f²

Face Forensics
High Volume
Identity Verification
for Access Control

Face Forensics' f2 is highly advanced face recognition technology which provides both one-to-one matching (identity verification), one-to-many (identification), and many-to-many (multiple enrollment detection).

A major application of identity verification is controlling access to secure buildings, where its role is to confirm that people entering are authorized to do so. It works as follows.

If employee photos don't already exist in the employee database the first step is enrollment of everyone who is authorized to enter the building. Several photos will be taken of each employee and stored in the employee database (or linked to it). Each facial shot is encoded by f2 by detecting approximately 3000 features in the central area of the face, i.e. ignoring facial hair which can be changed. This information is then transformed mathematically into a numeric string - this is a unique identifier for each facial image. To maximize search speeds the strings are held in server memory.

Example of a 1:1 Match

When anyone enters the building their access card will be scanned (RFID cards will be read automatically).   As the person walks forward a camera facing them automatically detects their face approaching and takes 3-4 shots (this is in case they're blinking, sneezing, etc.). Each shot is encoded as above.

So to allow for image differences f2 one-to-one matching is actually few-to-few.

Each encoding from the camera shots is then compared with the numeric strings for this individual held in server memory.   If this exceeds a user-defined acceptance threshold the two faces are deemed to match, the person is accepted to be the owner of the access card, and they will be cleared to continue walking uninterrupted into the building.

If the match% is below the threshold they won't be allowed to enter and security officers will be alerted to take them to one side for further checking. A key feature of the system is that if they refuse to cooperate f2 can be used in identification mode to compare the camera image with the faces of all the employees in the database to determine if the individual is an employee (or ex-employee) with someone else's card, or an unknown person.

In all cases the application keeps a time-stamped record of the images as well as details of the specific entry lane that the match took place for future investigation if required.

The f2 matching process is effectively instantaneous and will not delay valid employees entering. This is the case regardless of the number of employees.

f2 connects easily to existing employee databases (in read-only mode, so data integrity is assured). It holds no images itself (unless the user wishes) apart from a small test database.

Key Features:

- Matching is extremely fast – authorized employees don't have to slow down to be verified when they enter the building

- Multiple shots are taken and matched as the employee (whose ID card has been read on entry) walks towards the camera, so a good facial image can be obtained even if they're wiping their face, coughing, looking down, etc.

- The employee has no physical contact with the system in order to be identified

- f2 includes high-speed one-to-many matching as standard, so any unmatched face can be immediately identified

- In the case of buddy-punching, where one employee checks in on behalf of a colleague, f2 can immediately identify both, effectively stopping buddy-punching completely

- f2 is designed to be straightforward to install, test (using the application), and integrate (using the SDK or web service). It can be downloaded for 30 days at no charge

The Face Forensics team has over 18 years' experience in developing face recognition technology and implementing major systems across North America and around the world. We can provide advice on installation and implementation including type and location of cameras, hardware specifications, lighting, software integration, etc.

System Requirements

f2 is available as a stand-alone/networked application, as a .Net SDK, and as a web service. It runs under Windows 10 (in 64-bits). It will access SQL Server, Oracle, and DB2 databases. Cameras should support Microsoft DirectX or DirectShow.