



## Facelt® Software Developer Kit

### Comprehensive Facial Recognition Toolkit

Use the Facelt® SDK to build facial recognition solutions for:

#### Eliminating Duplicate IDs

- Passports/Visas
- Driver Licenses
- National IDs
- Voter Registrations

#### Verifying Identity

- Border/Access Control
- Smart Card Applications
- Network Security
- Online Transactions

#### Criminal ID

- Mug Shot Booking
- Jail Visitation
- Facial Screening

#### Unique Criminal Applications

- Photo Kiosks
- Cameras / Mobile Devices
- E-Learning

Creating solutions with the Facelt® SDK gives integrators and developers an edge in today's fast and evolving marketplace. The technology has been adopted worldwide for some of the most high security deployments such as the U.S. Department of State visa issuance system, Mexico's voter registration system, DMV applications in states such as Colorado and Kansas and passport systems in Sweden. It has also been included within some of the most innovative applications for facial recognition such as Nikon's COOLPIX cameras and Traffic 101's online traffic school programs. With the Facelt® SDK, the possibilities are endless.

Working with the Facelt® SDK inspires confidence that your solution is best-in-class. By combining traditional facial geometry techniques with skin biometrics, Facelt® technology has reached exceptional levels of performance, bringing it on par with fingerprint technology for one-to-one matching and leapfrogging previous one-to-many matching results by as much as thirty percent.

With all the tools that you need to build face recognition solutions for enrollment and one-to-one and one-to-many matching, the integration process is fast and easy. The Facelt® SDK contains modules for face finding, template creation, quality analysis, and watchlist searches packaged in a simple C application programming interface (API).

<b>Facelt® Processing Library</b>	
Contains the elements that encapsulate Facelt® technology and its supplemental functionality, including face finding, quality analysis, template creation, verification, identification, and watchlist searches.	
<b>Media Processing Library</b>	
Two modules that allow processing of still and live images for facial matching.	
<b>Sample Applications</b>	
Three source-code sample applications that demonstrate image capture, verification (1:1 matching) and identification (1:N searching).	
All technology in simple C API for compatibility with Microsoft C and C++. Compatible with Microsoft Video for Windows (VFW) and DirectShow capture systems. Supports standard .jpeg, .jpeg2000, .tiff, .gif files, and frame capture from .avi and .mpeg files.	
SDK purchase includes free hot-fixes, service pack and minor point updates. Run time licenses at additional cost depending on application.	
<b>Facelt® Technical Specifications</b>	
<b>Platforms Supported</b>	Microsoft Windows ME, 2000, XP, 2003. Available for UNIX and Linux through special requests.
<b>Input Formats</b>	JPEG, JPEG 2000, BMP, GIF, DirectShow, Video For Windows. Also accepts artist rendered images.
<b>Output Formats</b>	Facelt® G6 template and standards-compliant facial images in JPEG, JPEG ROI (Region of Interest), JPEG 2000
<b>Faceprint Size</b>	VFA template – 648 bytes. LFA template – 5K bytes. STA template – 7K bytes.
<b>Recognition Matching</b>	Supports both Verification (1:1) and Identification (1:N)
<b>Speed</b>	Head Finding: 50-300 milliseconds depending on scene complexity. One-to-one matching: <1 second One-to-many matching: Up to 60 million per minute CPU for vector template depending on hardware; when using all 3 templates, aggregate search speed up to 10 million per minute per CPU, depending on hardware.
<b>Database Size</b>	Technology can support an unlimited number of records
<b>Motion</b>	Detects moving as well as stationary faces
<b>Pose</b>	Technology works optimally when matching frontal images. Face-finding detects faces as long as both eyes are visible. Recognition is not significantly affected by variations in pose up to 15 degrees. From 15 to 35 degrees there is a slight loss in matching ability. Beyond 35 degrees more significant loss of matching may occur.
<b>Race and Gender</b>	Performs well on all races and both genders.
<b>Robustness to Variability</b>	The algorithm focuses on the inner region of the face and had built-in mechanisms that compensate for natural variability in the face. The result is an engine that is robust with respect to changes in lighting conditions, expression, facial hair, and hairstyle.
<b>Eyeglasses</b>	Explicit designed to match faces with or without eyeglasses, as long as the eyes are visible and not occluded by glare.
<b>Lighting</b>	Optimal performance is obtained in diffuse ambient lighting, where the face is evenly illuminated, without shadows or glare. Gain control on cameras can be used to compensate for back-lighting of the face, but cameras can be tricked by excessively bright or dark backgrounds into producing images with overly dark or light faces. An evenness of the lighting in the field of view produces the best results most easily.
<b>Background</b>	Finds the faces in an image against any background, plain or cluttered. Recognition performance uses only features on the face, so it is unaffected by the background once the face is successfully located.
<b>Image Depth and Resolution</b>	Minimum of 320x240 resolution for desktop verification and 640x480 resolution for surveillance. Minimum of 8 bits of grayscale depth. Recommended image format is JPEG with 24-bit color depth and a maximum compression of 15:1.
<b>Standards</b>	Support for CBEFF Patron Formats A, C (BioAPI) and D (ICAO) with both ISO and ANSI data interchange files provided by Facelt® Quality Assessment SDK with Standards Formatting Module.

5705 W. Old Shakopee Rd.  
Suite 100  
Bloomington, MN 55437  
Telephone 952-932-0888  
Facsimile 952-932-7181