
Project Overview

Title

AI Powered Location Based Attendance System with GPS & Selfie Verification

1. Introduction

Attendance management is a crucial task in educational institutions. Traditional attendance systems such as manual roll-calls or biometric devices have several limitations like proxy attendance, time consumption, and hardware dependency.

This project, **Location Based Attendance System**, is a web-based solution that uses **GPS location and selfie verification** to ensure that attendance is marked only when a student is physically present inside the classroom.

2. Problem Statement

- Manual attendance is time-consuming
 - Proxy attendance is common
 - Biometric systems are costly and require hardware
 - Students can misuse mobile-based attendance by sharing phones
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3. Proposed Solution

The proposed system solves the above problems by:

- Using **GPS-based classroom location validation**
 - Allowing teachers to define classroom boundaries
 - Using **selfie capture** to reduce proxy attendance
 - Running completely on a **web browser (no extra hardware)**
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4. Objectives

- To develop a web-based attendance system

- To restrict attendance within classroom boundaries
 - To reduce proxy attendance using selfie verification
 - To provide an easy-to-use interface for teachers and students
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5. System Overview

The system consists of two main modules:

5.1 Admin (Teacher) Panel

- Set classroom center location
- Set North, South, East, West boundaries
- Manage classroom configuration

5.2 Student Panel

- Fetch student GPS location
 - Validate presence inside classroom
 - Capture selfie for identity verification
 - Mark attendance
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6. System Architecture

Frontend:

- HTML
- Tailwind CSS
- JavaScript

APIs Used:

- Geolocation API (GPS)
- MediaDevices API (Camera)

Backend:

- python(FastAPI/Django)

ML Model:

- FaceNet

7. Algorithms Used

Distance Calculation Algorithm

- Haversine-based distance formula
- Used to calculate distance between student and classroom center