Artificial Intelligence and Machine Learning (AIML) – Project

Names: **Sec: 5**

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Problem Statement: Attendance Management System Using Face Recognition

Attendance Management System Using Face Recognition is a computer application that automates the process of taking attendance by using facial recognition technology. This system aims to replace the traditional manual attendance taking methods, which are often time-consuming, error-prone, and susceptible to proxy attendance. The proposed system uses a high-resolution digital camera to capture images of students in a classroom. These images are then processed using facial recognition algorithms to detect and recognize individual faces. The recognized faces are compared against a database of registered student faces to mark their attendance

Dataset:

1. **Title:** VGGFace2.
   Source: Visual Geometry Group at the University of Oxford
2. **Title:** LFW
   Source: University of Massachusetts, Amherst

Algorithm:

Step 1: Automated attendance marking: The system automatically marks the attendance of students present in the classroom without the need for manual intervention.
Step 2: Improved accuracy: By using facial recognition technology, the system can accurately identify students and eliminate errors associated with manual attendance taking.

Step 3: Time-saving: The automated process saves time compared to traditional attendance taking methods, especially in large classrooms with many students. .

Step 4: Reduced proxy attendance: The system prevents proxy attendance, where one student marks attendance for another absent student, by requiring each student to be physically present in the classroom.

Expected Outcome:

The Attendance Management System using Face Recognition is expected to deliver an automated and efficient solution for tracking attendance through advanced facial recognition technology. By accurately detecting and recognizing the faces of students or employees in real-time, the system will match them against a database of registered individuals, significantly reducing errors associated with traditional manual methods. This automation will eliminate issues like proxy attendance and missed entries, resulting in more reliable attendance records.

In addition to enhancing accuracy, the system will streamline the attendance process by automatically marking attendance as individuals enter the classroom or workplace. This time-saving feature allows educators and administrators to focus on more critical tasks rather than spending time on manual attendance taking. Furthermore, the face recognition approach will enhance security by preventing unauthorized individuals from marking attendance, ensuring that records remain tamper-proof.

The system will also generate detailed attendance reports and analytics, providing valuable insights into trends such as punctuality and absenteeism. This data can inform better decision-making and policy formulation. Integration with other systems, such as student information management or HR platforms, will enhance functionality by enabling features like notifications to parents or guardians and payroll calculations based on attendance data. With a user-friendly interface for both administrators and individuals, this Attendance Management System aims to revolutionize attendance tracking in educational institutions and workplaces, making the process more accurate, efficient, and secure.