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## SMART MONITORING AND DATA ENTRY SYSTEM

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**ABSTRACT** - The face is the identity of a person. The method to exploit this physical feature that have seen a great change since the advent of image processing techniques. The attendance is taken in every school, colleges and library. Traditional approach for attendance is professor calls student name & record attendance. In this project, at the time of attendance real time images will be captured and the faces in those images will be matched with the faces in the pre trained dataset. Along with the face detection, the temperature of the student is also measured using temperature sensor. Finally the attendance is uploaded to the webpage and is available for the management and students to view the attendance.

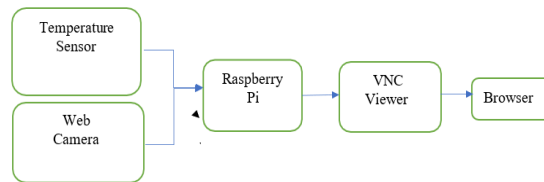
### I. INTRODUCTION

The Outburst of Corona (Covid – 19) brought a drastic change in many of the lives irrespective of everything. The main symptoms remained to be the raise in body temperature, severe cough, throat dryness, loss of taste buds and cold. It easily spread among people through direct contact & through the products they used. The only solution to control Covid-19 relayed on maintaining social distancing, using hand sanitizers after using the common things and masking up themselves to stop spreading the pandemic disease. The quite difficult task is maintaining social distancing. If it is properly maintained the risk of spreading decreases half the way. The place where more gatherings happen is School, Colleges, Workplace. To ensure the proper health of students or employees the management should also take part in it. As a solution to this, the data monitoring system was employed. This detects the temperature & recognize the face so that no proxy entry will be marked and temperature will also be monitored.

### II. LITERATURE SURVEY

Nandhini R et al. (2019) presented automatic face recognition (AFR) technologies have made many improvements in the changing world. Smart Attendance using Real-Time Face Recognition is a real-world solution which comes with day to day activities of handling student attendance system. Face recognition-based attendance system is a process of recognizing the students face for taking attendance by using face biometrics based on high - definition monitor video and other information technology. In my face recognition project, a computer system will be able to find and recognize human faces fast and precisely in images or videos that are being captured through a surveillance camera. Numerous algorithms and techniques have been developed for improving the performance of face recognition but the concept to be implemented here is Deep Learning. It helps in conversion of the frames of the video into images so that the face of the student can be easily recognized for their attendance so that the attendance database can be easily reflected automatically.

Smitha et al. (2020) proposed in this digital era, face recognition system plays a vital role in almost every sector. Face recognition is one of the mostly used biometrics. It can be used for security, authentication, identification, and has got many more advantages. Despite of having low accuracy when compared to iris recognition and fingerprint recognition, it is being widely used due to its contactless and non-invasive process. Furthermore, face recognition system can also be used for attendance marking in schools, colleges, offices, etc. This system aims to build a class attendance system which uses the concept of face recognition as existing manual attendance system is time consuming and cumbersome to maintain. And there may be chances of proxy attendance. Thus, the need for this system increases. This system consists of four phases- database creation, face detection, face recognition, attendance updation. Database is created by the images of the students in class. Face detection and recognition is performed using Haar-Cascade classifier and Local Binary Pattern Histogram algorithm respectively. Faces are detected and recognized from live streaming video of the classroom. Attendance will be mailed to the respective faculty at the end of the session.



### III.BLOCK DIAGRAM

To implement this project the required hardware components are Temperature Sensor MLX90614, Web camera, Raspberry pi b+. The Raspberry pi is connected to the power supply. The temperature is detected by the temperature sensor & web camera detects the face sends the data to server.

### IV.PROPOSED SYSTEM

The task of the proposed system is to capture the face of each student and to store it in the database for their attendance. The face of the student needs to be captured in such a manner that all the feature of the students' face needs to be detected. There is no need for the teacher to manually take attendance in the class because the system records a photo and through further processing steps the face is being recognized and the attendance database is updated.

The temperature is recorded through the MLX90614 sensor and are updated to the database. The temperature is measured in Celsius and if needed can be converted to Fahrenheit manually when entered.

### V.WORKING

The general idea goes like this:

Detect a face. Check that the person is in the database. If the person is in the system, record their temperature and create an entry with the current timestamp in the system. Otherwise, notify the admin of the unknown person via email with an attached form to register the person.

Once the person is registered, they will be checked-in. The data will be stored locally for future retrieval. When the person puts his/her hand near the temperature sensor (MLX90614) detects the body temperature. When the individual records his/her face through the camera, it recognizes and uploads the person's name, entry time and the date. The data's are sent to webpage and saved for future reference.

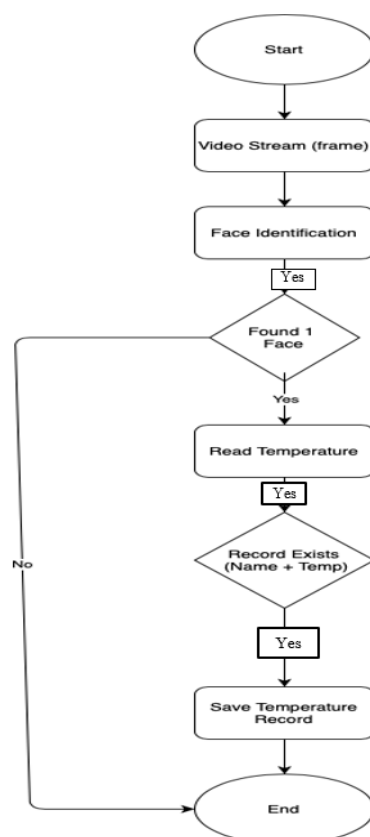


Fig.1 Flow Chart of the System

## VI.WEB PAGE DEVELOPMENT

Local host is used to upload the recognized data. It is a platform to view the final output of the data. If there is an error occurring while recording data and if it doesn't hit the server, the data can be uploaded manually too. The portal is available for the staffs to view the data for marking attendance. The data's that were recorded are sent to the local host with IP address. The web server is now available at <http://localhost:8000> And when the webpage is opened and point it to [http://localhost:8000/face\\_detection/detect/](http://localhost:8000/face_detection/detect/) the JSON response can be found from the face detection API. All the data that were collected from the user are sent to the browser. The IP address of the browser is given in the program and is able to see the output there. The staff or the management can view them from anywhere once it is updated. Even when there is server issues and data will not be sent, we can add them manually.

## VII.RESULT

Thus, the hardware and software are implemented and the recorded data were sent to the browser. The recorded data will be saved for future reference. Once the data's are uploaded the staff/management can view the attendance details of the student containing name, roll no, temperature, time & date.



Fig.2 HARDWARE PROTOTYPE

| Attendance Portal                     |          |               |            |             |                         |
|---------------------------------------|----------|---------------|------------|-------------|-------------------------|
| Contactless Attendance System Records |          |               |            |             |                         |
| Sl.No                                 | Roll.No  | Name          | Attendance | Temperature | Time                    |
| 5                                     | 18BEI009 | Videsh R      | Absent     | 37.95°C     | 21:13:41    Apr-22-2022 |
| 4                                     | 18BEI007 | RamKarthik G  | Present    | 38.69°C     | 21:13:41    Apr-22-2022 |
| 3                                     | 18BEI001 | Mohanapriya B | Present    | 38.67°C     | 21:13:41    Apr-22-2022 |
| 2                                     | 18BEI005 | Bavadharani P | Absent     | 38.29°C     | 21:13:41    Apr-22-2022 |
| 1                                     | 18BEI027 | Aswath Krisna | Present    | 35.71°C     | 21:13:41    Apr-22-2022 |

Fig.3 SOFTWARE IMPLEMENTATION

## VIII.CONCLUSION

Capturing the images from camera and applying techniques for face detection can decrease the manual work from taking attendance and will increase the security. Based on the face detection and temperature recognition automated attendances can be marked in the browser. This system has implemented an attendance monitoring system for theory classes or laboratory by which lecturer or teaching assistant could record student's attendance. It saves time and effort, especially if it is a lecture with huge number of students. This attendance system shows the use of facial recognition techniques for the purpose of student attendance. The temperature is measured using the infrared thermometer, a sensor that consists of a lens to focus the infrared (IR) energy on to a detector, which converts the energy to an electrical signal that can be displayed in units of temperature after being compensated for ambient temperature variation. Hence the data are saved for the future reference too.

### IX.FUTURE SCOPE

The future scope of the proposed work is to capture multiple detailed images of the students and using cloud technology to store these images.

Since the development time for this project is very limited, the designed system only consists of the minimum function required for it to work. However, it can be further improved to maximize the usage of the raspberry pi to produce a better system.

The followings are the further developments for the project to be improved.

Provide a better domain name for the webpage. Improve the face recognition algorithm. Provide better search functions in the webpage. Expand the storage of the raspberry pi. Develop a fingerprint recognition mechanism to enhance the recognition system. Improves the system so that it can eliminate the need of lecturer input before the recognition procedure can start. Improves the database so that it can also store the information of the subjects taken by each student to facilitate the attendance marking procedure.

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