

Face Recognition System for Emotion Analysis in Educational Settings

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Introduction

The advancement of face recognition technology progresses while researchers continue to evaluate its potential for real-time educational emotion analysis applications. The proposed project aims to build an AI platform that both identifies faces and measures student emotional responses to lecture content for instructor feedback.

Background and Motivation

Traditional education assessment utilizes test scores along with occasional surveys, which fail to maintain continuous student emotional involvement. Computer vision, along with emotion recognition made possible by modern Artificial Intelligence technologies, provides teachers with up-to-the-minute information about the student's involvement and psychological state (Indra Saputra et al., 2024).

Problem Statement

Currently, ways of getting information on students' emotional responses to educational sessions are very ineffective, so educators miss opportunities to change their approaches to teaching based on the feedback of students' emotions (Demekash Asregid et al., 2023). Despite the fact that research shows that emotional engagement motivates both understanding and remembering, today's key educational assessments do not take these emotional aspects into consideration.

Research Objectives

The research objectives are to:

1. Develop an automated system that recognizes faces and understands emotions using deep learning algorithms.

2. Develop an interface that will display graphical data on student emotions in classroom sessions.
3. Develop an algorithm that recognizes which educational approaches and classroom materials best connect with different emotions.
4. Prove accuracy and practicality by conducting system tests in controlled educational settings.
5. Analyze emotional data and develop actionable educational recommendations.

Methodology

The system will employ a CNN-based deep learning architecture trained on diverse facial datasets with emotion labels, implemented through a Python-based pipeline using TensorFlow and OpenCV to capture, process, and analyze classroom video feeds in real time.

Key Findings

The preliminary analysis suggests that real-time emotion detection can identify specific teaching moments that trigger engagement or confusion, potentially allowing instructors to modify their teaching approach during lectures rather than waiting for end-of-course evaluations (Indra Saputra et al., 2024).

References

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