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Missing Persons Identification Using Deep Learning

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Abstract: *Missing person cases are among the most urgent issues facing the world, impacting families and law enforcement agencies worldwide. Traditional search methods, such as manual identification through photographs, public announcements, and eyewitness reports, are often time- consuming, inefficient, and prone to human error. As artificial intelligence (AI) advances, and deep learning, it is feasible to automate missing person identification using real-time identification of faces technology. This research proposes an AI-driven System for Missing Person Identification that integrates deep learning, real-time video analysis, and automated alert mechanisms to increase the effectiveness of locating missing individuals. CNNs, or convolutional neural networks, are used in the suggested system for face recognition, OpenCV for image processing, MySQL for database management, and SMTP for automated email notifications. By leveraging IP cameras and surveillance networks, the system continuously scans live video feeds to detect, recognize, and match missing persons against a pre-registered database. The methodology of this system is structured into six major components: (1) Data Collection and Preprocessing, where missing person images are gathered and processed for AI model training; (2) Face Recognition Model, a CNN-based deep learning framework that encodes and classifies facial features with 98.2% accuracy; (3) Real- Time Video Processing, using OpenCV to detect and extract faces from live surveillance feeds; (4) Database Storage and Management, where facial encodings and Personal data is safely kept in a MySQL database; (5) Automated Warning System, which sets off real-time email notifications with geolocation details when a missing person is identified; and (6) System Performance Evaluation, where accuracy, response time, and efficiency are assessed to optimize results.*

Keywords: Missing Person Identification, Convolutional Neural Networks and Deep Learning (CNN), Real-Time Face Recognition, AI-Based Surveillance, OpenCV, Facial Feature Extraction, Automated Alert System, Geolocation Tracking, MySQL Database Management, Computer, Artificial Intelligence, and Machine Learning Vision, IP Camera Surveillance, Law Enforcement Assistance, Predictive Analytics, Image Processing

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