ScienceGL
## Fingerprint Enhancement SDK API specifications.

Main Features

AFIS specific
- Optimized compression algorithm for high resolution fingerprint and palm print images
- Original 2d to 3d construction algorithm of highest possible feature enhancement of latent fingerprints.
- Up to 32 fingerprints in one 3D screen, Multiple layer surfaces
- Multiple fingerprint simultaneous analysis
- 3D and 2D mode specific to compare poor quality 3D enhanced and good quality 2D images in the same screen
- 3D print Comparator and matcher relative scaling, rotation, matching movement with interactive mouse
- Maximum possible fingerprint image analysis for latent print images.
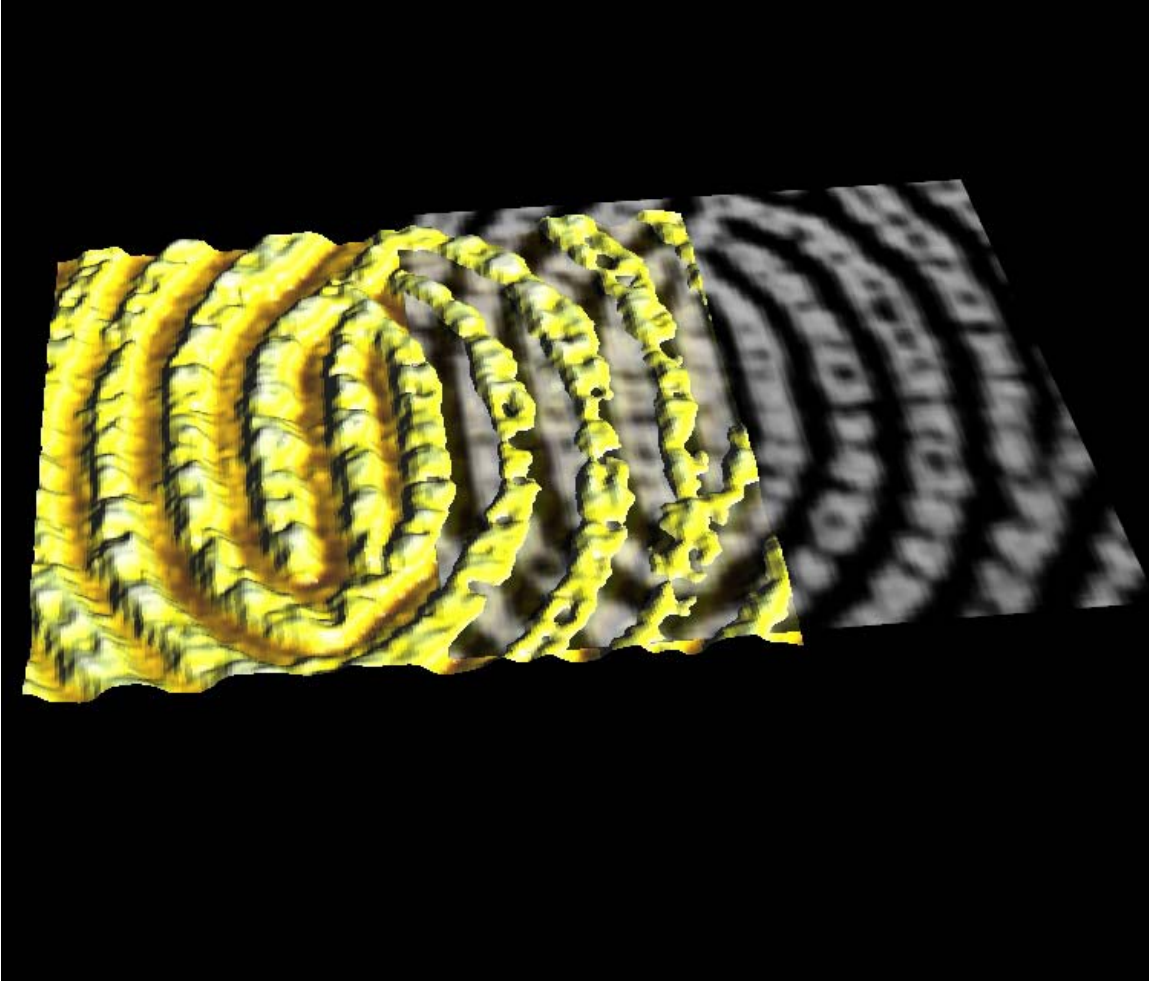
Sample: double image 3D and late 2D test image combined mode. The figure demonstrates the matching of the latent and reference fingerprint images in 3D space.

3D optimization specific
- Graphic card accelerated highly optimized 3D visualization
- Animation, fast real time (up to 50 fps) virtual reality
- Scientific grade true math 3D surface constructor of double precision resolution

Enhancement methods
- Photorealistic shadowing
- Coloring, 10 built in palettes, palette constructor
- Texture support for both reference and latent images
- Transparency
- Mask
- Contour plots
- Light of adjustable angle, position and intensity
- User defined True RGBA palette
- Scalar color for each pixel (data point)
- Independent Zoom in all XYZ directions

- Internal maximum possible quality Double Precision fingerprint image processor

3D mouse interaction
- Movement of all surfaces
- Rotations
- Zoom
- Pan
- Data zoom

3D interactive measurement tools
- Interactive orthogonal cut planes
- 1D cut plot (surface/plane intersections)
- Interactive mouse operating measurement tools XYZ distances, area, volume, etc.
- Range of interest (ROI) selection tool
- Multiple 3D markers (pins) for minutiae marking
- Mouse position XYZ read out
- True 3D XYZ axis, user format or auto formatted. Scalable captions, labels, grids
- Multiple 3D text labels: selectable color, size, position, orientation
- Waterline height comparison tool
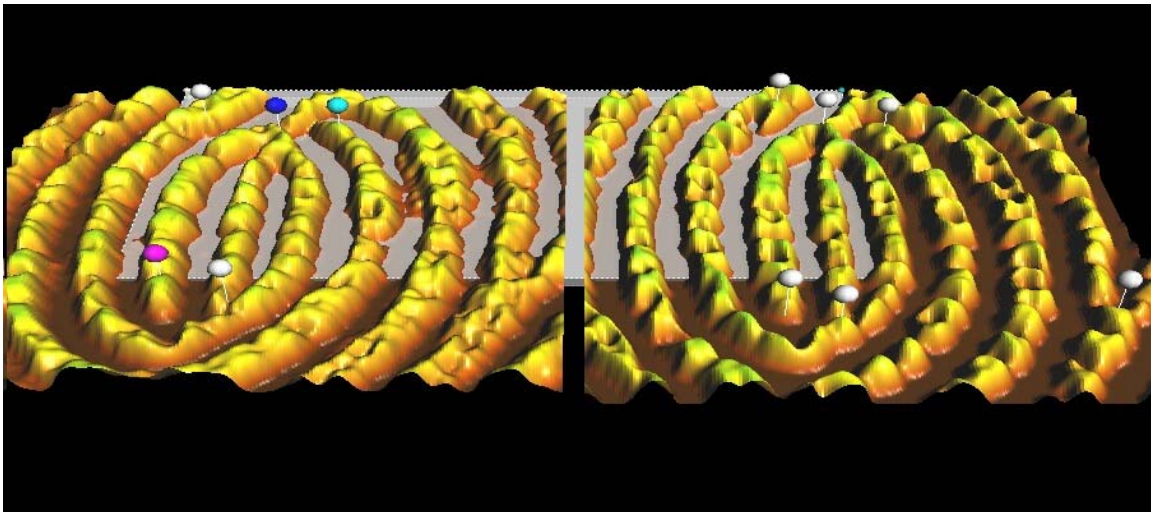
Sample: Double surface pins, waterline tool. Latent and reference images.

Input / Output
- Input 8, 16, 24, 32, 48 bit depth gray scale or color images
- Input 3D scanner data (optional)
- Input Array of points (optional)
- Custom input file formats support (contact)
- Flexible output JPG, BMP, AVI animation
- Specific output input filters available upon request

Filters (optional)

- Leveling of first and second order
- Advanced leveling FFT and background subtraction
- True Gaussian ISO Smooth filter
- High pass, Low pass, Band pass
- Data Cut off, contrast inter-surface adjustment
- Specific custom filters

Advanced (optional)
- Vector graphics support multiple lines, dots
- Stereo Screen support, Stereo markers.
- Stereo XYZ,W mouse support

Implementation
- ActiveX component of high level programming
- ActiveX server of high level access
- Solution turnkey application

Platform:
- VC++, C#, VB.NET, VB6,
- Delphi, LabView (optional)
- Win NT/95/98/ME/2000/XP

References
- General 3D enhancement info
  http://www.sciencegl.com/forensic_document/forensic_image_help.html
- AFIS samples
  http://www.sciencegl.com/fingerprint_3d/3D_AFIS.htm
- Flyer PDF
  http://www.sciencegl.com/Docs/sciGL_Forensic_Comparator.pdf
  General multiple layer surface information
- http://www.sciencegl.com/multiple_layers/multilayer.htm