AI Assisted Proctoring of Online Exams

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Abstract: Owing to the ongoing pandemic, education system all around the globe has taken a severe hit. Students could not attend their classes and take up the exams in person. In particular, the exams are being conducted online. Invigilators invigilate the online exams to detect any cheating instances. However due to more number of students the invigilator find it difficult to detect cheating events. Hence there is a immediate need for proctoring the online exams remotely. Here, Artificial Intelligence based proctoring programs invigilate the online exams and find anomalous behavior of students such as moving frequently out of the camera, whispering or uttering some common exam related words and/or a combination of both to determine the cheating instances without any ambiguity.

Methodology:

A camera is used to capture live video of the student taking the online exam and a microphone captures the students voices while the exam is in progress. The captured live video and microphone voice is provided as input to an AI assisted analysis engine. The analysis engine is a python program which makes uses of the machine learning technique to identify anomalous behaviour. Thonny IDE is used to compile the python program.

Data Analysis:

The python program using the captured live video stream and voice identifies the following:

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2. Number of times the student moves out of the camera frame along with the timestamp. Face recognition using Haar Cascade classifier algorithm is used for this purpose. When face is recognized it is considered as normal and when there is no human face, it is considered as a cheating event.
3. The words uttered are identified with the help of google speech recognition API. The words were uttered are identified with the help of google speech recognition API.
4. The number of times the student is captured outside camera frame.

The analysis engine is trained with data set from student who take up the exam without cheating and those who do cheating during the exam.

Results:

The python program for face and speech recognition is able to identify the number of instances the student moves out of the camera frame and also the words uttered by student during the online exams effectively. It is also able to record the timestamp at which the student moved out of the camera frame.

Based on the observed parameters, anomalous event detection shall be performed.

Sample Table of Findings and Observations:

Conclusions:

An AI assisted proctoring software for monitoring online exams is being developed. Python program to determine the number of instances the student is out of camera frame and to recognize the word utterances has been developed. Time stamp at which theses instances have take place is also recorded. These parameters shall be subjected to the analysis engine to determine the anomalous or cheating events.

References: