Converting a Point Cloud image to triangulated stl file

Daniel Swenson, 2022-11-16

http://www.locostusa.com/forums/viewtopic.php?f=4&t=17614

https://www.cadforum.cz/en/how-to-convert-a-point-cloud-to-an-editable-3d-cad-model-mesh-tip9512

https://www.youtube.com/watch?v=rPEQVBhKJGA

Task 1: Download the scan data. This data can be downloaded from locostusa.com and the thread "RTz's Miata Powered Seven w/CNC cut Frame". RTz is the author. Search for author RTz to find the thread.

https://www.locostusa.com/forums/viewtopic.php?f=35&t=17715&start=45

On page 4 of this thread are the links to the files.

Engine: https://www.dropbox.com/s/9fxdd1yf3hvfwxk/Engine.rcs?dl=0

Differential: https://www.dropbox.com/s/ng0uofn29d2noro/Diff%202.rcs?dl=0

Task 2: Convert .rcs to .pts files. Use Autodesk ReCap Pro to convert the .rcs files to .pts files. Then rename the .pts file on your disk to the extension .ASC. ASC files can be then directly imported into MeshLab.

Task 3: Make a mesh. Use MeshLab to import the .asc point clouds and create the triangulation.

- Open the point cloud file File->Import Mesh
- Filters->Normals, Curvatures and Orientation->Computer normals for point sets
- Filters->Remeshing, Simplification and Reconstruction->Surface Reconstruction: Screened Poisson
- To simplify the mesh, Filters->Remeshing, Simplification and Reconstruction->Quadric Edge Collapse Decimation. By default, each pass will cut number of faces in two.
- Repeat until you have a good representation without too many faces.

For the engine I needed to remove the large extra triangles.

- Filters->Cleaning and Repairing->Remove duplicate vertices
- Filters->Selection->Select Faces with edges longer than…

I did not use these options, but they are available.

- Filters->Sampling->Poisson-disk sampling
- To clean the model, Filters->Cleaning and Repairing->Select Faces from non Manifold Edges then Delete.
- To clean the model, Filters->Cleaning and Repairing->Select non Manifold Vertices then Delete.
- To clean the model, Filters->Cleaning and Repairing->Select non Manifold Edges then Delete

Task 4: Write stl file.

- File->Export Mesh As…