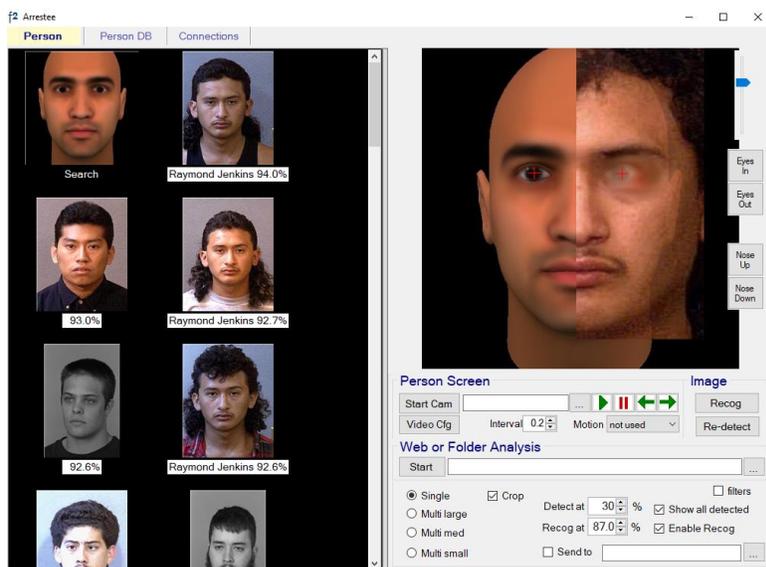




# Face Forensics Disaster Recovery & Victim Identification Suite

In the event of a major disaster such as an earthquake, tsunami, terrorist event, etc, a major concern is the need to keep government and essential services going by identifying which key people have died, identify who is best to replace them, and get them into place as soon as possible. DVI is specifically designed to handle this, with a particular focus on vital departments and agencies, for example emergency services, government officials, police, the military, religious leaders, etc, enabling services to be re-established as quickly as possible.



Partial face with the good eye closed, overlaid on a template.  
Results matched against a 5000-face database

DVI provides a unique means of enabling this. At its core is powerful face recognition technology, with one-of-a-kind partial face recognition. No other face recognition system provides this crucial capability, which was originally developed for the International Committee of the Red Cross to help identify the bodies of migrants who had drowned in the Mediterranean trying to get to Europe.

DVI integrates different means of identifying dead bodies, including face and tattoo recognition, while

its open design enables a range of 3<sup>rd</sup> party biometrics, such as fingerprint readers, to be added if required. Partial face recognition enables DVI to identify dead and injured bodies where one or both eyes may be closed and the face may be significantly damaged.

Closed eyes are an issue because all face recognition systems place much value on the area around the eyes due to the clear edges and high contrast of the features there. If both eyeballs are not clearly visible the recognition performance of almost all systems will be severely degraded or not work at all, as the eyeballs are the key anchor points around which the characteristics of numerous distinguishing facial features are measured. The design of the DVI

suite overcomes this through the ability to select, crop out, encode, and match an undamaged part of a face against a previously-taken shot of each key person, determine the position of the eyes, and then apply different weightings to individual facial areas depending on whether the eyes are open or closed. In partial mode the system can work with both eyes or just one.

The above screenshot shows a face which has been heavily damaged on one side, leaving the other side with the remaining eye closed. The good side has been cropped out and copied into the area on the right, where it's positioned over a generic facial template and then adjusted to fit using the scroll wheel on the mouse and nose/eye positioning controls. The eye positions are then marked in relation to the remaining part of the face, the face area weightings are automatically adjusted, the facial characteristics are automatically encoded, and the search initiated. This is extremely fast. The top matches are displayed as thumbnail images on the left together with the associated name and Match%. Any match can be magnified for visual confirmation. The same process can then be followed for the other selected biometrics.

DVI maps on to the fields it needs in existing SQL Server and Oracle databases, or alternatively can use its own. It accesses existing databases in read-only mode and does not store the images or data unless requested to do so.

Operationally, each location in which key people are physically located would be equipped with a small database application holding a photo and up-to-date details of each individual and their additional biometrics. This can be set up prior to a disaster occurring so it's immediately available whenever one occurs. It can be networked internally and externally and will be self-sufficient if the network goes down.

The database can be held on an existing PC and kept up-to-date by the administrative staff there. A copy would be maintained centrally in case the building is damaged or destroyed.

In the event of serious damage, recovery teams would be sent to the site equipped with laptops/tablets loaded with the site database (communications may be down, and the computers at the site may have been damaged). They'll take frontal shots of each victim, as well as their other biometrics if they're undamaged. These will be sent back to the centre for processing.

## **Background & System Requirements**

The Face Forensics team has over 20 years' experience in developing advanced biometric technologies, including face and tattoo recognition, and implementing them in conjunction with partners around the world.

Face Forensics' Disaster Victim Identification & Recovery suite is available as a stand-alone/networked application, as a .Net SDK, and as a web service. It runs under Windows 10/11. It's straightforward to install and test and can be downloaded for evaluation, with full online support.