Student Attention Monitoring Tool for Online Learning Based on Machining Learning

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I certify that I have read this thesis and that in my opinion, it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

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DECLARATION

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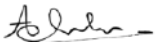
Sign:  .....

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ABSTRACT

By monitoring students in conventional classroom education, a teacher can quickly recognize or get their attention. The lack of such response from the emotions and actions of students participating in the session has an impact on distance education. The student's level of attention to the explanation of a certain lecture is a factor that may affect their ability to recall and use what they have learned. Students who keep attention are thus more involved in the learning and teaching process than those who do not, and they acquire the skills provided in the courses. As a consequence, it is crucial to create strategies and technologies that allow teachers to objectively assess their students' levels of attention so that they may make necessary adjustments to the lecture's dynamics. In order to bridge the gap between these two learning modes, the suggested system analyzes students' attention levels using the typical built-in web cameras on their laptops and developed to function in real-time while they are attending lectures, using drowsiness, movement of the head, and facial expressions such as happiness, sadness, disgust, surprise, fear, anger. This method offers the teacher available information on pedagogic efficacy while removing the requirement to switch on the camera and share student videos during the lecture. The method described in this research is conceptualized as a software architecture that runs locally on the personal computers of students. Each model that has been used is consistently performing between 80% and 98% accurately. Teachers should be able to readily detect student behaviors with the help of a thorough representation of the data obtained from the students.

Keywords: Distance Education, Attention level, Facial Expression, Head movements, Monitoring

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ABBREVIATIONS	DESCRIPTION
MOOC	Massive Open Online Course
PPG	Photoplethysmogram
LMS	Learning Management System
CNN	Convolutional Neural Network
ANN	Artificial Neural Network
V-classroom	Virtual Classroom
ResNet	Residual Convolutional Network
CPAM	Coordinate Pair Angle Method