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Obtaining Individual Feedback Based on the Real-Time Facial Expressions of Students Recognized During Online Lectures

A Dissertation by

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Abstract

Image processing is an exceptionally normal technique that is utilized to accomplish differently assignments connected with the results or the outputs required or expected to separate from the images. Generally, many automated frameworks or systems are utilizing this image processing procedure these days. There are many quantities algorithms related to machine learning and image processing to playing out this image processing task. In this research, the principal task is image processing as this is a facial expression recognition system. Emotions or feelings are very significant in settling on choices or making decisions. And also act as the main role in learning and teaching. The aim or the point of this research is to foster facial expressions recognition software. By utilizing this research, we can detect and distinguish an individual's facial expressions including the seven basic or universal expressions like happiness, surprise, sadness, neutral, fear, anger, and disgust. This is intended or designed to identify by capturing and reading an individual's (students) face and perceiving the expressions' changes during online lectures through the web cameras. Then the particular lecturer who is conducting the lecture can see every single student's facial expressions or faces through the web camera of the laptop/ device or the camera fixed in the auditorium/ lecture hall while the system works.

Using this system, the specific lecturer can arrive at a decision or make conclusions about whether the students are giving the attention to the lecture in an appropriate way or not or, more than likely the level of interest and the motivation of the student towards the lecture using the generated graphs based on the facial expressions. This will help the lecturers individually identify the comprehension of the students towards the lecture. As per this project's further improvement or development, I will make a cross-platform mobile application. This will decrease or lessen the wastage of time of the lecturers as they can get feedback for their lectures conducted online, utilizing the expressions or the emotions of the students captured, recognized, or distinguished by this system. During the process of implementing the software or the system, acquired many encounters or experiences and needed to face many challenges and deterrents. Various algorithms and techniques have been utilized in this thesis to accomplish the goals and objectives of the proposed system.

Keywords: Deep learning, face recognition, facial expressions recognition, Machine Learning, Image processing, Object tracking, Computer vision, learning and teaching, behavioral sciences, CNN, Algorithm Selection, Python, C#