STUDENT LIVE BEHAVIOR ANALYSIS

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ABSTRACT -- We are all aware that, due to the current health crisis, the majority of institutions and colleges have chosen for virtual education. The learning process of students was primarily influenced by this epidemic. As a result, the virtual system was recommended by the majority of educational facilities. Many educational institutions began using virtual tools such as Discord, Google Meet, Microsoft Teams, Skype, and Zoom to teach their students. As a result, the report's major focus is on the influence of student learning through video conferencing. Although the majority of the instructors were familiar with the tools, just roughly a quarter of them said their academic performance had improved. However, some teachers were having psychological challenges as a result of the new teaching methods. procedure. To assess the student's behavior, we are employing Artificial Intelligence and Machine Learning techniques in this project. Finally, both students and teachers think that virtual tools are quite beneficial in virtual courses.

Keywords: OpenCV, Shape predictor model, Artificial Intelligence, 68 Facial landmarks data, Module description, Eye aspect ratio, Mouth aspect ratio, Head pose.

I. INTRODUCTION

Over the last decade, machine learning and computer vision algorithms have made significant progress in a variety of applications. For example, automated evaluation, facial recognition, and a variety of other security applications. The finest example of these applications is automated assessment, which may be used in the classroom to track the growth of a student's behavior.

The project's main goal is to keep an eye on the situation.

It is critical for instructors to be able to recognise and reprimand pupils' inappropriate behavior. Teachers and school administration may be able to determine whether or not pupils are paying attention in class by watching their behavior. They may also readily determine the pupils' level of interest in their chosen subject. As a result, the instructor is aware of the modifications that must be made in their teaching method. The concept of smart schooling is central to this endeavor. Its goal is to improve e-education over local networks by using one-to-many video communication, such as live courses between teachers and students on a local college or university network. It was making it more directed by employing technologies such as deep learning face identification, real-time feedback via charts and alarm systems, and so on. In addition, both students and teachers will receive a recap of the video presentation. By the end of the session, we will be able to demonstrate the attentiveness of all participants based on the data we collected using a machine learning model. To the instructor, he pupils in the class. From the pupils' perspective, they have had their whole attention during the lesson. Besides

this feature from both sides, they can have their dashboards-where their past performance was stored and also, they can add them to-do list for them to finish for a particular day. I hope that this technique proves to be more effective in recognizing student conduct in the classroom..

II. LITERATURE SURVEY

They presented a method that had previously been developed by employing an emotion detector to determine the kids' behavior using computer vision techniques and the FAR algorithm. They are able to recognize the six fundamental emotions on the face as a result of this. That, too, necessitates a neutral facial posture. Otherwise, the incorrect result will be shown. To address this, we've developed a new approach called Shape Predictor 68 Facial Landmarks. It will identify the aspect ratios by utilizing landmarks.

Using artificial intelligence and machine learning models, forecast the conduct of students in their respective forms. and recognizes when the understudies concentrate in the homeroom before reporting to the offices This means that if instructors are able to deal with students' negative attitudes, they may make more appropriate adjustments to improve the learning environment for Students.

[1] The paper offers research from the Technical College of Cluj Napoca, Romania, on understudies' behavior and perceptions regarding online instruction during the pandemic period. A total of 300 understudies took part. The survey was divided into four areas to determine the unique traits of understudies, their needs, their knowledge of virtual stages, and their quality preferences for online schooling. For 78 percent of the understudies, internet-based teaching that simulates the same thing is beneficial. Since the beginning of the epidemic, 41.7 percent of students have valued the educators' teaching talents and the quality of online courses, and 18.7 percent of students have welcomed the additional internet-based study tools to aid their learning.

[1] The motivation behind this paper is to make a connection investigation between student's web-based learning conduct elements and course grade, and to endeavor to assemble some compelling forecast model in light of restricted information. The prediction label in this paper is course grade of student's and the eigenvalues of the student's age, gender and the machine learning model which is used in this paper is the classical three-layer feedforward neural network. This paper helps the teacher to get the clue about the difficulties faced by the students in online learning. In this paper the students' data must be collected and later they perform on course grade, age, rank and gender. Firstly, they find the course grade in the form of GPA.

[1] The purpose of this research is to investigate the relationship between students' web-based learning behavior aspects and course grade, and to attempt to construct a persuasive forecast model based on limited data. In this article, the prediction label is a student's course grade, as well as the eigenvalues of the student's age and gender, and the machine learning model utilized is a typical three-layer feedforward neural network. This paper assists the instructor in gaining insight into the challenges that students experience when learning online. Students' data must be obtained for this paper, and they must then perform on course grade, age, rank, and gender. To begin, they look for the course grade, which is expressed as a Pracademic portal to retrieve the detailed schedule and to reduce the scale of student recognition. Since the students' live behavior monitoring is bonded with the many strict and tight requirements, there is a need for more investigation.

[2] [2] In this paper, they must identify the elements influencing students' satisfaction with online classes, as well as the adjustments that must be made to integrate all of the factors found in this study. The paper's findings demonstrate that the four independent criteria employed in the study were instructor quality,

quality design, fast feedback, and student expectation, all of which significantly impacted students' happiness and, in turn, positively impacted students' performance. Similarly, school closures may have an impact on children as a result of disruptions to instructors and student groups, resulting in a poor performance. According to Span, schools and colleges are focusing on innovative teaching methods to help students learn how to write.

During the pandemic season, stay away from a strain. As a result, the current study's purpose is to develop and evaluate an applied model of student satisfaction related to online instruction during COVID-19, in which both students and instructors have no choice but to use the internet-based stage of continuous learning and instruction. The exploration instrument is divided into two halves. The main area is linked to demographical elements such as discipline, orientation, age grouping, and educational level. The next section calculates the six variables: educator quality, course configuration, short critique, understudy assumptions, fulfilment, and execution.

III. PROPOSED METHODOLOGY

Student features are captured from every frame and data is analyzed based on different types of activity related to eye movement, mouth movement, head movement and analysis is done on student active status in that respective class. Graphical representation is used to show the performance of students.

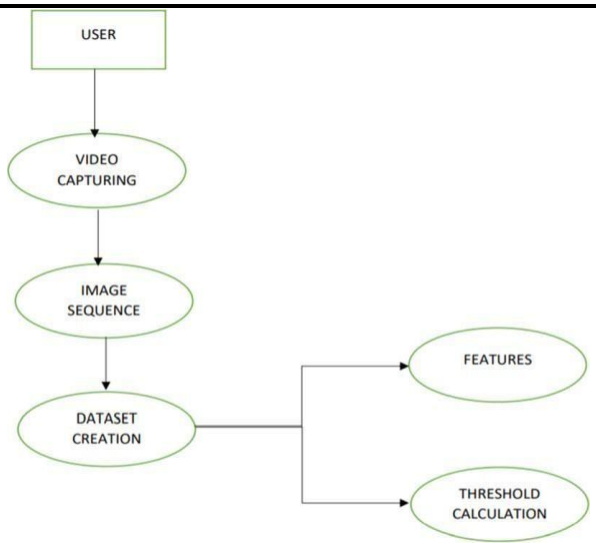


Fig1: Proposed Block diagram

3.1 Module Description:

3.1.1Client:

Every frame captures student characteristics, and data is examined based on several sorts of activity such as eye movement, tongue movement, and head movement, as well as student active status in that class. Students' performance is displayed through a graphical representation.

3.1.2 Server:

This program is managed by a student, who is responsible for opening the camera and displaying the student's footage on the screen. Each frame's details are exchanged and forwarded to other modules for processing and analysis using a trained model.

3.1.3 Face Processing Module:

Each frame is utilized as input in this module, and the shape predictor model is used to forecast different variables such as eye aspect ratio, mouth aspect ratio, and so on.

sleepy, yawn, and a head position These values are delivered to the server module when they have been calculated.

3.2 Shape Predictor Model

Shape predictors, also known as landmark predictors, are used to anticipate a given "shape" face key (x, y)-coordinates. The most well-known and often used shape predictor is dlib's facial landmark predictor, which is used to locate particular facial components such as the eye, mouth, eyebrows, and jawline. Facial landmarks are utilized in applications such as facial alignment, sleepiness detection, face swapping, and virtual makeovers. and much more.

3.2.1 Shape Predictor Algorithm

Shape prediction algorithms come in a variety of forms.

It is dependent on:

• Whether the data is 2D or 3D; whether deep learning is required; or whether typical Computer Vision and Machine Learning techniques will suffice.

However, in our project, we use an ensemble model in which the characteristics of each framework are changed, and then regression is used to maximise the sum of square losses and partially labelled data.

The procedures below should be followed to estimate landmark locations:

• Looks at how the input pixel data is collected (i.e., the features to the input model).

• Uses Ensemble Regression Technique to pass the characteristics (ERT).

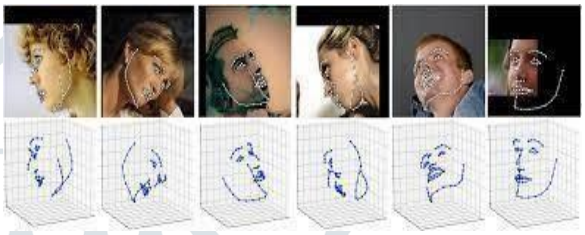
• Improves the accuracy rate by redefining the expected sites.

3.3 LANDMARKS DETECTION

Dlib's implementation of regression trees

Kazemi is the one who devised the regression approach for detecting landmarks. Each regression model is used to update the estimation of identified landmarks in a cascaded regression procedure. The first estimation position is based on the face box and requires a small amount of learned data that has been trained over several hours on a basic computer. However, the testing time is extremely rapid, down to the millisecond.

Face Alignment Network



Bulat invented the FAN, which comprises of four stacked hour glass networks. On the bottom heatmap, the network outputs a heatmap, on which the mean squared error loss is applied. Along with the several pretrained networks, a python-based FAN is offered.

IV RESULT & DISCUSSION

The result should be based on the three classifications:

Drowsiness:

We need to specify some eye aspect ratio for the output dependent on eye movement. If the eye is bigger than the EAR, the graph will grow, otherwise it will be normal, as seen in Fig 4.1.

Fig 4.1: Graphical representation of Drowsiness

Yawn Movement

The output is dependent on the mouth movement. If the mouth movement is larger than the MAR, it counts the yawn movement and plots a graph. Figure 4.2 shows the graphical depiction.2.

Fig 4.2 Graphical Representation of Yawness

Head Position

The output is determined by the location of the head. It implies that it will identify whether or not the pupil is looking at the computer screen. If he isn't looking at the screen, the graph is fast increasing; otherwise, it should be normal. Figure 4.3 shows the graphical depiction.

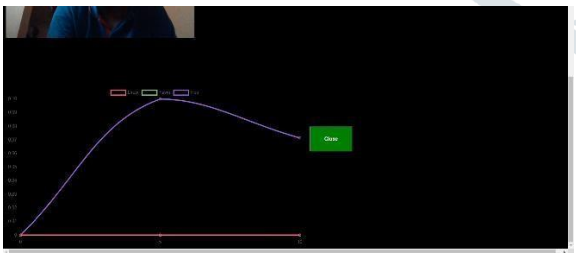


Fig 4.3 Graphical Representation for Head position

We were able to merge all three classes and create a single graph, which can be seen in Figure 4.4. (Drowsiness is brown, yawning is purple, and head pose is violet.)

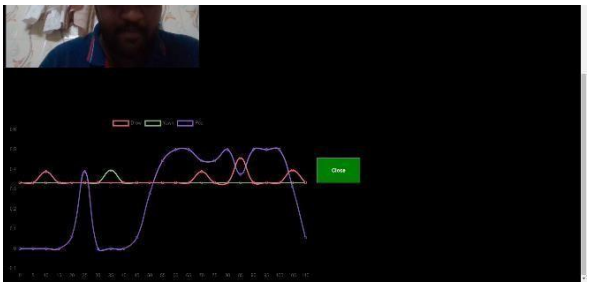


Fig 4.4 Graphical Representation for Drowsiness, Yawn, Head Pose

Finally, we will determine the student's overall performance during the class. As may be observed in Fig. 4.5.

Fig 4.5 Overall performance of Students V CONCLUSION

In the classroom teaching system, a Shape predictor model using Ensemble regression method was utilised to analyse the student's observable activities in the identification of student actions based on stated criteria.

scenes. The decision was reached shortly after the live feed review. Models for DLIB have been produced. For object detection, such models were tested using OPENCV. Since more students would prefer larger room sizes, the recommended approach is frequently adaptable and receptive to various circumstances, such as using a higher type of camera with specific upgrades, such as an IP camera for persistently capturing images of the students, identifying the countenances in pictures, and contrasting the distinguished appearances and the data set. It might be used for more significant information picture estimates, anchor box elements that are perfect

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