

CORRELATOR3D™ MODULES & TOOLS

AERIAL TRIANGULATION

- Fully automated process for adjusting exterior orientation data
- Option for camera and boresight calibration
- Fast automatic tie point extraction using the GPU
- Multi-core CPU based bundle adjustment
- Intuitive tools for visualizing and editing results
- Highly robust and accurate results with detailed quality reports
- Ground control points (GCP) can be imported to ensure accuracy
- Automatically registers new projects to older mosaics & DEMs

DEM EDITING

- Features powerful monoscopic editing functions to alter DEMs according to specific user requirements
- Provides highly intuitive user interface to visually interact with elevation data and specify polygonal selections
- Supports several operations including crop/delete, set/offset elevation values and filter regions
- Advanced “Delete and Fill” function for deleting elevation points and filling resulting gaps

DSM GENERATION

- Dense digital surface models (DSM) and point clouds generated from stereo imagery
- Patented technology based on advanced computer vision algorithms utilizing 3D graphics cards to accelerate processing
- Images are processed on a pair-by-pair basis significantly reducing memory/system requirements and eliminating project size constraints
- DSM results from individual image pairs are automatically merged to improve overall data quality and allow parallel processing on multiple PCs
- 3D constraints (e.g. points, vectors and polygons) can be imported as Shapefiles or DGN files to force particular elevation values in final DSMs such as water bodies (optional input)

ORTHORECTIFICATION

- Very fast production of individual orthorectified images & true orthos

MOSAIC CREATION

- Fully automated mosaicing of unlimited individual orthorectified images
- Final mosaics featuring smooth and seamless transitions between adjacent images
- Color balancing includes brightness & contrast adjustments of each image, inter-image equalization, independent channel analysis for hue equalization and photometric constraints to maintain global information of brightness, contrast and hue

DTM EXTRACTION

- Automatic filtering of DSMs to extract digital terrain models (DTM)
- Unique algorithms that identify 3D features, remove associated elevation points and interpolate from neighboring regions for filling removed areas

TIE POINT EDITING

- Allows visual inspection and editing of automatically generated tie points
- Provides advanced tools to add tie points between images
- Includes a predictor to facilitate feature selection

MOSAIC EDITING

- Allows simultaneous multi-user seamline modifications through a highly intuitive visual interface
- Real-time updating of final mosaic during modifications
- Smooth interaction with data
- Minimum number of manual operations required, significantly increasing overall productivity

FEATURE EXTRACTION

- Semi-automatic creation of 3D polygons from photogrammetric / LiDAR DSMs

VOLUME CALCULATION

- Measures a volume over a user-specified selection and a reference elevation
- Includes different types of reference elevations such as interpolate at boundary or fixed elevation
- Calculates volume between reference and the terrain above / below, terrain area and orthogonal area

SCRIPT AND COMMAND LINE

- Batch processing facility for advanced users desiring to fully automate their processing tasks

3D CHANGE DETECTION

- Based on a robust approach that compares DEMs instead of images
- Performs a comparative analysis and determines the importance of changes in 3D

POINT CLOUD COLORIZATION

- Automatically determines correspondence between 3D points and orthomosaic pixels
- Outputs colored point cloud in LAS format

GCP EXTRACTION

- Visual tool for extracting image coordinates of ground control points (GCP)
- Semi-automatic workflow for GCP tagging

FIDUCIAL DETECTION

- Automatic tool for detecting fiducials in traditional scanned films
- Quickly extracts the position of marks, which are necessary for film processing

DEM VISUALIZATION

- Highly intuitive tool to visualize DEMs, including real-time zooming and panning capabilities
- Features different visualization modes and styles such as color / greyscale, DEM shading and color stretching
- Includes a profile tool for generating and exporting vertical profiles of DEMs over user-specified paths

DEM INSPECTION

- Generates statistics about the quality of a DEM against reference data, including bias error, standard deviation, RMS error and maximum error

SYSTEM REQUIREMENTS

- Nvidia GTX 770 or higher
- Intel i7
- 6GB RAM
- Windows 7, 8 or 10 (64-bit)

DEMO

For a demonstration of Correlator3D™, please contact us at engesat@engesat.com.br.