Face Forensics
Detection of Multiple Records of the Same Person under Different Names

Face Forensics' f2 is a highly-advanced face detection and recognition system – the result of many years experience in the forefront of face recognition development. It will:

- Search a database to identify an unknown face

- Verify that an individual is who they claim to be

- Detect and recognize faces in a video stream

- Identify part of a face in a forensics or investigations environment

- Check an entire database, or multiple databases, for multiple records of the same person using different names, i.e. N:N matching

Detection of Multiple Records – N:N Matching

f2 can match every facial image in a database against every other to identify instances where an individual has multiple records under different names. Examples are where an individual has been registered by the same organization at different locations, and where an ID document such as a drivers license has been confiscated, e.g. for DUI, whose owner is desperate to continue driving.

f2 connects easily to the images in existing databases and will automatically enroll them all by detecting and encoding over 3000 characteristics of each face. These generate a unique numerical string describing the face in detail. The arrays are stored in server memory. f2 can search any database on a network under appropriate controls.

A Matchlist Showing an Individual under his own Name
Together with Two Aliases

The encode array of each face is then matched in turn against the encode arrays of all the other faces in the database. By setting the matching threshold relatively high, the incidence of false positives, i.e. faces that largely match the characteristics of the individual but are actually of someone else, are kept to a minimum. All matches above the threshold are displayed on the panel on the left, and also sent to a separate folder for review.

A major factor with N:N matching is that the number of comparisons involved increases geometrically as the database(s) get larger. If there are 10,000 enrolled faces in a database N:N matching would involve 50 million comparisons. If there are 100,000 it would involve 5 billion. f2 incorporates various features to minimize the time that this will take, as well as minimizing the number of false positives that would have to be visually checked, as below:

Key features:

- f2 has been developed in 64-bits, enabling it to work extremely quickly with databases of any size, including those incorporating tens or even hundreds of millions of records

- The encode arrays are held in server memory, enabling extremely high search speeds to be achieved

- While the number of matches can be enormous, this can be handled by splitting the search across multiple copies of f2 installed on multiple cores & processors. f2 is multithreaded

- Unlike most computer applications, with multiple record detection a significant benefit is gained the first time that f2 is run against an existing database, because all the duplicate records of the same individuals built up over the life of the database can be identified in one shot. When new records are subsequently added to the database the new face can be checked by f2 against all faces already there on a 1:N basis to detect if it already exists under a different name

- f2 is not constrained to searching a single database. Every image in one database can be matched against every image in another, regardless of whether they use the same underlying database system or not. For example, all the faces in an Oracle database can be compared with all those in a SQL Server database

- While f2 can be configured to handle the matching task in a reasonable period of time by using the means described above, in large databases there will inevitably be very similar faces, and these are likely to generate false positives. The incidence of these can be substantially reduced by the use of text filters on fields such as gender. Multiple text filters can be used.

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 Oracle, SQL Server, and DB2 databases. The user interface can be switched to any language.

For more information visit www.SketchCop.com or email Contact@SketchCop.com

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