Computer Vision in Education

The Problem

With the increase of online lectures, the need to understand the effectiveness of lectures is needed to improve teaching methods or optimize student motivation and desire to learn in an online format. Therefore, the problem I would like to address is how to assess and facilitate learning in a non-obstructive manner, without continuous human interaction.

Motivation

As in-person classes have been transitioning to online classes because of the current pandemic that the world is facing, as a student I feel my academic performance has not been as optimal as desire. Therefore, this motivates me to address this problem since this is an ongoing issue to not only online lectures but also in-person lectures. I believe that with computer vision, we will be able to assist students with academic performance.

Background

One of the main issues of this problem is the engagement detection in online lectures. According to Yin, it is difficult to identify when a student is bored, stressed, or distracted as you are unable to pay attention to their body language and facial expression [1]. With computer vision, we should be able to collect and monitor student's behavior by studying their eye movement, body positions, and other factors.

Following this, we could use computer vision for attendance monitoring and campus security [1]. By using computer vision to take attendance in a big classroom, we could save time that could be spent in assisting a student's academic progress. We could also use computer vision in case of emergencies and campus security; for example, there is a fire during a lecture or lab; a professor might need to take attendance of all the students in that class. Computer vision could help identify the students.

Another issue are online exams. With more courses going online and the need of having online exams; computer vision will help identify cheating behaviors from students such as identifying suspicious eye or facial movements [1].

Finally, we have handwriting recognition of student work. Currently, paper-based tests and written exams are still mostly used for classes. By using computer vision, we can detect the student handwriting and grade their assignment without the use of a lot of graders.

References

[1]   D. Yin, "Computer Vision in the EdTech Industry – What Can AI See," *Medium* Nov. 16. 2019. [Online]. Available: https://medium.com/alef-education/computer-vision-in-education-what-can-ai-see-84d679d12a79. [Accessed Sep. 29, 2020].