***Abstract:***

This project implements a real-time “Face Recognition-Based Attendance System” using a webcam feed. The system captures images of students, detects and encodes their faces, and matches them with pre-stored facial data. When a match is found, the system marks the student's attendance by recording their name along with the current date and time in a text file. This system aims to automate attendance marking, making it faster and more efficient than traditional methods.

Face encoding is performed using a deep learning-based face recognition model (from the `face\_recognition` library), which extracts 128 unique measurements (called embeddings) to represent the features of a face. These encodings are later used to compare faces. The face encodings from the webcam are compared against stored encodings using Euclidean distance. The lower the distance between two encodings, the more similar they are. A match is confirmed when the distance is below a certain threshold.Upon a successful match, the system logs the student's name, time, and date in a text file for attendance purposes. This system leverages computer vision and facial recognition techniques to streamline attendance in educational or professional settings.