



## Ai Based Students Performance Monitoring for Online Classes

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**ABSTRACT** -- Researchers are all aware that, as a result of the present health crisis, the large majority of organizations and universities have opted for online courses. This epidemic had a significant impact on students' learning processes. As a result, the significant proportion of educational institutions preferred the virtual environment. Many education systems began using virtual tools to educate their students, such as Discord, Google Meet, Microsoft Teams, Skype, and Zoom. As an outcome, the report's primary focus is on the impact of virtual meetings on student performance. Despite the fact that the majority of the instructors were accustomed with the tools, only about a quarter of them reported that their academic performance had positively affected. However, as a result of the new teaching methods, some teachers experienced psychological difficulties procedure. In this proposal, we are using Artificial Intelligence and Machine Learning techniques to evaluate the students' performance. Finally, both students and instructors believe that virtual tools are extremely helpful 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

Deep learning and vision - based algorithms have made tremendous advances in a wide range of fields during the previous decade. Automated assessment, facial recognition, and a range of other safety applications are examples. The best illustration of these technologies is automated assessments, that could be used in the education to follow a student's social - emotional development. The primary purpose of the initiative is to keep a watch on the situation. It is vital for teachers to be able to detect and correct students' unacceptable behavior. Teachers and school administrators may be able to tell if students are paying attention in class by observing their behavior. They can also quickly ascertain the students' degree of interest in their selected topic. As a consequence, the teacher is aware of the changes that need to be made to their teaching style. This initiative revolves around the concept of smart schooling. Its purpose is to increase e-education over local networks through the use of one-to-many

videoconferencing, such as live courses between lecturers and students on a local school or university network. It was making it more targeted by using techniques such as deep learning facial recognition and real-time feedback using charts and alert systems, for example In addition, both instructors and learners will acquire video presenting review. We will be able to show the attention of all students towards the end of the session because of the information we obtained using a machine learning system. He students in the class, according to the teacher. They received their entire commitment during the session, according to the students. Aside from this functionality, both parties can have dashboards where their previous productivity is kept, as well as a to-do list for them to complete for a certain day. I am hopeful that this strategy will be more helpful in identifying student behavior.

### II. LITERATURE SURVEY

They showed a previously established system that used an emotion detector to determine the kids' behavior using computer vision methods and the FAR algorithm. As a consequence, they are able to distinguish the six basic emotions on the face.



A neutral face posture is also required for this. Otherwise, the erroneous outcome will be shown. To solve this, we created Shape Predictor 68 Facial Landmarks, a novel technique. It will use landmarks to determine the aspect ratios. Forecast student behaviors in its many forms using artificial intelligence and machine learning algorithms. and notices when the understudies focus in the homeroom before reporting to the workplaces This suggests that if teachers can deal with their pupils' negative attitudes, It was making it more targeted by using technologies such as deep learning facial recognition and real-time feedback.

[1] The report presents data from Cluj Napoca Technical College in Romania on understudies' behaviour and impressions of online training throughout the pandemic era. A total of 300 understudies participated. The survey was separated into four sections to establish the distinct characteristics of students, their demands, their understanding of virtual stages, and their quality choices for online education. Internet-based instruction that replicates the same thing is useful to 78 percent of students. Since the outbreak, 41.7 percent of students have praised instructors' teaching abilities and the quality of online courses, while 18.7 percent have welcomed the advent of internet-based study aids to enhance their learning.

[1] The goal of this article is to undertake correlation research between student web-based learning behavior aspects and course grade, and to attempt to construct some plausible forecast model based on limited data. In this article, the predictions label is the student's course grade, as well as the eigenvalues of the student's age and gender, and the machine learning model utilized is the traditional three-layer feedforward neural network. This paper assists the instructor in

gaining insight into the issues that students confront when learning online. Students' data must be obtained in this paper, and they must then perform on course grade, age, rank, and gender. They begin by determining the course grade in the form of GPA.

[1] The goal of this study is to look at the link between students' web-based learning behavior elements and course grade, and to try to build a convincing forecast model using limited data. The prediction label in this article is a student's course grade, along with the eigenvalues of the student's age and gender, and the machine learning model used is a standard three-layer feedforward neural network. This paper supports the instructor in acquiring an understanding of the difficulties that students face when learning online. For this paper, students' data must be acquired, and they must then perform on course grade, age, rank, and gender. They begin by looking for the course grade This is presented as a Pracademic gateway to recover the specific timetable and lower the student recognition scale More inquiry is required since the pupils' live behaviour monitoring is linked to several tough and stringent regulations.

[2] They must identify the variables impacting students' happiness with online classes in this article, as well as the changes that must be implemented to include all of the aspects discovered in this study. The findings of the research show that the four independent variables used in the study, namely teacher quality, quality design, timely feedback, and student expectation, all had a substantial influence on students' pleasure and, as a result, favorably impacted students' performance. Similarly, school closures may have an influence on children's performance as a result of interruptions to instructors and student groupings. According to Span, schools and universities are focused on novel teaching strategies to assist kids learn how to write. Stay away from a strain during the pandemic season. As a result, the current study's goal is to create and test an applied model of student satisfaction associated to online

education during COVID-19, when both students and instructors are forced to use the internet-based stage of continuous learning and instruction. The exploration instrument is split in half. The primary area is associated with demographic characteristics such as discipline, orientation, age grouping, and educational level. The six factors are calculated in the following section: educator quality, course configuration, brief criticism, understudy assumptions, fulfilment, and execution.

### III. PROPOSED METHODOLOGY

Student characteristics are caught in each frame, and data is processed based on several sorts of activity such as eye movement, mouth movement, and head movement, as well as student active status in that particular class. Graphical representation is used to display student performance.

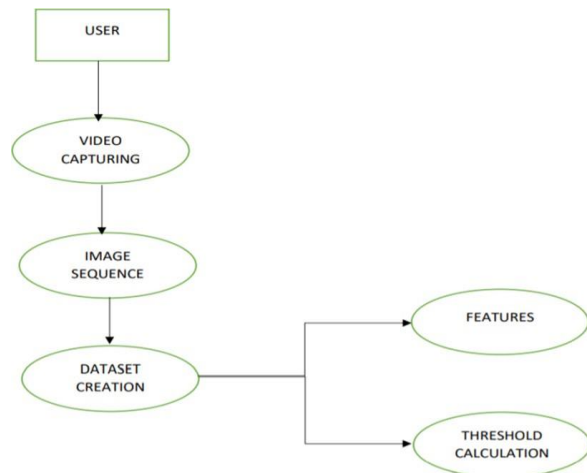


Fig1: Proposed Block diagram

### 3.1 Module Description:

#### 3.1.1 Client:

Each frame records student characteristics, and data is analysed based on several types of activity such as eye movement, tongue movement, and head movement, as well as student active status in that class. A graphical depiction of students' performance is provided.

#### 3.1.2 Server:

In this module, each frame is used as input, and the shape predictor model is used to forecast various variables such as eye aspect ratio, mouth aspect ratio, and so on. drowsy, yawn, and head position When these numbers have been computed, they are provided to the server module.

#### 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 forecast the face key (x, y)-coordinates of a given "shape." dlib's facial landmark predictor is the most well-known and widely used shape predictor, and it is used to find specific face components such as the eye, mouth, brows, and jawline. Facial landmarks are used in a variety of applications, including facial alignment, tiredness detection, face swapping, and virtual makeovers.

#### 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 maximize 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 Kazem developed the regression technique for detecting landmarks. In a cascaded regression approach, each regression model is utilized to update the estimation of detected landmarks. The initial estimation position is based on the face box and involves a little quantity of learnt data that was trained on a simple computer over few hours. The testing time, on the other hand, is exceedingly fast, down to the millisecond.

## IV RESULT & DISCUSSION

The result should be based on the three classifications:

### Drowsiness:

We need to define an eye aspect ratio for the output dependent on eye movement. The graph will expand if the eye is larger than the EAR, else it will remain normal

### Yawn Movement

The production is determined by the movement of the mouth. If the mouth

movement is more than the MAR, the yawn movement is counted and a graph is shown.

### Head Position

The placement of the head determines the output. It suggests that it will detect whether the student is looking at the computer screen or not. The graph is rapidly growing if he is not looking at the screen; else, it should be normal.

We were able to combine all three classes into a single graph

## V CONCLUSION

A Shape predictor model with Ensemble regression was used in the classroom teaching system to analyses the student's observable activities in the identification of student actions based on given criteria. scenes. The decision was made immediately after the assessment of the live feed. DLIB models have been created.

OPENCV was used to evaluate such models for object identification. Because more students prefer larger room sizes, the recommended approach is frequently adaptable and receptive to different 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 photographs, and contrasting the distinguished appearances and the data set. It might be utilized for more substantial image estimations, anchor box components that are ideal.

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