RECOGNITION USE: FORENSIC FACE SKETCH CONSTRUCTION AND RECOGNITION

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Introduction:

Criminal identification traditionally relies on eyewitness sketches and manual facial recognition, which are often time-consuming and prone to inaccuracies due to human memory limitations. This project introduces an advanced system that integrates digital face sketch construction with automated facial recognition. The system enables investigators to create suspect sketches using a drag-and-drop interface and then identify individuals using machine learning techniques. By incorporating the Local Binary Patterns Histogram (LBPH) algorithm, the system enhances recognition accuracy even with low-resolution or partially obscured images. This project aims to improve the efficiency, reliability, and speed of forensic investigations, thereby supporting law enforcement agencies in faster and more accurate criminal identification.

Objectives:

1. To develop a digital face sketch construction system using a drag-and-drop interface.
2. To implement facial recognition using the LBPH algorithm.
3. To improve accuracy and efficiency in criminal identification.
4. To design a user-friendly system for law enforcement agencies.

Methodology:

The proposed system consists of two main modules: Face Construction and Face Recognition. In the first module, users create facial sketches by selecting and arranging facial features such as eyes, nose, mouth, and hair through an intuitive interface. In the

second module, the LBPH algorithm is used to extract facial features and compare them with images stored in a criminal database. The system performs preprocessing steps such as grayscale conversion, normalization, and feature extraction before recognition. The backend is developed using Python (Flask/Django), while the frontend uses HTML, CSS, and JavaScript. The system stores data securely in a database and provides matching results with confidence levels.

Result and Conclusion:

The system successfully demonstrates the ability to construct facial sketches digitally and recognize faces using the LBPH algorithm. The results show improved accuracy and faster processing compared to traditional methods. The integration of sketch construction and recognition into a single platform enhances usability and effectiveness in forensic investigations. The project concludes that combining image processing and machine learning techniques significantly improves criminal identification systems.

References:

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Future Scope:

1. Integration of deep learning models (CNN, FaceNet) for higher accuracy.
2. Development of real-time recognition using CCTV footage.
3. Implementation of mobile-based forensic applications.
4. Expansion of database for large-scale criminal identification.