

Real Time Face Attendance System

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ABSTRACT



- This project presents a Real-Time Face Attendance System using Python and Firebase.
- The system captures live video, recognizes faces using computer vision techniques, and automatically marks attendance.
- Attendance records are stored in Firebase and updated in real time.
- The solution is contactless, fast, and reduces proxy attendance, making it suitable for educational institutions and organizations.

PROJECT OBJECTIVE AND TOOLS USED

Objective:

- To design and develop a real-time face recognition-based attendance system.
- To automate attendance marking and eliminate proxy attendance.
- To provide a contactless, fast, and accurate attendance solution.
- To store and update attendance data in real time using Firebase.
- To create a scalable system suitable for classrooms, offices, and institutions.

TOOLS AND LIBRARIES USED:

PYTHON

FACE_RECOGNITION
NUMPY

FIREBASE_ADMIN

CV2
CVZONE

OS

PICKLE
DATE-TIME

MODULES OVERVIEW

1. firebase admin

- Used to connect the Python backend securely with Firebase.
- Enables real-time read/write operations for attendance data.
- Ensures authenticated and authorized access to Firebase services.

2. pickle

- Used to store and load face encodings (embeddings) efficiently.
- Helps in fast retrieval of trained face data during recognition.
- Reduces processing time by avoiding repeated training.

3. face recognition

- Core library for face detection and face recognition.
- Converts facial features into numerical embeddings.
- Compares live faces with stored data to identify individuals.

MODULES OVERVIEW

4. cv2

- Used to capture live video from the camera.
- Handles image preprocessing like resizing and frame conversion.
- Plays a key role in real-time image processing.

5. os

- Used for file and directory handling operations.
- Manages image paths, dataset folders, and local files.
- Helps in system-level operations like file access.

6. storage

- Used to upload and retrieve face images from Firebase Cloud Storage.
- Ensures secure and scalable storage of image data.
- Stores image URLs instead of raw image data in the database.

MODULES OVERVIEW

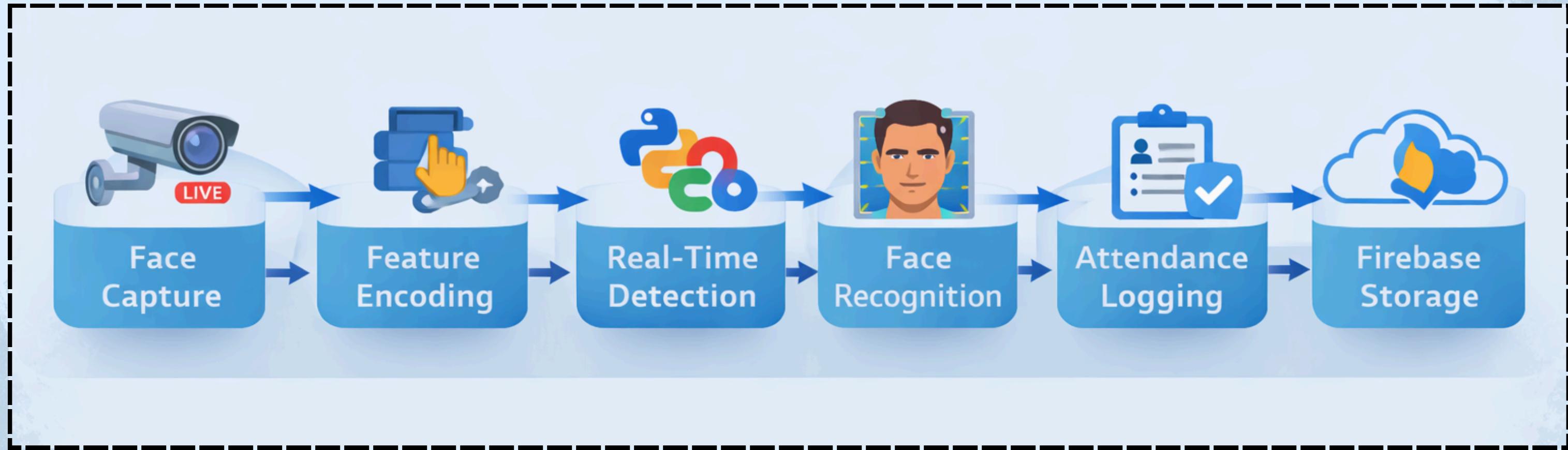
7. credentials

- Used to authenticate the application with Firebase.
- Ensures only authorized backend access to Firebase services.
- Prevents unauthorized data manipulation.

8. datetime

- Used to record date and time of attendance.
- Helps in maintaining daily attendance logs.
- Prevents multiple attendance entries for the same day.

METHODOLOGY



CONCLUSIONS

- The Real-Time Face Attendance System provides an accurate and automated solution for attendance management.
- It reduces manual effort, prevents proxy attendance, and improves efficiency.
- The integration of Python-based face recognition with Firebase enables real-time and secure data storage.
- The system is scalable and can be extended for institutions, offices, and smart environments.

FUTURE ENHANCEMENTS

- Role-based access for individuals.
- AI-Based Attendance Prediction.
- Mobile application integration.
- Offline Attendance Sync.
- Multi-Institution Support (SaaS Model)
- Automated Compliance & Reports

Thank You