AI-BASED STUDENT ENGAGEMENT LEVEL DETECTION

AI-Based Student Engagement Level Detection proposes an emotion detection algorithm called “Teacher’s Assistant”, which can be employed in a typical Indian classroom where the pupil-to-teacher ratio is high. Currently, the Convolutional Neural Network I designed as part of the algorithm stands at 86% accuracy.

The model successfully detects 7 primary emotions—happiness, sadness, disgust, surprise, anger, fear, and neutral. These are mapped to high, medium, and low engagement levels. The algorithm uses the Facial Emotion Recognition (FER) program installed in the classroom cameras to detect the emotions of students during live classes and then consequently map them with an appropriate engagement level index.

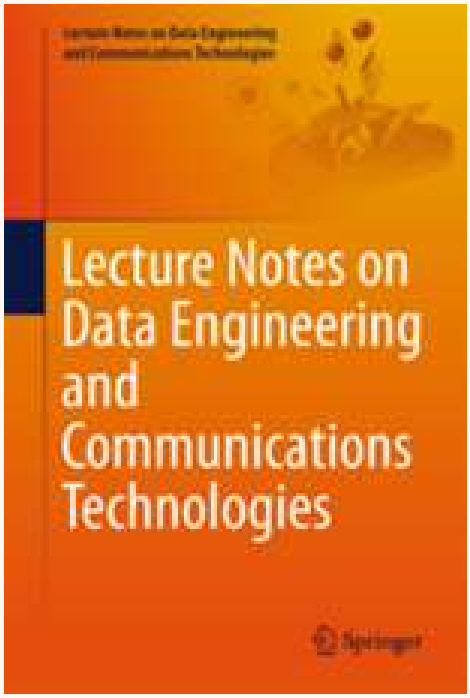
The project has valuable implications for the teaching community. The teachers can view each student's engagement reports, helping them identify engagement trends and employ appropriate interventions to improve engagement and learning outcomes for students.

Following are some of the milestones that contributed to the success of this project:

1. Proof of Concept at Aditya English Medium School: Initially implemented this technology at my school and me along with the teachers were able to detect a trend in engagement levels per student. Additionally, we were able to identify measurable ways to improve engagement levels of students

2. Wrote a Research paper and presented it at AIET 2024: Submitted the research paper to AIET 2024. Attend the conference hosted at the University of Barcelona, Spain, and presented my research paper.

3. Springer publication: The accepted papers at AIET 2024 will be published in Lecture Notes on Data Engineering and Communications Technologies and indexed by the Ei compendex and Scopus.



5. Eagle Robot Lab: I had the opportunity to work with Eagle Robot Lab, a company based in Bangalore, India. We worked on integrating Student Engagement Level Detection web service with the humanoid robot Eagle 6.0. Indus International School, Pune uses Eagle humanoid robots as teaching assistants. Including Engagement level detection technology into humanoids will help to manage the classroom better.