Foresight AI

Foresight AI is an innovative, offline, AI-powered Missing Person Detection System that harnesses the power of advanced face recognition technology to analyze CCTV footage and identify individuals with unmatched precision. Designed with both performance and accessibility in mind, this system is optimized for modest hardware such as the ASUS VivoBook Go 15 (AMD Ryzen 3 5300U, 8GB RAM) while still delivering high accuracy and rapid processing speeds.

The project employs state-of-the-art techniques like frame skipping, OpenCL GPU acceleration, and memory-efficient video processing to reduce computational overhead and expedite detection. Users can seamlessly insert video footage and reference images through a sleek, dark-themed GUI built with CustomTkinter. This user interface not only allows for effortless task initiation with clear progress tracking but also provides essential controls such as pause, resume, and stop functions to manage the detection process effectively.

Upon starting a detection task, the system verifies the presence of the target individual by comparing the provided reference image with the faces detected in the video. When a match is found, it captures and saves snapshots of the detected face along with precise timestamps, while simultaneously calculating the frequency of the individual's appearances. All related data—including images, occurrence counts, and timing information—are organized into a structured folder hierarchy for easy access and review.

Foresight AI's robust design includes comprehensive error handling mechanisms and ensures complete functionality in an offline environment. The system also streamlines dependency management by allowing required models to be installed directly via the terminal, eliminating the need for local model directories. Additionally, the project incorporates both front-end and back-end developments to maintain a clear separation of concerns and enhance maintainability.

With a focus on accessibility for beginners, Foresight AI is accompanied by detailed documentation and a sample README that guides developers through setup, usage, and further customization. This ensures that even those new to AI and computer vision can successfully implement and expand the project. Overall, Foresight AI stands as a versatile and reliable solution for missing person detection, combining cutting-edge technology with user-centric design to address real-world challenges in surveillance and security.

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