

DreamVision Face Recognition

DreamVision Face Recognition is a fully automatic facial recognition system built upon state-of-the-art technologies. It automatically captures faces in the viewing area of camera, extracts facial characteristics, compares the characteristics against those stored in the database of pre-enrolled individuals, and finds a match in less than 1 second.

DreamVision Face Recognition is a proactive biometric solution able to recognize identity by generic video devices without the need of physical contact to any device. When an unauthorized individual comes into the viewing area, DreamVision Face Recognition automatically captures and recognizes his/her face, delivers a message to relevant parties, and stores the facial image for further inspection. The features of hands-off operation and auto-image-storage make DreamVision Face Recognition an outstanding choice among various biometric solutions.

Components

DreamVision Face Recognition is composed of the following four major modules: a face detector, a feature extractor, a model builder, and a decision maker.



Face Detector

It detects faces from images of video sequences or photographs, and separates the faces from background using image processing and computer vision technologies. The images can be either colour or black-and-white.

Feature Extractor

It extracts characteristic features from facial images. The features allow a unique representation for each individual.

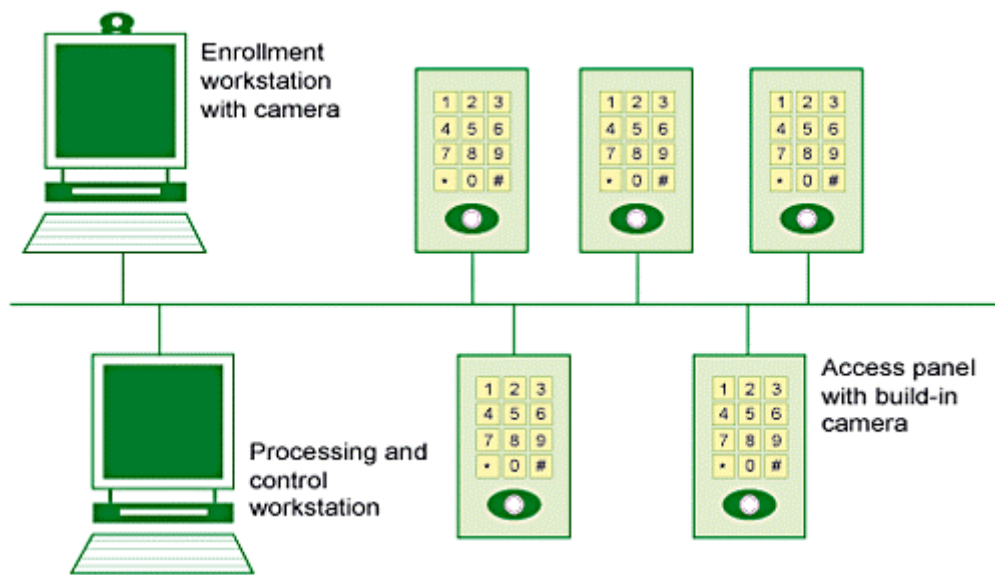
Model Builder

It builds a multidimensional model for each enrollee's face using the extracted facial characteristic features. The model is developed when one is enrolled to the system, and then stored in a database.

Decision Maker

When a facial image comes in to the system, its features are first extracted, and the decision maker takes these features to find a match to a facial model in the database. If the match is above certain confidence, the identity of the facial image will be rendered and accepted; otherwise rejected.

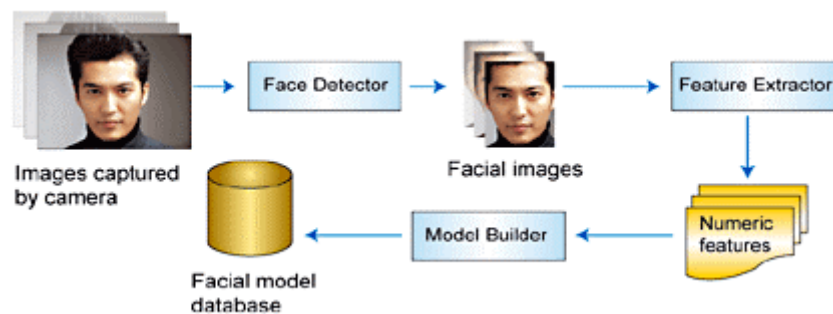
System Configuration



Workflows

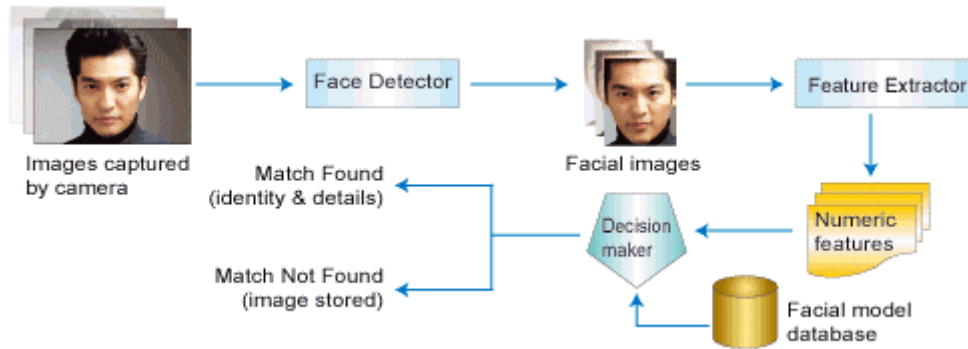
Enrolment

When a user enrolls in front of the enrolment workstation with an integrated camera, the user's facial images will be immediately processed by the face detector, then by the facial feature extractor, and then by the model builder to develop a facial model to be stored in the facial database.



Recognition

When an individual comes into the viewing area, his/her facial image will be captured, facial features extracted and matched against all facial models in the database. The match search will run throughout all enrollees in the database. When a match is found above certain confidence, his/her identity is rendered; otherwise, he/she is considered an impostor, and the captured images will be stored for follow-up actions.



Authentication

Different from the above recognition in which user does not give any information and the system searches for a match all by itself, in authentication user first claims his/her identity and the system verifies if the claim is true or false. In short, recognition performs a one-to-many match, authentication performs a one-to-one match. The processing flow is mostly the same as the above for recognition but the output from the facial model database is the one only claimed by the user, the decision maker then verifies whether the user's face matches the model of the claimed identity.

System Specifications

- Intel Pentium III or above compatible
- Minimum 128 MB RAM
- Windows 98, 2000, or XP OS, and DirectX 8.0 or above for image display
- Minimum 6 MB required for installation
- Each facial model size 600 KB
- Feature size 4 KB
- Digital camera with USB interface and minimum resolution 380,000 pixels

Performance

- Both on-line and off-line enrolment available
- Recognition time less than one second
- Both FRR and FAR less than 1%, tested up to 500 individuals