

OrthoEngine 3D Stereo

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OrthoEngine 3D Stereo offers advanced tools for 3D viewing and feature extraction (vector editing) of stereo airphotos, satellite and SAR imagery. Additional features include 3D editing of DEM data, and extraction of elevation points or contours from a DEM. The software supports special hardware for viewing, feature extraction and editing in three dimensions using anaglyph viewing, or shutter glasses/polarizing monitor technology.

MODULE PREREQUISITES

OrthoEngine 3D Stereo requires Geomatica, and an associated sensor math model, such as OrthoEngine Airphoto Models, Satellite Models, High-Resolution Satellite Models or RPC and Generic Models.

3D VIEWING

- Image enhancements include: Linear, Equal, or Root, brightness and contrast adjustments
- Zoom by icon, keyboard shortcut, or mouse click
- Recenter at cursor; Refocus at cursor elevation
- Cursor Snap to Ground using autocorrelation
- Toggle between system cursor and 3D stereo cursor for navigation and editing
- Cursor color: use defaults or customize
- Adjust cursor's elevation using the keyboard or wheel mouse
- Display the 3D image using anaglyph mode, with active shutter glasses, or with passive polarizing monitors, on Windows, Solaris and SGI platforms
- Advanced OpenGL stereo-in-window display
- Select desired stereopair from a graphical display with the click of a button

- View raw, uncorrected images as stereopair for quick viewing, with parallax adjustment automatically applied at the cursor location
- Generate and view epipolar images as stereo pair for easier and sharper stereo viewing
- Manually adjust parallax between left and right image

CONVERTING DEM DATA INTO VECTORS FOR 3D EDITING

- Extract vector elevation points from a raster DEM
- Extract vector contours from a raster DEM
- Raster may be existing, or generated through OrthoEngine Automatic DEM and RADAR DEM module
- Specify the pixel spacing of the vector points, or contour interval for vector contours
- Automatically extract the Failure Value and the Background Value from the channel descriptor listings of the input DEM. If these values are not available, user may type in these values
- Optionally specify a sub-area from the input DEM for vector creation
- Use 3D viewing and editing to edit out artifacts, fill in failed areas, and refine geomorphic feature
- Regenerate raster DEM based on 3D vectors, including:
 - edited vector elevation points
 - additional spot heights
 - breaklines representing ridges, valleys and changes in slope
 - polygons representing areas of constant elevation (lakes, buildings)

3D FEATURE EXTRACTION

- Load and/or Edit existing vector layers, in any supported format (see Generic Database technical specification for supported formats)

Technical Specifications

- Create new vector layers in any supported format
- View 3D vectors in stereo, superimposed on image stereopair
- Editing functions include:
 - Create or delete points, lines, polygons
 - Select and edit a point or vertex
 - Insert and delete vertices for polygons and lines
 - Snap to nearest vertex, or snap to nearest point on line or polygon
 - Add or modify attribute fields for each layer
 - Collect attribute values with tabular view
 - Modify vector layer graphical properties
- Resolution in stereo mode on SGI systems in typically 24 bit 1280x512
- Windows platform recommended
Graphics Cards:
 - 3DLabs Oxygen GVX1
 - 3DLabs Oxygen GVX210
 - 3DLabs Wildcat II 5000

HARDWARE CONFIGURATION

- Anaglyph mode:
 - Anaglyph (red/blue) glasses
 - No special hardware required
 - Monitor can be at full resolution
 - 24 bit or 16 bit color graphics suggested
- Shutter Glasses:
 - Contact hardware vendor for specific system configurations that support OpenGL stereo
 - Stereographics CrystalEyes®
- Shutter Monitor:
 - Contact hardware vendor for specific system configurations that support OpenGL stereo
 - Monitors should support OpenGL stereo windows at 100Hz to 120Hz, at an appropriate desktop size of 1152x864 or better
 - NuVision 21MX Stereo Monitor, or 21SX Polarizing Panel, with polarized glasses
 - Stereographics Z-Screen® Polarizing Panel
 - Resolution in stereo mode on Windows systems in 24 bit 1152x864 or 1280x1024
 - Resolution in stereo mode on Solaris systems in 24 bit 960x640

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