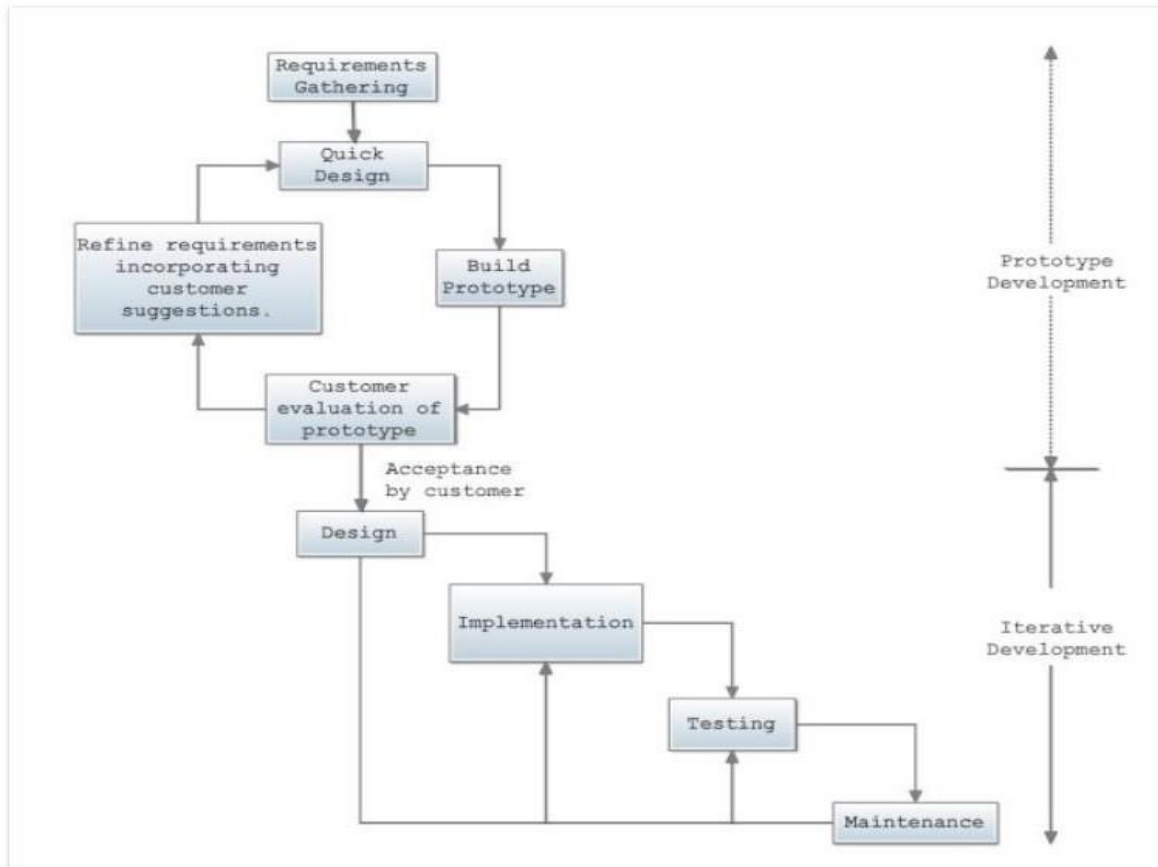
5)

[https://www.researchgate.net/publication/328018773 Automatic Attendance Management System](https://www.researchgate.net/publication/328018773_Automatic_Attendance_Management_System)

Attendance means the presence of a person to physical location at a particular time for an event. Manual method is time consumable and some cases may not be reliable due to the possibility proxy etc. Bio-metric system only at the entry process, but not at the actual work of job locations.

In our present research we have successfully recorded every presence of a person in the work using machine learning based face detection techniques.

We have successfully targeted for continuous monitoring system as human face may change on time due to many reasons and hence our feature extractions-based machine learning process is also updating accordingly.



6)

[https://www.researchgate.net/publication/347048613\\_FACE\\_RECOGNITION\\_FOR\\_THE\\_AUTOMATIC\\_ATTENDANCE\\_MANAGEMENT\\_SYSTEM](https://www.researchgate.net/publication/347048613_FACE_RECOGNITION_FOR_THE_AUTOMATIC_ATTENDANCE_MANAGEMENT_SYSTEM)

Uses the concept of Convolutional Neural Networks to extract relevant facial features.

The system can be trained to recognize a set of people, and to learn in an on-line way, by integrating the new people. Face recognition system is one of the biometric information processing its applicability is easier and working range is larger than others.

The face recognition is live acquired images without any application field in mind. process utilized in the system are White Balance correction, skin like region segmentation, facial feature extraction and face image extraction on a face Candidate. The face one of the easiest ways to distinguish the individual identify each other.

7) [https://www.researchgate.net/publication/360642343\\_IoT-based\\_Automatic\\_Attendance\\_Management\\_System\\_using\\_Middleware](https://www.researchgate.net/publication/360642343_IoT-based_Automatic_Attendance_Management_System_using_Middleware)

The main concern of this study is to build an IoT-based automated attendance management system for educational institutes by biometric recognition to incorporate fake/proxy attendance and effects of entry and to replace old manual methods of taking students' attendance by calling their names or roll numbers.

The AAS will click the image of the classroom, and it will automatically detect the faces of students sitting in the lecture room and recognize them during lectures then mark their

attendance daily to keep a record of their presence and also maintain and manage it for the management staff of the institution for future by using web services.

8)

[https://www.researchgate.net/publication/343114802\\_Automatic\\_Attendance\\_Management\\_System\\_based\\_on\\_Deep\\_One-Shot\\_Learning](https://www.researchgate.net/publication/343114802_Automatic_Attendance_Management_System_based_on_Deep_One-Shot_Learning)

Uses the concept of FaceNet embedding distances as a metric. face detection stage using HOG and a CNN with Max-Margin Object Detection based features.

Due to the positive relationship between the presence of students in classes and their performance, student attendance assessment is considered essential within the classroom environment, even as a tedious and time-consuming task.

We proposed a solution for student attendance control using face recognition with deep one-shot learning and evaluated our approach in different conditions and image capturing devices to confirm that such a pipeline may work in a real-world setting.

9)

[https://www.researchgate.net/publication/354536646\\_Automatic\\_Attendance\\_Management\\_System\\_Using\\_Face\\_Detection\\_and\\_Face\\_Recognition](https://www.researchgate.net/publication/354536646_Automatic_Attendance_Management_System_Using_Face_Detection_and_Face_Recognition)

Uses the concepts of LSVM and FaceNet.

After Detecting face using CNN, the images pass through the FaceNet algorithm and FaceNet learns a mapping from face images to a compact Euclidean Space. Distance metric directly correspond to the similarity between two images.

The algorithm will click the image of the classroom, and it will automatically detect the faces of students sitting in the lecture room and recognize them during lectures then mark their attendance.