Automated Attendance Tracking System requirements

Functional Requirements

1. **User Registration and Management**
    - The system shall allow administrators to register new employees by capturing their photographs and storing them in the database.
    - The system shall provide functionalities to update or delete employee information and photographs.
2. **Attendance Marking**
    - The system shall identify and authenticate employees using facial recognition technology.
    - The system shall mark the attendance of the employee once authenticated.
    - The system shall record the time and date of attendance.
3. **User Authentication**
    - The system shall authenticate administrators before allowing access to the application.
4. **Report Generation**
    - The system shall generate daily, weekly, and monthly attendance reports.
    - The system shall allow exporting reports in various formats (e.g., PDF, Excel).
5. **Real-time Notifications**
    - The system shall send real-time notifications to administrators if any unauthorized person attempts to gain access.
    - The system shall notify employees of their successful attendance marking (with audio like hello employee name^^, or type name on screen).

6. **Integration**
    - The system shall integrate with existing HR and payroll systems to update attendance records automatically.
7. **User Interface**
    - The system shall provide a user-friendly interface for administrators.
    - The system shall display real-time attendance status on a dashboard.

Non-Functional Requirements

1. **Performance**
    - The system shall process and recognize faces within 2 seconds.
    - The system shall handle up to 100 concurrent user recognitions without performance degradation.
2. **Scalability**
    - The system shall be scalable to accommodate the growing number of employees.
3. **Accuracy**
    - The system shall achieve at least 99% accuracy in facial recognition to minimize false positives and negatives.
4. **Security**
    - The system shall ensure that all data (including images and personal information) is stored securely and encrypted.
    - The system shall comply with data protection regulations (e.g., GDPR).
5. **Availability**
    - The system shall be available 99.9% of the time.
    - The system shall include failover mechanisms to ensure continuous operation.
6. **Usability**

- The system shall have an intuitive interface that requires minimal training for administrators.
- The system shall provide help and support features.

7. **Maintainability**
    - The system shall be designed to allow easy updates and maintenance.
    - The system shall include logging and monitoring features to help in maintenance and troubleshooting.
8. **Compatibility**
    - The system shall be compatible with various types of cameras and hardware configurations.
    - The system shall be operable on different operating systems and platforms (e.g., Windows, Linux).
9. **Backup and Recovery**
    - The system shall have automatic backup features to prevent data loss.
    - The system shall provide a recovery mechanism to restore data in case of a system failure.
10. **Compliance**
    - The system shall adhere to industry standards and best practices for facial recognition technology.