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NEC

Advanced criminal investigative solution

NeoFace Reveal

At a glance

- Facial forensic image processing & matching
- Powerful image enhancement tools
- Independently evaluated as the most accurate face recognition solution in the market
- Innovative multi-touch user interface utilising Microsoft Windows 8
- Highly scalable for large systems & users
- Easy integration into existing operational & security processes
- Support of multiple image & video formats

Overview

The amount of mugshot data law enforcement agencies must process from real-time videos, online digital media and hardcopy photographs is growing at a rapid rate. Additionally, suspects cannot always be relied upon to provide their true identities, taxing stretched resources even further. Leveraging face recognition technology to automatically search, process, and match facial images can unlock the information held in large digital mugshot databases to expedite criminal investigations and solve more crimes.

NEC's NeoFace Reveal is a latent face workstation providing law enforcement and crime laboratory agencies the ability to enhance poor quality latent face images, search against their mugshot repositories, and locate potential candidates.

NeoFace Reveal allows authorities to match facial images against these potential candidates, ranking the database images against the probe image and providing a ranked candidate list. The solution allows operators to easily scroll through and review the candidate list, enabling a quick assessment by skilled experts.

Solution

NEC's NeoFace Reveal is a latent face workstation that reduces investigation time for cases that contain facial video evidence, thus reducing case load for investigators. Another advantage of NeoFace Reveal is its rapid processing of facial evidence coupled with its ability to generate persons of interest list investigation immediately after the crime has taken place. This advantage allows investigators identify a suspect prior to the suspect evading capture by leaving the local community, state or country.

Turn poor quality images into evidence

NeoFace Reveal enables law enforcement agencies to enhance poor quality latent face images for comparison to their mugshot repositories. This allows system operators to develop watch lists of potential matches while maintaining a full audit trail for each step in the image enhancement process. It also helps investigators identify individuals in crime scene photos and surveillance videos by matching facial images against the agency's mugshot repository. NeoFace Reveal also provides a set of verification tools that helps identify the person in question in a timely manner, allowing investigators to act upon the search results in the critical time period after a crime has been committed.

Advanced image editing/enhancement tools

Due to poor quality or angle of captured facial images, image enhancement algorithms can improve matching accuracy. NeoFace Reveal provides a comprehensive set of standard and advanced image processing enhancements to improve image quality and matching ability.

The standard image enhancements include overall image adjustments and filters applied to improve detail and remove background noise. Some standard enhancements include crop/rotate, brightness, contrast, intensity, smooth, sharpen, histogram equalisation, noise reduction, aspect ratio correction, and de-interlacing.

NeoFace Reveal also delivers several advanced enhancements, allowing correction of difficult to match images:

- Pose Correction – Pose correction attempts to generate a frontal face image from an image source that was captured off center. By manually marking specific facial features, a rotated facial image can be calculated, improving the facial matching score.
- Consolidation – Consolidation attempts to create a properly-posed frontal face image from a series of images. By selecting a series of images, a composite facial image can be created, allowing simulation of a frontal face image.
- Illumination – Illumination allows for correction of shadows due to off-center light sources. Manual selection of an area of the image will allow simulation of an additional light source.

Support of multiple image & video formats

NeoFace Reveal can process facial images obtained from either still images or video streams. Still images can be imported through two different methods, depending on source and intended use. The first method is to select a single file from a locally available directory. This uses the standard Windows file selection dialog. The second method is to batch input all images within a selected directory. Once input, NeoFace Reveal displays all images in a pick list from which additional review and processing can be accomplished.

For both single file and batch input methods, multiple image file formats are supported, including BMP, TIFF, PGM, PNG, JPEG, and J2K. EBTS or NIST formatted files can also be imported.

Once a still image of any type is imported, potential facial data is extracted and quality metrics are displayed, overlaying each image. This quality data can help determine the best images for further processing and searching.

Unsurpassed accuracy & matching speed

The strength of NEC's NeoFace technology lies in its tolerance of poor quality. Highly compressed surveillance videos and images, previously considered of little or no value, are now usable evidence and leading to higher rates of positive identification. With its ability to match low resolution facial images down to 24 pixels between the eyes, NEC's NeoFace technology outperforms all other face recognition systems in matching accuracy. While searching of latent fingerprints at crime scenes is standard, NeoFace facial recognition technology can now positively identify latent photos with a high degree of accuracy.

Why choose NEC?

NEC facial recognition technology is widely regarded as the world's best in terms of both accuracy and speed. NEC was ranked #1 in 3 consecutive facial recognition benchmark tests conducted by the National Institute of Standards and Technology (NIST), exceeding all other vendors in both accuracy and speed by a large margin.*

Best accuracy

- #1 in matching high resolution image
- #1 in matching low resolution image
- High matching accuracy with images of different lighting and angles from original images

Fastest matching speed

- 6 Million matches per second (against 1.6 million records)

** http://biometrics.nist.gov/cs_links/face/frvt/frvt2013/NIST_8009.pdf*

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