Creating a Polygonal Mesh using IMMerge – Polyworks V11

This series will show you advanced modeling building modeling techniques using Leica's Cyclone.
Hint: You can click on any image to see a larger version.

As objects become more complex, using layers (Shift + L) becomes essential to organizing and controlling the model space.

Once a point cloud data set has been properly aligned with overlap reduction, it is ready for meshing. IMMerge is the module in Polyworks that creates a mesh from an IMAlign project. *Note* – Only IMAlign projects can be meshed. See below for specifics for IMMerge operations.

In the Polyworks Workspace Manager, select the IMAlign project that you want to mesh and then select **Create a Polygonal Model** in the Workspace Manager.

BASIC SETTINGS
ADVANCED SETTINGS

IMMerge – Basic Settings

Values Carried over from IMAlign Project (usually do not change)

Max Distance: The maximum distance between two overlapping scans
Surface Sampling Step: Average of interpolation step across scans; the resulting mesh density
Standard Deviation: Approximate alignment error (In meters for Optech)

Smoothing Level: Can be modified. ***It is generally recommended to have Low to Med level of smoothing.***

Advanced Settings Explained – (usually do not change)

Reduction Tolerance:
- Compresses the mesh by reducing the number of triangles (without loosing definition)
- Typical Reduction Tolerance = 1/5 * max standard deviation

Smoothing Radius
- Radius of the spherical filter used to smooth the resultant mesh.
- The greater the smoothing radius, the more the mesh is smoothed.
- Typical Smoothing Radius: 2-4 times the surface sampling step

Smoothing Tolerance
- Typical Smoothing Tolerance: 3 x's max standard deviation

Common Error returned from IMMerge processing of very large datasets
Error 1413: Block Size too small or Out of memory

- Actually not a function of block size, so DO NOT increase block size. *Recommended block size and compaction is 200 and 20, respectively.* Instead, change the subdivision settings. Change the "# of triangles per job" to "# of Merging jobs" and where it says default, set a value. Start at 1000 then double if the operation still does not merge. If it does not merge in 10000 jobs or less, then the dataset is probably too large.

- If the dataset will not merge, split the IMAlign project into two pieces and mesh the two pieces separately.

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