Advanced Investigative Solution using NEC's NeoFace® Technology
NeoFace® Reveal

National Security Systems
An NEC Company
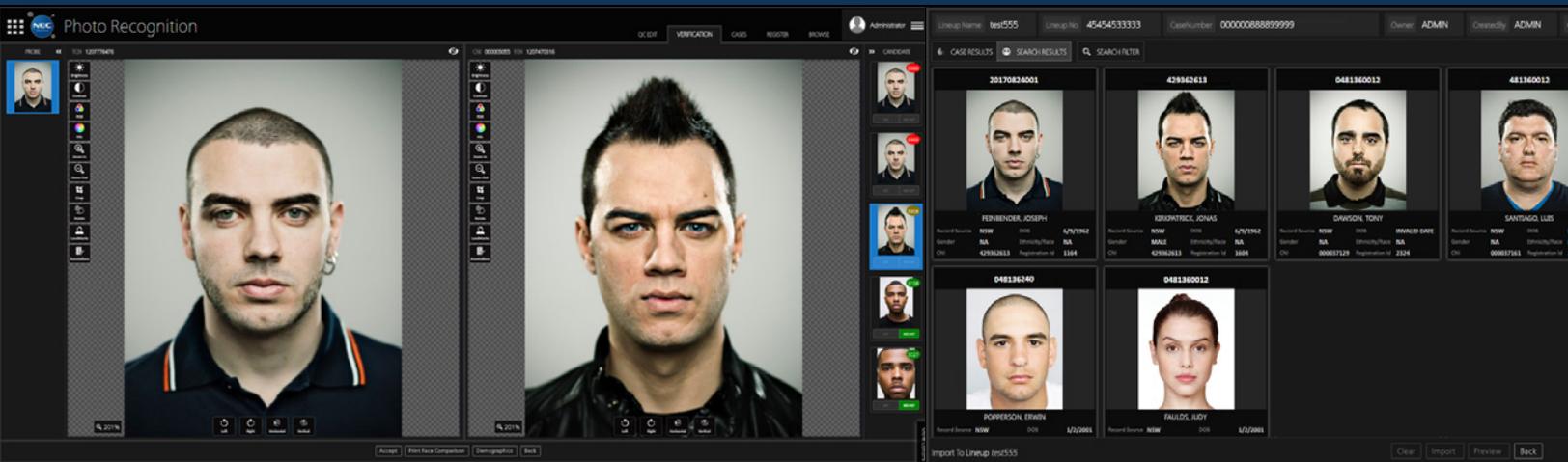
Face recognition has become an added value technology for many government agencies to support investigations and commercial entities to detect and prevent fraud.

For law enforcement agencies, the ability to quickly identify a suspect or a victim using crime scene photographs or videos helps speed up the investigative process and effectively solve cases. Face recognition has proven to be a critical piece of the law enforcement tool kit, and its value continues to grow as it becomes more ingrained in the way agencies do business and the policies that surround it.

Identity theft and fraud are examples of the types of crime that both law enforcement agencies and commercial companies use face recognition to detect and prevent either fraud or shop lifting. Whether a criminal is obtaining a driver license in another person's name or applying for social services benefits using a false identity, identity theft and fraud have a significant financial impact on both organizations and constituents alike.

By utilizing face recognition technology at the beginning of the application process, government agencies can easily identify fraudulent applications and prevent stolen credentials from falling into the wrong hands—saving organizations and constituents valuable time and money.

A leader in face recognition technology for over 30 years, NEC is uniquely positioned to support government agencies in providing advanced investigative solutions for criminal investigation and fraud prevention.

Independent testing from the National Institute of Standards and Technology (NIST) confirms that NEC's NeoFace technology provides the fastest, most accurate matching capability and is the most resistant to variants in age, race, and pose angle. Government agencies can feel confident knowing they have the most accurate and extensive capabilities in the market and that their employees, business practices, and results can be defended.

At a Glance

- Forensic face image matching
- Extensive image enhancement tools
- Fastest and most accurate face matching algorithm as proven by NIST
- Case management to keep track of all investigative cases
- Customized, configurable workflows to optimize efficiency and performance
- Supports multiple image and video formats
- Easy-to-use web browser-based user interface
- Supports large databases and low-quality images without sacrificing speed or accuracy
- Supports multiple use cases, including criminal investigation, person identification and fraud detection and prevention
- Powered by NDP for connectivity, data presentation, interoperability and workflow

Solution

NEC's NeoFace Reveal is a forensic face recognition application providing law enforcement, crime laboratories, and civil applicant processing agencies the ability to identify face images (ranging from good to very poor quality) by performing either a one-to-many (1:N) search or one-to-one (1:1) match against a database of any size.

When an investigator submits a search transaction, NeoFace Reveal compares the probe image against the database images and provides a ranked candidate list, allowing the investigator to easily scroll through and perform a quick assessment of candidates. When a potential match is found,

the investigator can select the individual candidate for verification and perform a detailed review and comparison of facial attributes to confirm the subject's identity. This verification process can be repeated for each potential candidate.

In addition to providing intuitive search and verification tools, NeoFace Reveal also maintains a complete audit trail of the investigation—from case entry and search submission to case review and disposition—to keep track of every step taken in each case.

Advanced Image Editing/Enhancement Tools

Image enhancement algorithms can improve matching accuracy for poor-quality images or faces captured at an angle. NeoFace Reveal provides a comprehensive set of standard and advanced image processing enhancements to improve image quality and matching ability.

NeoFace Reveal enables investigators to enhance poor-quality face images for comparison to their image repositories. This allows system operators to create a list of all potential matches while maintaining a full audit trail for each step in the image enhancement process.

Standard image enhancements can help skilled experts by improving detail and removing background noise. Some standard enhancements include crop/rotate, brightness, contrast, intensity, smooth, sharpen, histogram equalization, noise reduction, aspect ratio correction, and de-interlacing.

NeoFace Reveal also provides a set of verification tools that help experts identify the suspect quickly and efficiently, allowing investigators to act upon the search results during the critical time period after a crime has been committed.

NeoFace Reveal also delivers several advanced enhancements, allowing image quality improvements of difficult-to-match images.

Support of Multiple Image and Video Formats

NeoFace Reveal can process face 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 local directory. This uses the standard Microsoft® Windows® file selection dialog box. The second method is to batch input all images within a selected directory.

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 are also supported.

Once images are 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.

NeoFace Reveal also displays all images in a pick list from which additional review and processing can be accomplished.

Unsurpassed Accuracy and Matching Speed

The strength of NEC's NeoFace technology lies in its tolerance of poor quality. Highly compressed surveillance videos and images, previously of little or no value, are now usable evidence, leading to higher rates of positive identification.

With its ability to match low-resolution face images down to 24 pixels between the eyes, NEC's NeoFace technology outperforms all other face recognition systems in matching accuracy. Similar to searching latent fingerprints from crime scenes, NeoFace can now help experts positively identify unknown subjects in photos with a high degree of accuracy.