# Face Recognition Attendance System Documentation

## Project Overview

The Face Recognition Attendance System is a web-based application built with Django, OpenCV, and the face\_recognition Python library. It automates student attendance by detecting and recognizing faces in real-time via a webcam feed. Attendance records are stored in the database, ensuring accurate tracking and preventing duplicate entries.

## Features

* **Real-Time Face Detection and Recognition**
* **Automated Attendance Recording**
* **Student Registration with Face Encoding**
* **Live Video Streaming**
* **Attendance Dashboard**
* **Error Handling for Missing Faces or Invalid Inputs**

## Technologies Used

* Backend: Django (Python)
* Computer Vision: OpenCV, face\_recognition
* Database: SQLite/PostgreSQL (via Django ORM)
* Frontend: HTML, CSS, JavaScript

## Installation Guide

### Prerequisites

* Python 3.10/3.11 (64-bit)
* Git
* Virtual environment (recommended)
* CMake (required for dlib)

### Steps

1. Clone the repository:

git clone <repository-url>
cd face\_attendance

1. Create a virtual environment:

python -m venv venv
# Activate Windows
venv\Scripts\activate
# Activate Linux/Mac
source venv/bin/activate

1. Upgrade pip:

python -m pip install --upgrade pip

1. Install dependencies (Option 1: requirements.txt):

pip install -r requirements.txt

**Or manually (Option 2 for Windows)**:

# Install precompiled dlib wheel
pip install path\to\dlib‑19.xx.xx‑cp311‑cp311‑win\_amd64.whl
pip install face\_recognition opencv-python numpy django pillow

1. Run migrations:

python manage.py makemigrations
python manage.py migrate

1. Create superuser (optional):

python manage.py createsuperuser

1. Run server:

python manage.py runserver

1. Open browser at http://127.0.0.1:8000/

## Usage Instructions

1. **Register Students:** Upload name, roll number, and photo.
2. **Live Attendance:** Webcam detects faces and marks attendance automatically.
3. **View Attendance:** Access the attendance page to see daily records.

## Folder Structure

face\_attendance/
├── attendance/ # Django app
│ ├── camera.py # Video capture & face recognition
│ ├── models.py # Student & Attendance models
│ ├── views.py # Django views
│ └── templates/ # HTML pages
├── face\_attendance/ # Project settings
├── manage.py
└── requirements.txt

## Troubleshooting

| Issue | Solution |
| --- | --- |
| ModuleNotFoundError: face\_recognition | Ensure dlib & face\_recognition installed in active environment, use precompiled dlib wheel on Windows |
| Webcam not opening | Check camera permissions, try different indices (0,1,2) |
| CMake error | Install official CMake from cmake.org and add to PATH |

## License

For educational purposes only.