# Face Authentication and Attendance System with Geo-Location - Documentation

## Overview

This is a Flask-based application for face authentication, attendance tracking, and location tracking. It integrates face recognition using MediaPipe, geolocation tracking, and reporting features.

## Installation & Setup

### Prerequisites

Python 3.x  
Flask  
Flask-Login  
Flask-SQLAlchemy  
OpenCV  
MediaPipe  
NumPy  
ReportLab  
Pillow  
Folium  
pytz  
smtplib

### Setup

1. Install dependencies:  
```sh  
pip install flask flask-login flask-sqlalchemy opencv-python mediapipe numpy reportlab pillow folium pytz smtplib  
```  
2. Run the application:  
```sh  
python app.py  
```

## Database Models

### User Model (User)

Contains user information such as name, email, password, face embedding, and contact details.

### Attendance Model (Attendance)

Stores user attendance records with timestamps and geolocation data.

### Location Track Model (LocationTrack)

Stores user location tracking data with timestamps and coordinates.

## API Endpoints

### User Authentication

Endpoints for user login, registration, and logout.

### Attendance Tracking

Endpoints for marking attendance with face authentication and geolocation.

### Location Tracking

Endpoints for tracking user location and viewing it on a map.

### Attendance Reports

Endpoint for generating attendance reports in PDF format.

## Utility Functions

Includes face recognition, email notifications, and PDF generation functions.

## Conclusion

This system ensures secure face-based authentication with attendance and geolocation tracking. It provides automated report generation and email delivery for streamlined attendance management.

# Face Authentication and Attendance System with Geo-Location - Documentation

## Overview

This is a Flask-based application for face authentication, attendance tracking, and location tracking. It integrates face recognition using MediaPipe, geolocation tracking, and reporting features.

## Installation & Setup

### Prerequisites

Python 3.x  
Flask  
Flask-Login  
Flask-SQLAlchemy  
OpenCV  
MediaPipe  
NumPy  
ReportLab  
Pillow  
Folium  
pytz  
smtplib

### Setup

1. Install dependencies:  
```sh  
pip install flask flask-login flask-sqlalchemy opencv-python mediapipe numpy reportlab pillow folium pytz smtplib  
```  
2. Run the application:  
```sh  
python app.py  
```

## Database Models

### User Model (User)

Contains user information such as name, email, password, face embedding, and contact details.

### Attendance Model (Attendance)

Stores user attendance records with timestamps and geolocation data.

### Location Track Model (LocationTrack)

Stores user location tracking data with timestamps and coordinates.

## API Endpoints

### User Authentication

Endpoints for user login, registration, and logout.

### Attendance Tracking

Endpoints for marking attendance with face authentication and geolocation.

### Location Tracking

Endpoints for tracking user location and viewing it on a map.

### Attendance Reports

Endpoint for generating attendance reports in PDF format.

## Utility Functions

Includes face recognition, email notifications, and PDF generation functions.

## Conclusion

This system ensures secure face-based authentication with attendance and geolocation tracking. It provides automated report generation and email delivery for streamlined attendance management.