$$s(x) = \begin{cases} 1, & x \geq 0 \\ 0, & x < 0 \end{cases}$$

The Local Binary Pattern (LBP) calculates a binary code for each pixel by comparing its neighbors' pixel values to that of the central pixel, followed by converting this code into a decimal value, indicative of the pixel's LBP value. The resultant histogram of these LBP values, observed across either an image or a region of interest, frequently acts as a feature descriptor essential for tasks such as texture analysis or pattern recognition.

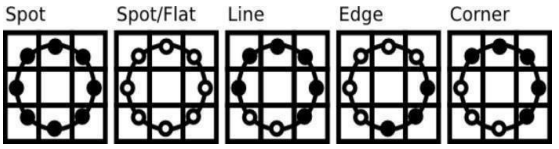

Fig 2.1.2 Circularly Symmetric neighbor sets

.2 HaarCascade Classifier:

HaarCascade is a ML algorithm used to pick out objects in an images, regardless of their scale incomputer vision, particularly for object detection. These algorithms utilize Haar-like features to identify objects within images by analysing variations in pixel intensities. A cascade of classifiers is employed to efficiently discard regions of the image that are unlikely to contain the object being detected, thereby accelerating the detection process.

This method has proven effective for various applications, including face detection,pedestrian detection, and more.

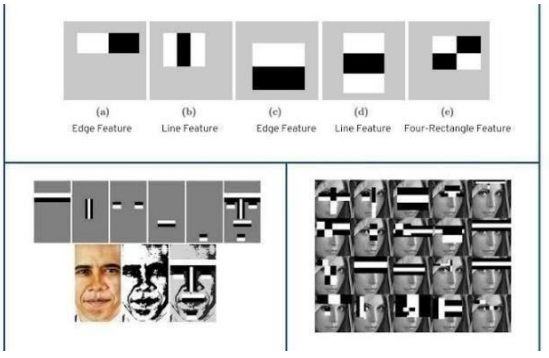

Fig 2.2.1 HaarCascade Classifier

PROPOSED METHOD

Our proposed method researches for taking the attendance system for the students more than one at a time in the image will be implemented. The imagecaptured with more than two students is compared with data base of the students if the student gets absent it need to mark the absent, if the student presents his/ her

H.T. No should mark as Present.The process shown in fig 3.1

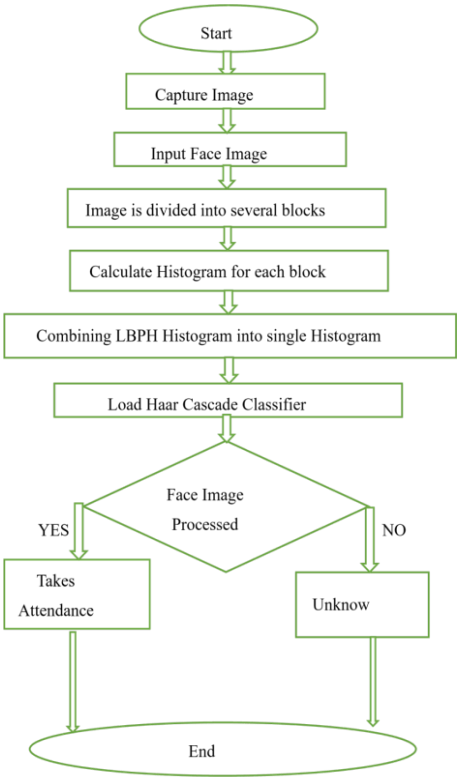

Fig 3.1 System Flow Chart

Steps as followed:

Step 1: from the fig 3.1, this step displays the front viewof the GUI.

Step 2: In this step, the image of the student captured.

Step 3: In this step the captured images are taken as theinput images.

Step 4: In this step, the images are divided into severalblocks.

Step 5: In this step, the histogram of each block will be calculated.

Step 6: In this step, the calculated histograms are combined into single histogram.

Step 7: In this step, Haar cascade classifier is loaded, which is ML algorithm used to identify facial features within the segmented blocks. This classifier is trained to recognize patterns corresponding to eyes, nose, and mouth, crucialfor accurate facial recognition.

Step 8: In this step, the face images were processed, which means feature extraction and normalization techniques to the detected facial regions within each block. These processes involve extracting relevant facial features such as key points, edges, and textures, while also standardizing the representation of each face image to ensure consistency and comparability across different samples.

Step 9: In this step, if the face is detected it takes attendance and marks attendance on excelsheet with name, id, and time and excel sheet was saved with date. If the face was not detected, it displays unknown.

RESULTS:

1. This front view is obtained by using GUI as shown in

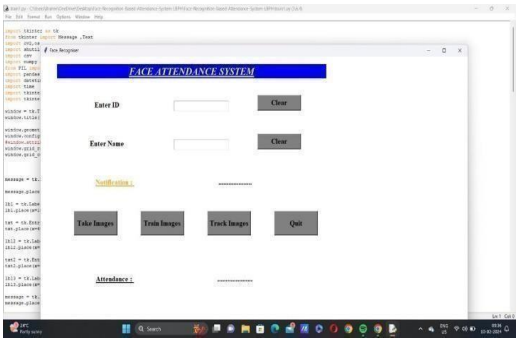

Fig 4.1

2. This window appears for capturing the image of student

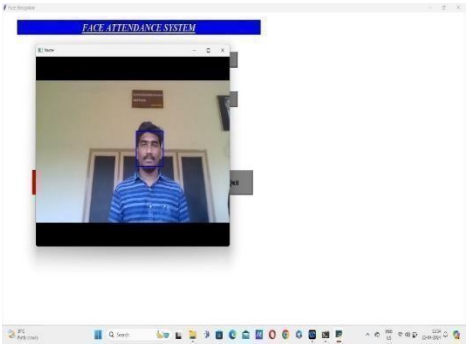

Fig 4.2

3.This window shows the trained images of the captured images the image folder.

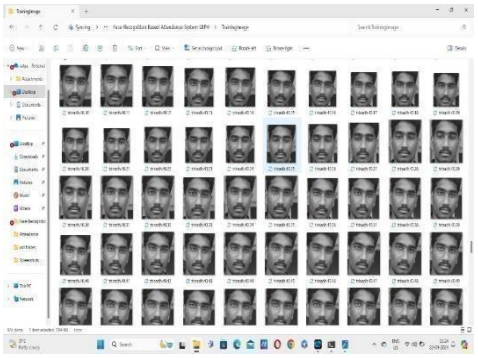

Fig 4.3

4.Notifications of saved images were show in this window as below fig 4.4

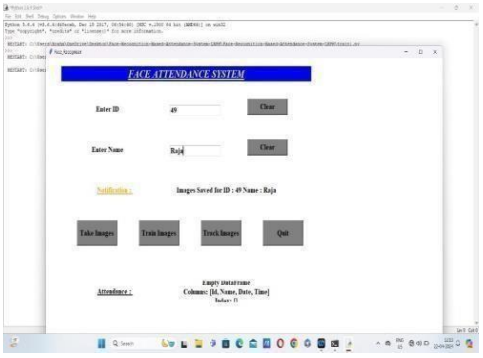

Fig 4.4

5.By clicking on Train image button, the image will be trained and displays the notification as Image

trained. Thesaved and detected images were trained.

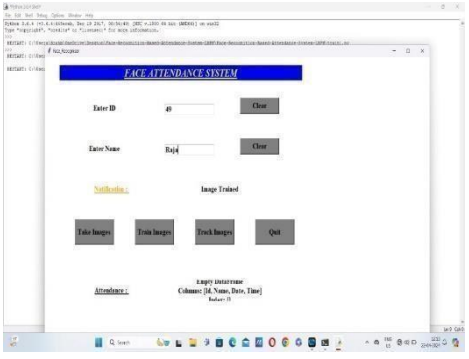

Fig 4.5

1. 6.By clicking on the track image button, it scans the faces and matches them against a pre-trained database. Upon recognizing a face, it retrieves the associated name and ID information. The above window shows how the project spontaneously detects and track the attendance of particular person.

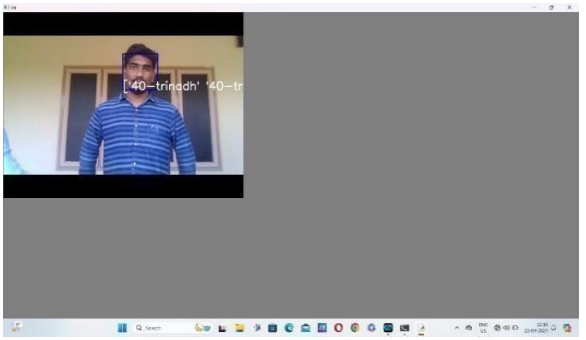

Fig 4.6

.1 7.After the images were tracked, by clicking on quit shown on window marks attendance in excel sheet saved with the date which was shown in fig 4.7

Fig 4.7

.2 8.Face detection of two members were shown in the image asbelow fig 4.8.

Fig 4.8

9.The untrained image was recognised as unknown in theabove image since it was untrained as shown in fig 4.9

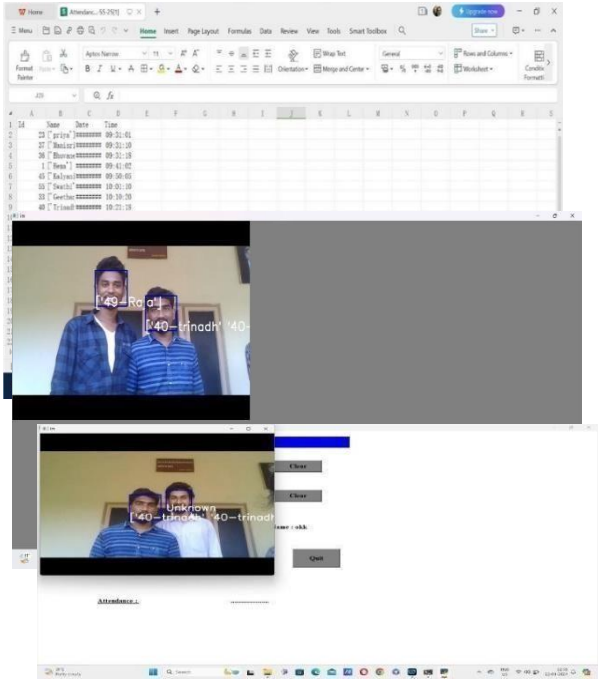

Fig 4.9

CONCLUSION:

This project focusses on marking the attendance through automated attendance management system by capturing the images and converting into blocks, comparing them with the database if the imagesmatch with data in date base it marks whether the student is absent or present. Traditional attendance marking technique does not disturb students but also teaching process The system helps in getting more accuracy. This research is developed to reduce the human intervention for marking the attendance in educational institutes. In this system, the attendance is marked for 2 or 3 students at a time which is time consuming that too regardless of any human efforts,which is the main extent in this system.

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