Project Synopsis
On

Attentiveness Detection In Online Meeting Platforms

Submitted as a part of course curriculum for

Bachelor of Technology
in
Computer Science

Submitted by
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TABLE OF CONTENTS

DECLARATION

We hereby declare that this submission is our work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgement has been made in the text.

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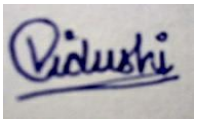

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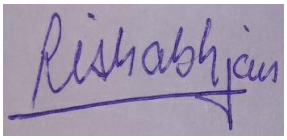

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CERTIFICATE

This is to certify that Project Report entitled "**Attentiveness detection in online meeting platforms**" which is submitted by "**Priyanshi Srivastava, Vidushi Bhatnagar and Rishabh Jain"** in partial fulfilment of the requirement for the award of degree B. Tech. in Department of Computer Science of Dr A.P.J. Abdul Kalam Technical University, Lucknow is a record of the candidates own work carried out by them under my supervision. The matter embodied in this report is original and has not been submitted for the award of any other degree.

Date: 06-09-2022

Supervisor Signature
Ms. Arti Sharma
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ACKNOWLEDGEMENT

It gives us a great sense of pleasure to present the synopsis of the B. Tech Mini Project undertaken during B.Tech. Third Year. We owe a special debt of gratitude to Ms. Arti Sharma, Assistant Professor, Department of Computer Science, KIET Group of Institutions, Delhi- NCR, Ghaziabad, for his/her constant support and guidance throughout the course of our work. Her sincerity, thoroughness and perseverance have been a constant source of inspiration for us. It is only her cognizant efforts that our endeavours have seen the light of the day.

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Last but not the least, we acknowledge our friends for their contribution to the completion of the project.

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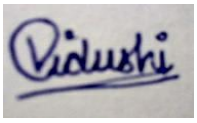

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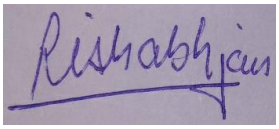

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ABSTRACT

Many organizers and teachers face the problem of checking the attentiveness of the attendees and students respectively. The attendees would be shown warning in the form of an alarm which gets triggered whenever they are not attentive or are yawning many times during the meeting andthe organizer will also get to know of the same.

Teachers will be helped majorly through this as this data would help teacher mark the attendance aptly. Also, the students will be more focused towards their studies and classes.

Not only teachers but it may be useful for offices as well where bosses can check for attentiveness of their employees.

This attentiveness detection is also a boon for today's scenario as due to bad seating postures people are getting back problems, one of the factors for non-attentiveness could be bad posture, it could make people feel drowsy. So, it is important to check for attentiveness and furthermore posture can be corrected by itself, hence, reducing the back problems in people.

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The project includes a system consisting of different modules to check attentiveness of people and notify them about it. It is often found that attendees in online meeting become inattentive once they join it. The list would be visible showing the attentiveness according to the considered parameters of meeting attendees. A buzzer system is introduced which will alert the attendee also about the inattentiveness.

1.2 PROBLEM STATEMENT

- ✓ Students tend to be inattentive in online classes and appear just for attendance.
- ✓ People tend to suffer with back problems due to bad posture and non-attentiveness could be a reason for bad posture.

1.3 OBJECTIVE

- ✓ To make people more attentive during online meetings/classes by alerting them.
- ✓ Helping teachers with the attendance system.

1.4 PROJECT SCOPE STATEMENT

1. 4.1 Scope Description

The Attentiveness of the students would be enhanced a lot and it would be much easy for teachers to take attendance. Also, students would understand the topics much more if they are being attentive instead of taking online classes casually.

1.4.2 Project Deliverables

project activities:

- project planning
- Training and testing of algorithm
- Deployment of the Algorithm

deliverables:

- Research Paper
- Zoom like website embedded with Attentiveness system.

1.4.3 Acceptance Criteria

This application can do recognition based solely on work-station camera without any additional devices.

CHAPTER 2: LITERATURE REVIEW

- **Facial Feature Monitoring for Real Time Drowsiness Detection[1]**

  This paper presents the real time implementation of drowsiness detection which is invariant to illumination and performs well under various lighting conditions. Correlation coefficient template matching provides a super-fast way to track the eyes and mouth. The proposed system achieves an overall accuracy of 94.58% in four test cases, which is highest in comparison to the recent methods. A high detection rate and reduced false alarms makes sure that this system can efficiently reduce the number of fatalities every year. Despite the highly satisfactory performance, the system was unable to predict drowsiness when the head was tilted towards.

- **Real time Drowsiness Detection Algorithm for Driver State Monitoring Systems [2]**

  We propose a novel drowsiness detection algorithm using a camera near the dashboard. The proposed algorithm detects the driver's face in the image and estimates the landmarks in the face region. In order to detect the face, the proposed algorithm uses an AdaBoost classifier based on the Modified Census Transform features. And the proposed algorithm uses regressing Local Binary Features for face landmark detection. Eye states (closed, open) is determined by the value of Eye Aspect Ratio which is easily calculated by the landmarks in eye region. The proposed algorithm provides real- time performance that can be run on the embedded device. We obtained the dataset using video records from the infrared camera which is used the real-field. The proposed algorithm tested in the target board (i.mx6q). The result shows that the proposed algorithm outperformed in the speed and accuracy.

- **Smart Attendance System Using Face Recognition [3]**

  In this system we have implemented an attendance system for a lecture, section, or laboratory by which lecturer or teaching assistant can record students' attendance. It saves time and effort, especially if it is a lecture with huge number of students. Automated Attendance System has been envisioned for the purpose of reducing the drawbacks in the traditional (manual) system. This attendance system demonstrates the use of image processing techniques in classroom. This system can not only merely help in the attendance system, but also improve the goodwill of an institution.

- **Implementation Of Face Recognition based Attendance system using LBPH [4]**

  We have implemented an attendance management system for lectures and students' attendance. It helps to reduce time and effort, especially in the case of large number of students and lectures to be marked attendance. The whole system is implemented in Python programming language. Facial recognition techniques use in the system for the purpose of the student attendance. And also, this record of student can used in exam related issues. On this project, there is some further works to do for alert the student by sending SMS regarding his, her attendance. GSM module is used for this purpose. Parent of the student gets this SMS alert.

- **Human posture recognition based on multiple features and rule learning[5]**

  In this paper, have proposed a rule ensemble approach for human posture recognition based on multiple features. The approach employs the Bagging approach for random sampling of training data and the Random Subspace method for random selection of feature subsets. This allows diverse rule-based classifiers to be trained using the RIPPER rule learning algorithm and thus create a high-performance ensemble. In terms of feature extraction, have managed to extract multiple features, which include angel features and distance features between joints. A comparison was made between the proposed approach and five popular learning methods using three public action data sets and one that was built by themselves. The experimental results show that the proposed approach outperforms the other learning methods.

- **Human Body Posture Recognition Using Artificial Neural Networks[6]**

  In this work, have presented an object detection framework using boundary extraction and contour selection. To conclude the whole work, it can be said that they cannot only recognize the numerous activities to be performed by a human body but can also consider the different postures to be made by them. With the help of detection features of upper body and lower body, they were able to find the particular direction of orientations of those features. Detection of various poses proves itself much easier if it can be done only on the basis of this division of upper and lower portions of the whole. This work does its role clearly and able recognize more than 90% accuracy which combines the head detection and lower/upper body segmentation and recognition as a whole.

CHAPTER 3: TECHNOLOGY USED

1. Machine learning

2. Full Stack
    - HTML
    - CSS
    - JavaScript
    - React

We are developing an online meeting platform using “Full Stack”.
Machine learning will be used to develop algorithms for attentiveness detection using parameters- eye movements and yawning. So, ML will be applied on facial features- eyes and mouth.

CHAPTER 4: DIAGRAMS

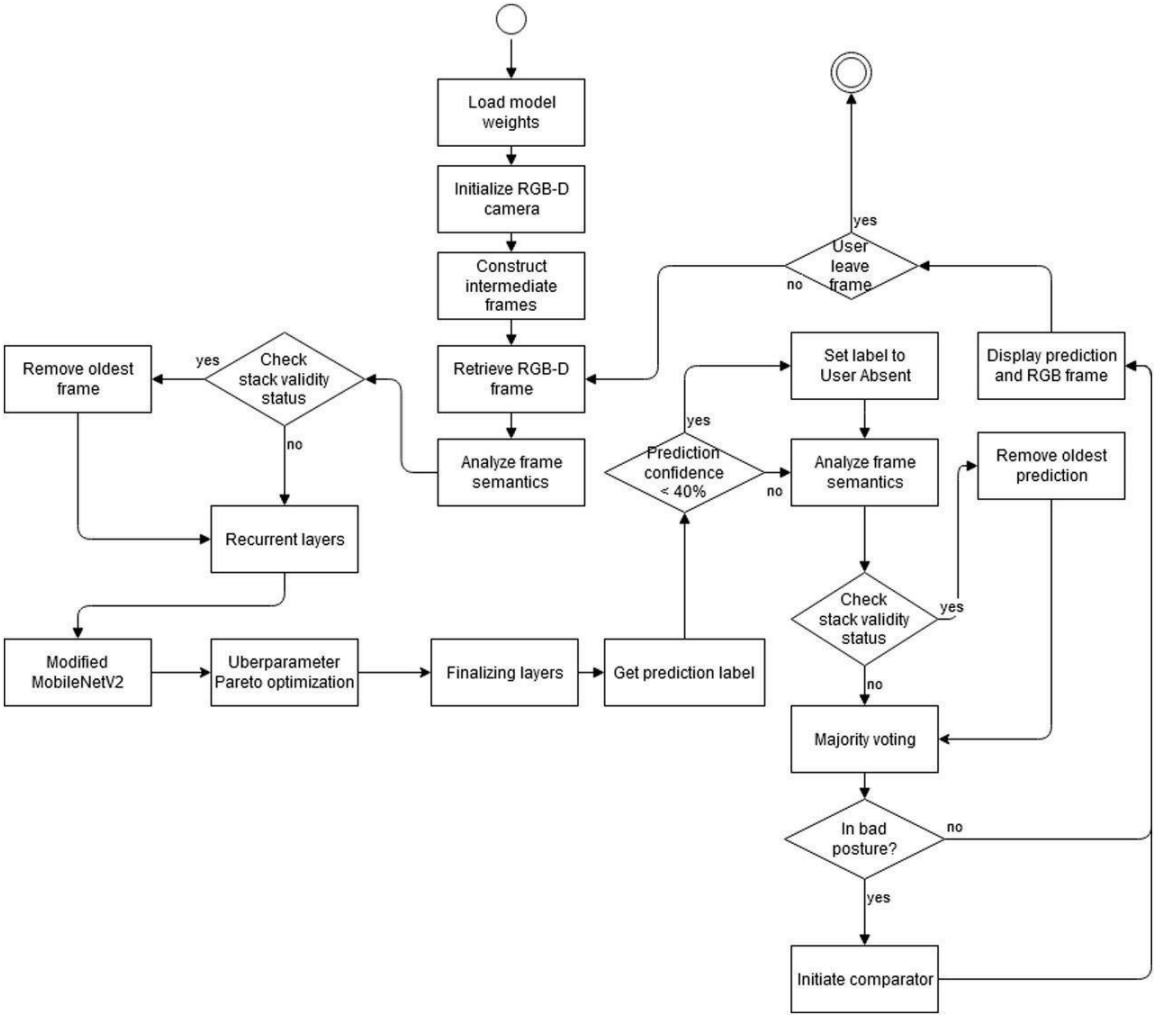

Figure 1

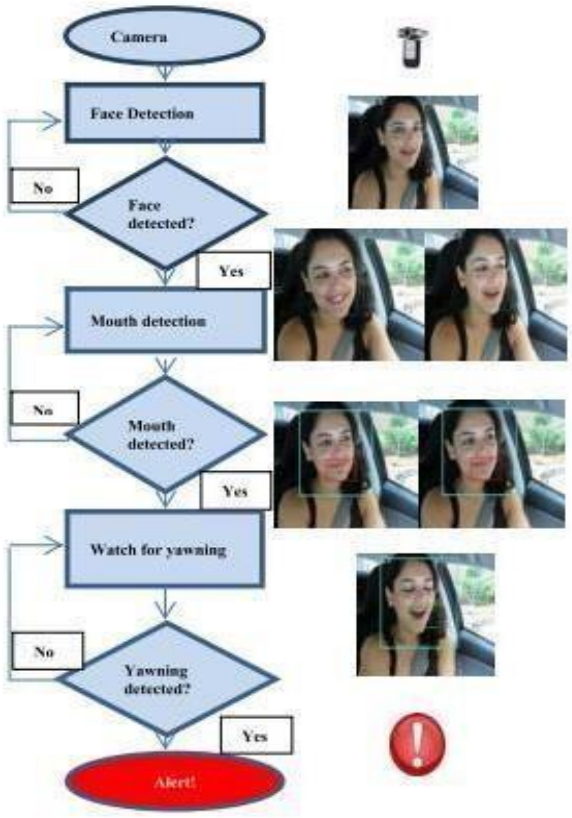

Fig. 1. Yawning detection algorithm.

Figure 2

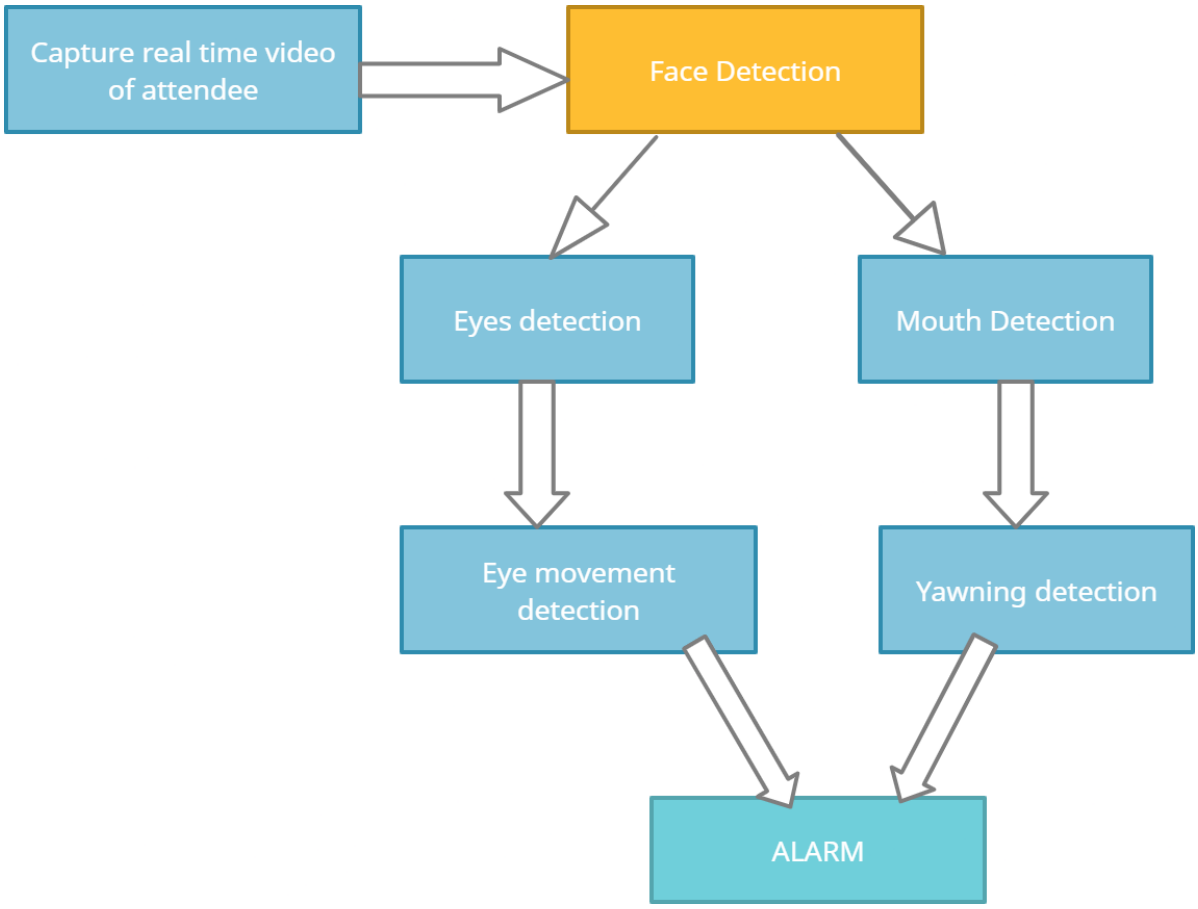

Figure 3. Process Flow

CHAPTER 5: CONCLUSION

As there is an increasing dependency on Online Meeting Platforms nowadays for classes, sessions, and meetings nowadays. This has given rise to problems like inattentiveness of students in online classes and employees not attending meeting properly. For overcoming these problems, we proposed this attentiveness detection feature to be included in the Online Meeting Platforms. This will help the organizers and teachers to be aware of the attentiveness of attendees and students respectively. This will be very beneficial for teachers to mark attendance of the students aptly, i.e., according to how much the student was attentive during the lecture. This will also help students by making them aware of their inattentiveness and helping them concentrate more in their classes.

Also, this setup is useful for online tests as it can check for the attentiveness of the candidates.

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