Face4 Recognition System (FRS)

A Face4 Systems Inc. Product

The Face4 Recognition System (FRS) is a large scale, 1: N face recognition matching solution. FRS is designed to perform fraud check in a secure-ID issuance system such as passport or drivers' license and to perform identification checks in support of larger software systems to support police and other security agencies. Integration is easy as all external interfaces are through web services. FRS is scalable to accommodate any combination of image gallery size, matching throughput, and matching speeds.

FRS Architecture

The FRS is built upon a web-based architecture. Client applications communicate with the FRS backend. The FRS provides a "Client API" as a .NET DLL which can be easily integrated into a client application. Additionally, the Client API can be accessed by direct requests to the Web Server, hence allowing integration directly into a web application. Any number of clients can simultaneously connect to the FRS.

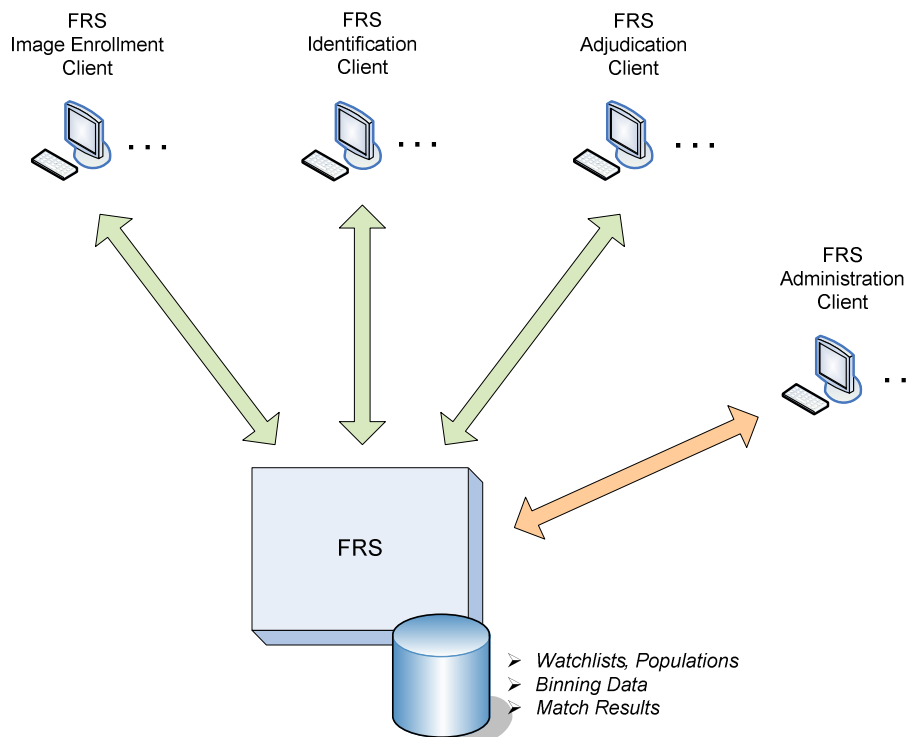**The FRS high level architecture is shown in Figure 1 below.**

Figure 1: FRS high-level architecture. All clients make requests to the FRS Web Server.

Operational Workflow:

The Client API is designed to reflect the typical operational workflow of secure-ID issuance, and as such is divided into 4 main components or classes: Enrollment, Identification, Adjudication, and Administration.

- The Enrollment class is used for submission of new individuals and associated images either in single enrollments or in batch enrollments - the latter would be used for large batches such as initial loading of a database.
- The Identification class is used for matching requests, each of which can be customized in terms of match threshold, max matches (Top N), and binning parameters.
- The Adjudication class is used to retrieve match results and investigate potential matches and images.

Adjudication:

The FRS includes an Adjudication GUI control (.NET User Control) which can be integrated into an investigation app. The Adjudication GUI provides an investigation tool for a forensic operator including essential visual tools for automatic selection and detailed comparison of facial landmarks, zooming and panning of these landmarks, and also super-imposing of facial images.
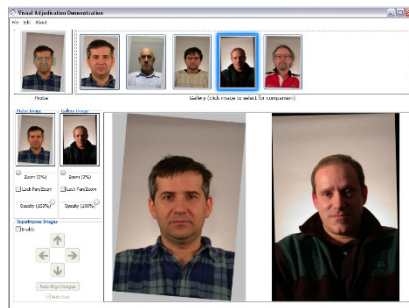

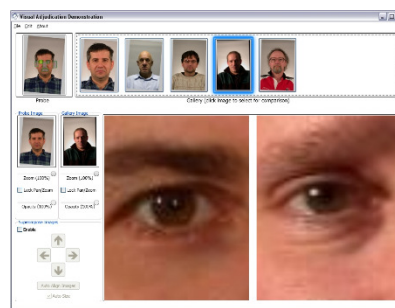
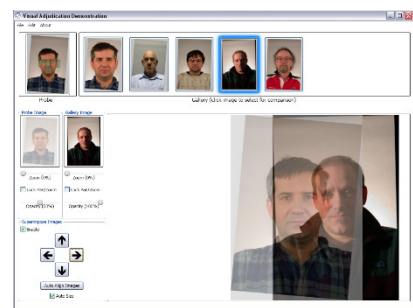**Fig. 2** For Visual Adjudication   **Fig. 3** Zoom on Face Features   **Fig. 4** Superimpose Face Images

FRS provides an integrator with a comprehensive large and scalable face recognition and adjudication system for fraud detection and investigation support.