PROJECT SYNOPSIS

Project Reference Number : 46S_BE_2021

Title : "**Sentiment Analysis To Improve Teaching And Learning**"

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Video Processing.

Introduction

Sentiment analysis, also known as opinion mining, is a computational process that involves determining and categorizing the emotions, attitudes or opinions expressed in a piece of image from the feedback video. It aims to understand the sentiment behind the expression and identify whether the overall sentiment is positive, negative, or neutral. Sentiment analysis techniques utilize natural language processing (NLP) and Convolutional neaural network machine learning algorithms to analyze image data and extract subjective information. Nowadays, the abundance of publicly available information encourages the study and development of Sentiment Analysis algorithms. These algorithms analyze vast amounts of user data with the goal of deducing reactions related to topics, opinions, and trends, in order to understand the mood of users who generate and share information online. The objective of Sentiment Analysis is to extract people's attitudes towards a specific topic or the desired emotional impact the author intends to have on readers. Machine learning algorithms are applied to classify the sentiment of the images which is taken from the feedback video. Common approaches include supervised learning, where a model is trained on labeled data, or unsupervised learning, where the model discovers patterns

and sentiments without pre-labeled examples. Relevant features are extracted from the preprocessed video data, Expressions (Happy, Sad, Angry, Surprise, Disgust, Fear).

Objectives

The objective of sentiment analysis in the context of video processing of students to improve teaching and learning is to extract valuable insights and understand the emotional state and reactions of students during educational videos. Sentiment analysis aims to analyze and interpret the sentiments, emotions, and attitudes expressed by students, thereby providing valuable feedback for educators and enabling them to enhance the teaching and learning experience. Here are some specific objectives : Understanding student engagement, Evaluating comprehension and knowledge retention, Assessing emotional well-being, Continuous feedback and improvement. Overall, sentiment analysis in video processing of students aims to provide valuable insights into student emotions, engagement, comprehension, and well-being, empowering educators to make data-driven decisions and improve the teaching and learning process.
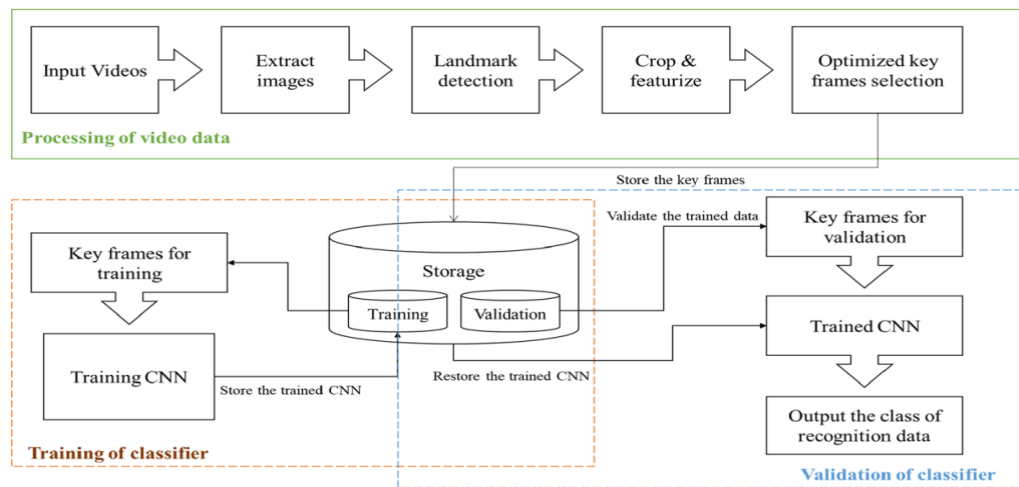
Methodology

Fig, 1.1 Block Diagram

A convolutional neural network (**CNN)** is a type of artificial neural network primarily used for analyzing visual imagery. Unlike traditional neural networks that rely on general matrix multiplication, CNNs employ a mathematical operation known as convolution in at least one of

their layers. They are specifically designed to process pixel data and are commonly utilized in tasks such as image recognition and processing. Natural Language Processing (**NLP**) techniques can be utilized in image analysis tasks in machine learning to extract meaningful information from textual descriptions associated with images. These are the two methods we are ussed in our project to extract the sentiment from the feedback system.

Result and Conclusion

Result : After analyzing all the images from the video clip the system will count for the number of the emotions which are occurred in the video of the student which is captured from each of the images like positive, negative and neutral for each frame. Then it arranges the emotions using TensorFlow, and displays result in text format containing a single line which tells the total emotion of the person. So that the admin can analyze the generated report accordingly.Like this we are going to analyze the number of randomly selected students to get to know about the understanding level of the student like this we can improve teaching and make changes in learning methods.

Conclusion : Sentiment analysis, when applied to video processing in the context of teaching and learning, offers several benefits. It enables educators to monitor and understand learners' emotional states, identify potential areas of difficulty or disengagement, and tailor their instructional strategies accordingly. By analyzing the sentiment of learners, educators can identify patterns, trends, and outliers, allowing them to make data-driven decisions to enhance the effectiveness of their teaching methods. Additionally, sentiment analysis can provide valuable feedback on the quality of video content, identifying aspects that resonate positively with learners and areas that may need improvement.

Scope For Future Work : The scope of sentiment analysis in teaching and learning with video processing is broad and encompasses various aspects,

Engagement Assessment: Sentiment analysis can help educators gauge the level of learner engagement during video-based instruction. By analyzing facial expressions, body language, and vocal cues, sentiment analysis algorithms can detect signs of attentiveness, confusion, boredom,

or frustration. This information can be used to adjust the pace, content, or delivery of the instructional materials.

Content Enhancement: Sentiment analysis can aid in the improvement of educational videos by identifying segments that generate positive sentiments among learners and those that elicit negative or neutral reactions. This feedback can guide content creators and educators in refining their videos, making them more engaging, informative, and emotionally impactful.

Personalized Learning: By analyzing individual learners' sentiment patterns, sentiment analysis can support personalized learning experiences. It can help identify learners who may require additional support or intervention, allowing educators to provide timely assistance tailored to their emotional states and learning needs.

Evaluation and Assessment: Sentiment analysis can be used as an additional tool for assessing learner satisfaction, comprehension, and overall learning outcomes. By analyzing the sentiment of post-video surveys, quizzes, or discussions, educators can gain insights into the effectiveness of their teaching methods and make data-informed decisions for instructional improvement.

Continuous Feedback Loop: Sentiment analysis, when integrated into an iterative feedback loop, can facilitate ongoing improvement in teaching and learning experiences. The sentiment analysis results can be used to adjust instructional strategies, content delivery, or learner support mechanisms, creating a dynamic and responsive learning environment.