**Title of the project : Facial Recognition (Attendance System)**

**Abstract**

Purpose:

The purpose of this project is to develop an efficient and high-accuracy facial recognition system using machine learning techniques. This system will be implemented to automate attendance management by recognizing faces via a webcam and recording attendance in real-time. The goal is to reduce manual efforts and errors, offering a reliable solution for attendance tracking in educational and organizational settings.

Methodology:

1. Exploration of Facial Recognition Concepts : The project begins by exploring the core concepts of facial recognition, including feature detection, face recognition algorithms, and how these technologies identify unique facial patterns.
2. Implementation of Facial Recognition Model : Using machine learning libraries such as OpenCV and TensorFlow/Keras, a basic facial recognition model is developed to recognize and classify faces.
3. Webcam Integration for Real-time Recognition : A webcam is integrated to detect faces in real-time. The system captures live images, compares them with the trained model, and identifies recognized individuals.
4. Attendance Logging : Once a face is identified, the system automatically logs the individual's name and timestamp in an Excel sheet using Python libraries like `pandas` and `openpyxl`.

Results:

The project successfully creates a facial recognition system with real-time capabilities. It automates the attendance process, demonstrating an improvement in accuracy and efficiency over manual methods. The system reduces errors in attendance tracking and offers scalability for multiple users in different settings.

Conclusions:

This project highlights the practical application of AI in streamlining administrative tasks such as attendance management. By utilizing facial recognition, the system ensures a non-intrusive and efficient way to monitor attendance. The results show that machine learning techniques combined with live data capture offer a scalable and accurate solution for real-world problems like attendance tracking.

Keywords:

Facial Recognition, Machine Learning, Real-time Attendance, OpenCV, TensorFlow, Keras, Excel Automation, AI in Education.