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Attendance Recording System using Face Recognition

Chandan R
ECE Department (VLSI Design and Embedded systems), PES College of Engineering Mandya, Karnataka (India)

Abstract: ***Image processing automated attendance system is the system in which easiest way to record the attendance for organization .This system is based on the face detection and face recognition algorithms. For this we make use of "Image Processing" using "MATLAB". The concept of this paper is to provide real time attendance of students in a class to the faculty's data base. Automatically detects the student using the web camera and only detect the facial part of that particular image and the image undergoes the various techniques and will compare with reference image, Later the attendance of the student is updated .Thus with the help of this system time will be saved and it is so convenient to record the attendance at any time throughout the day.***

Keywords: ***web camera, Face detection, Face recognition, MATLAB.***

I. INTRODUCTION

In Now days the time is gold as the famous line goes, time is very precious thing in today's fast changing generation automated attendance system had made the lives of teachers easier by making attendance marking procedure a piece of cake. This system includes detection of the human face through camera where detection of the images is done using the Viola Jones Algorithm. The recognition of the each individual student from the group image is done using a "SURF"(Speed Up Robust Features) Algorithm . This method involves capturing the group picture of the present strength in the class, matching already stored individual images of the student with the group image ,if the actual person is found in the group then the person is present and attendance is updated. The entire code is written using MATLAB.

II. PROPOSED SYSTEM

The Face recognition based attendance monitoring system mainly focuses on the matching of individual and unique features in the face of the individuals. The following fig 1.1 describes the method involved in the entire process.

A. Objectives

1) Apply face detection algorithm to separate individual faces from a group image.
2) Registration of the each individual face.
3) Recognizing the each individual faces.
4) Attendance marking

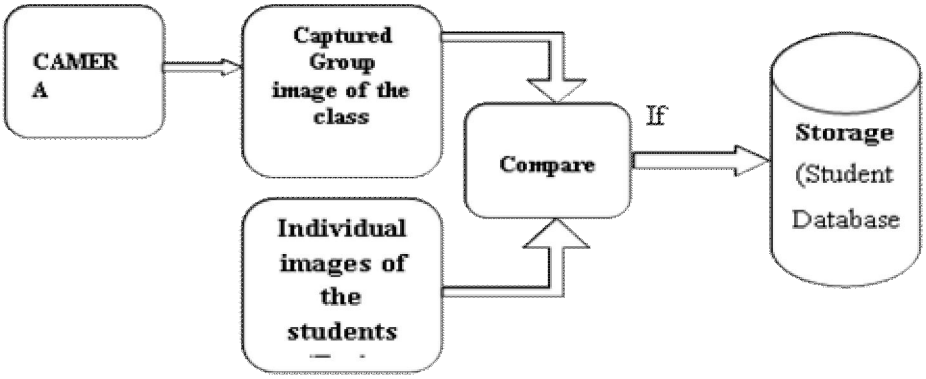


Fig.1. Block diagram of Attendance monitoring system

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III. SYSTEM ANALYSIS

The proposed system uses the PCA mechanism which receives the real time video from the web camera of the system. The GUI of smart attendance monitoring system extract the image from the real time video. From the extracted image system will identify the face using Viola Jones algorithm and the detected face is stored in the trained database. User can make more number of trained detected faces from the provided input video.

After the completion of face detection process the attendance monitoring process will start. For testing the face we need to follow the training process done before. The test detected face will store in the test data base and using Speeded Up Robust Feature (SURF) algorithm test face will compare with all trained faces from the data base then it will recognize the correct face and mark attendance as 1 with current date in xl sheet in front of the name of the student.

Individual images of each student is captured and stored in the database called “Train images”. These images are to be captured with a camera having good resolution and with proper illumination. On each day the capturing of the images in the class is done. This image will be a group image of many individuals. This image is stored in another folder called “Test image”. Now for the marking of attendance Train images are compared with the Test images. The SURF algorithm is used for the matching purpose. SURF is a descriptor which detects the interest points in the Train images and searches for the same features in the test image. It then filters out few points and left with few interesting points. Based on the Euclidean distance, the points having minimum distances are matched. If the contrasts at points are matched then the name of the trained image is stored in the database which indicates a particular student is present on that day.

IV. METHODOLOGY

1) *Violo-Jones Algorithm:* The Viola–Jones object detection framework is an object detection framework which was proposed in 2001 by Paul Viola and Michael Jones. Although it can be trained to detect a variety of object classes, it was motivated primarily by the problem of face detection. The problem to be solved is detection of faces in an image. A human can do this easily, but a computer needs precise instructions and constraints. To make the task more manageable, Viola– Jones requires full view frontal upright faces. Thus in order to be detected, the entire face must point towards the camera and should not be tilted to either side. While it seems these constraints could diminish the algorithm's utility somewhat, because the detection step is most often followed by a recognition step, in practice these limits on pose are quite acceptable.
2) *Speeded Up Robust Features (SURF) Algorithm:* speeded up robust features (SURF) is a patented local feature detector and descriptor. The SURF algorithm is based on the same principles and steps as SIFT; but details in each step are different. The algorithm has three main parts: interest point detection, local neighbourhood description, and matching. The detector locates the interest points in the image, and the descriptor describes the feature of the interest points and constructs the feature vectors of the interest points.

V. RESULT

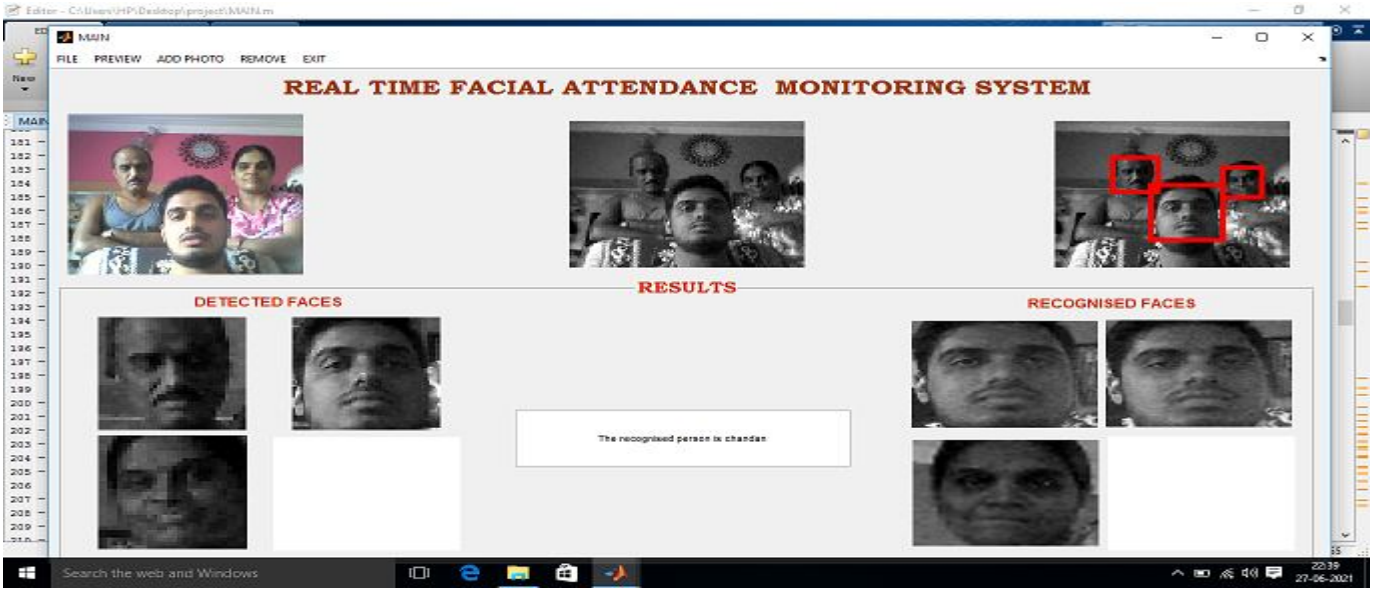


Fig.2 Recognised faces from the group image.

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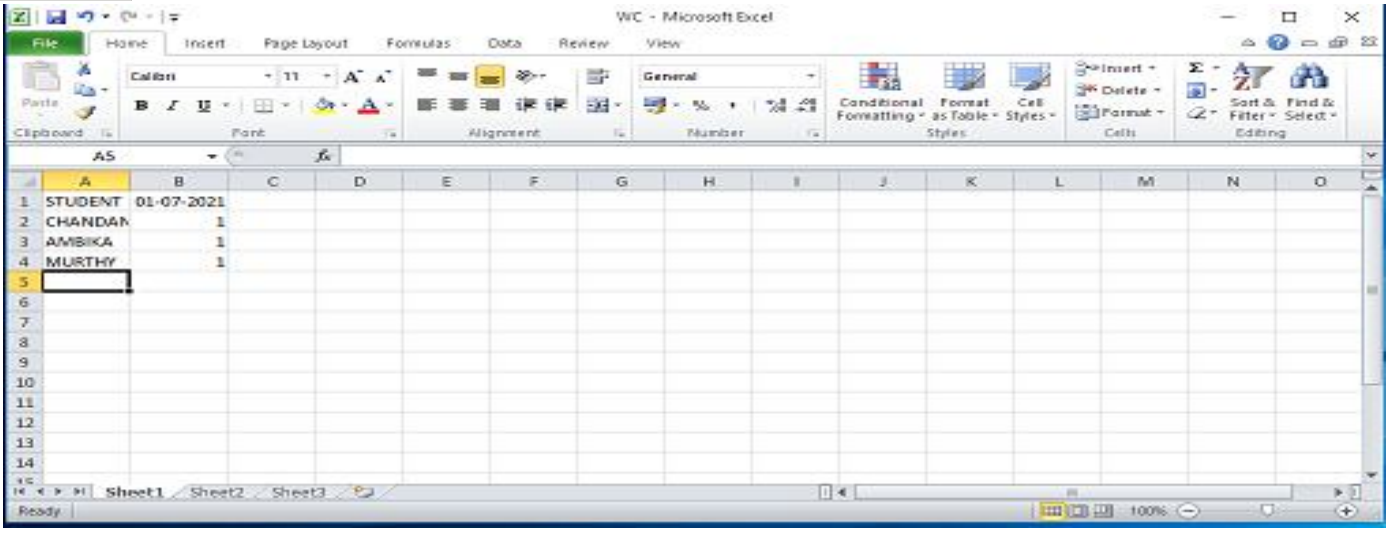


Fig.3 Attendance updated in the Excel Sheet

VI.CONCLUSION

SURF based attendance monitoring system has its own applications in various domain as mentioned. Also it can be modified further for other system .Most of the present system are time consuming, hence the approach solves the issues by the integrating the technique process. The betterment and employing technology may lead to the full efficient system in future. The real time implementations of systems can be achieved without much modification.

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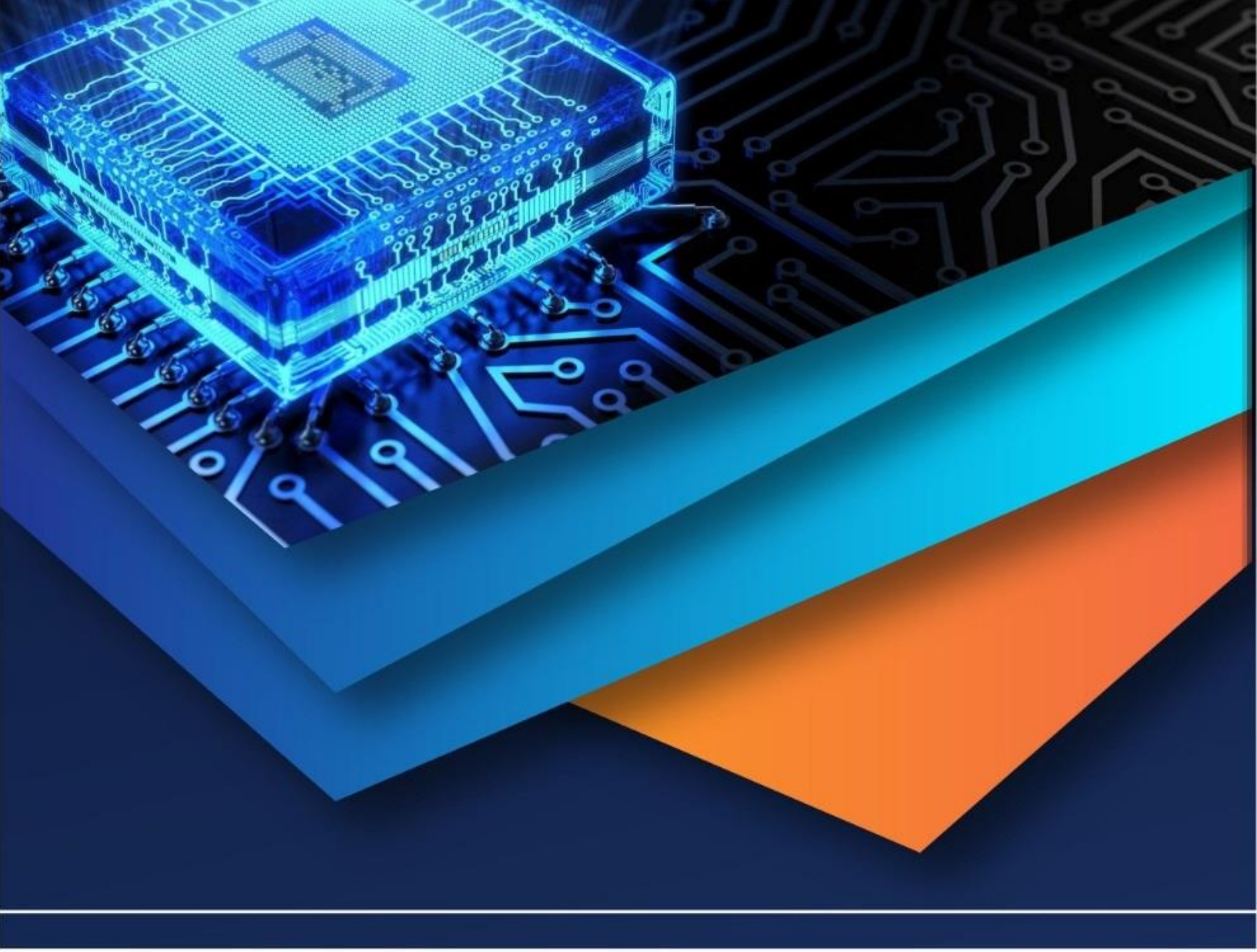
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Author Profile



CHANDAN R, is currently studying M.Tech IVth sem in the department of Electronics and Communication Engineering with a Specialization in VLSI Design and Embedded Systems in PES College of Engineering, Mandya under Visvesvaraya Technological University, Belagavi

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