



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJIRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Special Issue 2, December 2021

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 7.569**

# Automated Class Attendance System Supported Multiface Recognition

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**ABSTRACT:** This paper describes concerning student attending system. For each faculties, schools and library attending is obligatory. ancient methodology for taking attending is lecture vocation student name and record the attending in sheet. for every lecture its wastage of your time. it's terribly tough to verify every and each student in a very giant schoolroom. To avoid these losses, we tend to use automatic attending system. The planned system describes a way like once he/she enters the category space and marks the attending by extracting the image victimisation Personal element Analysis(PCA) algorithmic rule. The system can record the attending of the scholar at school space surroundings mechanically.

**KEYWORDS:** Face recognition, Attendance, Face detection, Deep learning, CNN

## I. INTRODUCTION

The main objective of this project is to develop face recognition based mostly machine-controlled student attending system. so as to realize higher performance, the take a look at pictures and coaching pictures of this planned approach restricted to frontal and upright facial pictures that comprises one face solely. The take a look at pictures and coaching pictures need to be captured by victimization a similar device to confirm no quality distinction. additionally, the scholars need to register within the info to be recognized. The registration are often done on the spot through the easy interface.

## II. LITERATURESURVEY

### VIOLA JONES ALGORITHMIC RULE

Viola-Jones algorithmic rule analyses a given image victimisationHaar options consisting of multiple rectangles (Mekha Joseph et al., 2016). Figure one (a) shows many styles of Haar options. The options perform as window operate mapping onto the image. one price result, that representing every feature are often computed by subtracting the add of the white rectangle(s) from the add of the black rectangle(s) (Mekha Joseph et al., 2016). The illustration is shown in Figure 1(b)..

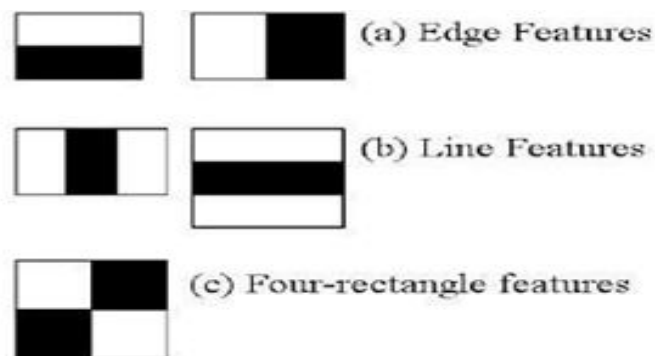


Figure 1(a)

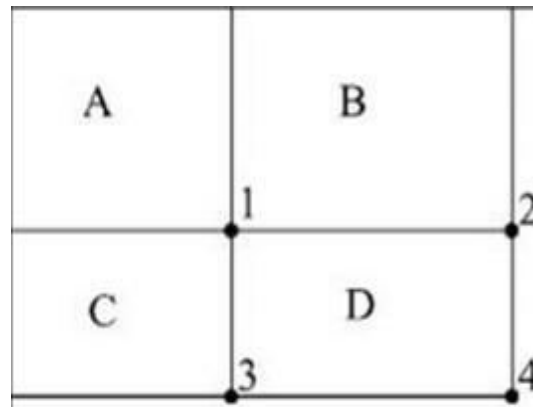


Figure 1(b)

## PRE-PROCESSING

Pre-processing enhances the performance of the system. It plays a vital role to boost the accuracy of face recognition. Scaling is one among the vital pre- process steps to govern the dimensions of the image. cutting down of a picture will increase the process speed by reducing the system computations since the amount of pixels ar reduced. the dimensions and pixels of the image carry abstraction info. Gonzalez, R. C. and Woods (2008) mentioned abstraction info may be a live of the tiniest discernible detail in a picture. Hence, abstraction info must be manipulated fastidiously to avoid distortion of pictures to stop board impact. the dimensions ought to be same for all the photographs for standardization and standardization functions. Subhi Singh et al (2015) planned PCA (Principal element Analysis) to extract options from facial pictures, same length and breadth of image is most popular, therefore pictures were scaled to one hundred twenty × one hundred twenty pixels.

## FEATURE CLASSIFICATION AND FACE RECOGNITION

Classification involves the method of identification of face. Distance classifier finds the space between the take a look at image and train image supported the extracted options. The smaller the space between the input feature points and also the trained feature points, the upper the similarity of the take a look at image and coaching image. The City Block Distance or Manhattan Distance is thought as L1-norm that is outlined in

$$d_1(\square, \square) = |\square - \square|$$

The geometrician distance is thought as L2- norm that is outlined in

$$d_2(\square, \square) = |\square - \square|^2$$

## EVALUATION

Different databases ar utilized in order to guage the system performance. The info provided by previous researchers with totally different variable conditions, as an example, lighting and expression are wont to justify the system and for study purpose. what is more, our own info are wont to analyze the system for real time application. From the literature review of the previous researchers, the common methodology to justify the performance of the system is by finding the accuracy of recognition.

### III. METHODOLOGY

#### FACE DETECTION

Viola-Jones object detection framework are used to detect the face from the video camera recording frame. The limitation of the Viola-Jones framework is that the facial image must be a frontal upright image, the face of the individual should be oriented towards the camera in a very video frame.

#### CONVERSION TO GREY SCALE IMAGE

Camera captures color pictures, but the planned distinction improvement methodology CLAHE will solely be performed on grayscale pictures. When increasing the distinction, the illumination impact of the photographs ready to be reduced. LBP extracts the grayscale options from the distinction improved pictures as eight bit texture descriptor (Ojala, T. et al., 2002). Therefore, color pictures need to be reborn to grayscale pictures before continuing to the later steps. By changing color pictures to grayscale pictures, the complexity of the computation are often reduced leading to higher speed of computation.

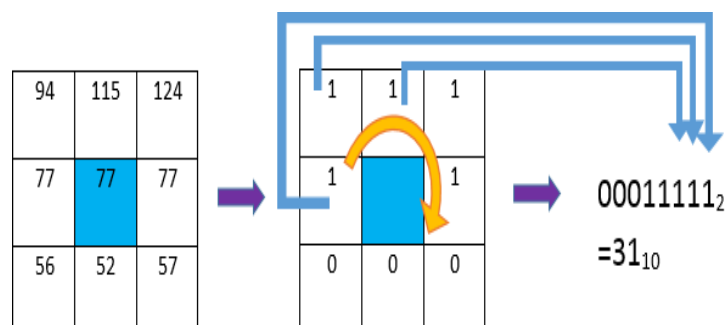
#### FEATURE EXTRACTION

Different facial pictures mean there are changes in textural or geometric info. so as to perform face recognition, these options need to be extracted from the facial pictures and classified suitably. During this project, increased LBP and PCA are used for face recognition. The concept comes from nature of human seeing that performs face recognition counting on the native datum and world datum options. Increased LBP extracts the native grayscale options by playing feature extraction on a tiny low region throughout the complete image. On the opposite hand, PCA extracts the worldwide grayscale options which implies feature extraction is performed on the entire image.

#### WORKING PRINCIPLE OF PLANNED LBP

Local Binary Pattern (LBP) is essentially a texture based mostly descriptor that it encoded native primitive into binary string. (Timo Ojala et al., 2002). The initial LBP operator works on a three × three mask size. three × three mask size contains nine pixels. The middle constituent are used as a threshold to convert the neighboring pixels (the different eight pixels) into figure. If the neighboring constituent price is larger than the middle constituent price, then it's appointed to one. After that, the neighborhoods constituent bits are concatenated to a code to create a computer memory unit price representing the middle constituent. Figure 3(a) shows an example of LBP conversion.

Figure 3(a)





## WORKING PRINCIPLE OF PCA

In this planned approach, Principal element Analysis (PCA) face recognition is studied, because it is one among the favored face recognition strategies that was steered and utilized by the previous researchers. The accuracy of PCA is computed so as to check with the improved LBP. PCA includes a number of steps which can concisely be delineate within the following paragraphs. For PCA, the image scale, length (M) and height (M) isn't thus vital. this can be as a result of PCA is usually addressing range of total pictures, N rather than M. However, same size of take a look at image and coaching image may be a should for PCA computation. PCA is concisely explained by victimisation the equation within the following steps.

Step1: Prepare the information,

Step 2: get the mean/average face vector. Next, the common face vector that is additionally referred to as mean face is calculated. The mean is computed row by row between the column vectors. Step 3: work out the mean/average face vector. so as to confirm the image knowledge is focused at the origin, the mean face is subtracted from every column vector.

Step 4: Calculate the eigenvectors and eigenvalues in variance matrix.

Step 5: Projection of facial image to Eigen face.

$$\Omega = (\Gamma - \bar{\Gamma}) \quad i = 1, 2, \dots, N-1$$

The facial image is projected on the Eigen face by victimisation the equation to get the projected image  $\Omega$ .  $\Gamma - \bar{\Gamma}$  is that the focused vector, that the mean face is removed.

## FEATURE CLASSIFICATION

Chi-square datum is employed as a unsimilarity live for LBP to work out the shortest distance between coaching image and also the testing image. On the opposite hand, geometrician distance is employed to reason the shortest distance between trained and take a look at image when PCA feature extraction. each classifiers, Chi-square datum and geometrician distance confirm the nearest or nearest potential coaching image to the testing image for face recognition. However, the closes result won't be invariably true. Therefore, associate algorithmic rule to mix increased LBP and PCA is applied so as to extend the accuracy of the system.

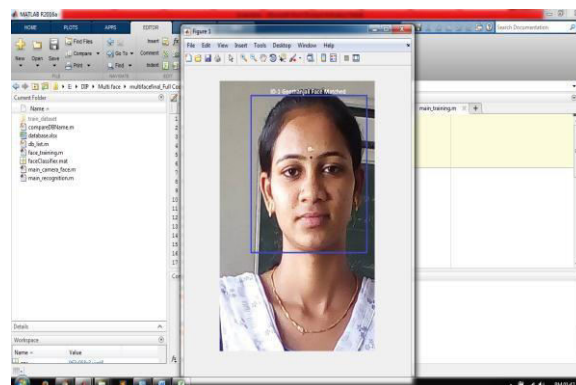
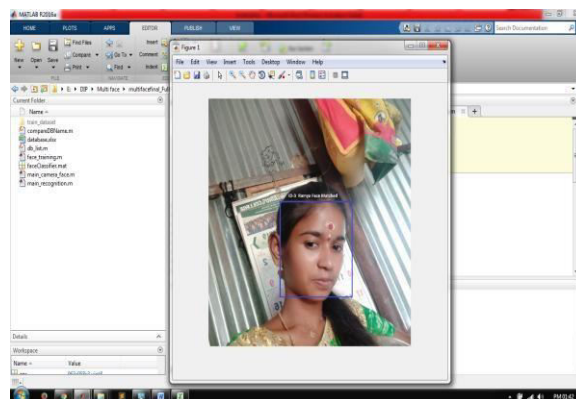
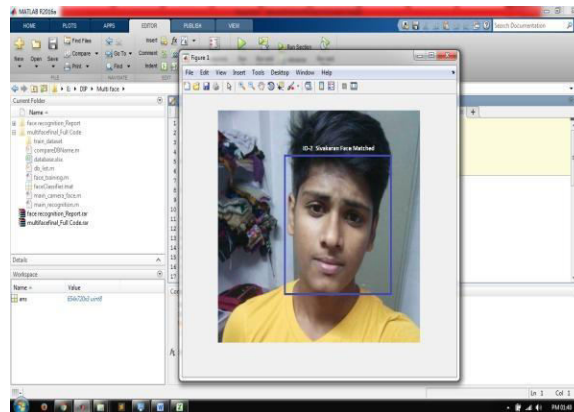
## SUBJECTIVE SELECTIVE ALGORITHMIC RULE AND FACE REOGNITION

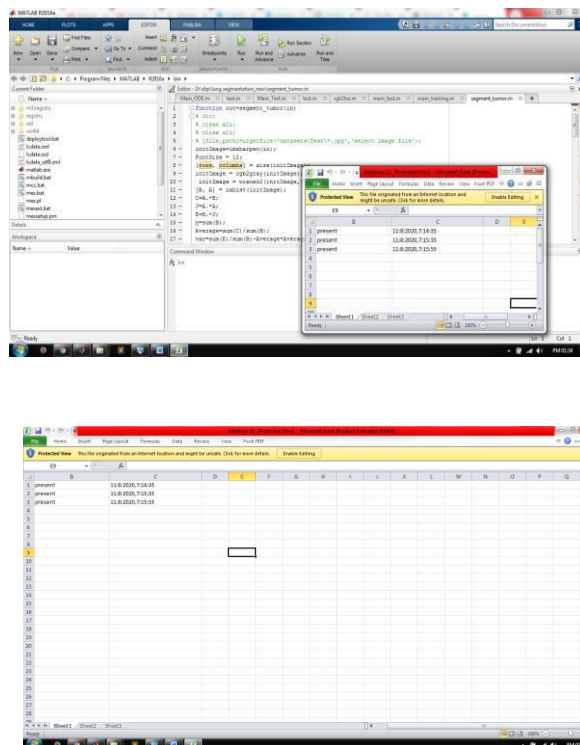
The feature classification that has been performed in previous half provides the nearest result however not absolute. so as to extend the accuracy and suppress the false recognition rate, associate algorithmic rule to mix increased LBP and PCA is meant during this planned approach. during this planned approach, best 5 results ar obtained from increased LBP and PCA. this suggests that 5 people that have nearest distance with regard to input image are known.



## IV. RESULT

Capture the image for attending view the attending sheet.





## V. CONCLUSION

In this approach, a face recognition based mostly machine-controlled student attending system is completely delineate. The planned approach provides a way to spot the people by comparison their input image obtained from recording video frame with regard to train image. This planned approach is ready to notice associated localize face from an input facial image, that is obtained from the recording video frame. Besides, it provides a way in pre-processing stage to boost the image distinction and cut back the illumination impact. Extraction of options from the facial image is performed by applying each LBP and PCA. The algorithmic rule designed to mix LBP and PCA ar ready to stabilize the system by giving consistent results. The accuracy of this planned approach is 100 percent for high-quality pictures, 92.31 you look after low-quality pictures and ninety five.76 you look after Yale face info once 2 pictures per person ar trained.

As a conclusion for analysis, the extraction of facial feature can be difficult particularly in several lighting. In pre-processing stage, distinction restricted accommodative bar chart effort (CLAHE) ready to cut back the illumination impact. CLAHE perform higher compared to bar chart effort in terms of distinction improvement. increased LBP with larger radius size specifically, radius size 2, perform higher compared to original LBP operator, with less tormented by illumination and a lot of consistent compared to different radius sizes.

## VI. FUTURE ENHANCEMENT

The system we've developed has with success ready to accomplish the task of marking the attending within the task of marking the attending within the schoolroom mechanically associated output obtained in an surpass sheet as desired in real time. Another vital facet wherever we will work is towards making a web knowledge base of the attending and its automatic change, keeping in mind growing quality of net of things.



15<sup>th</sup> & 16<sup>th</sup> September 2021

Organized by

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