EinScan-SP Training SOP

Tool Name and Location

The SHINING3D EinScan-SP 3D Scanner is located in Fume Hood #1 in Elings 2448.

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Safety

Machine Limitations:

• The turntable has a maximum weight limit of 5kg (~11lbs). Exceeding this weight could damage the machine and its internal components.

Environmental:'

• Keep the scanner in a well ventilated area. Keep flammables, corrosive agents, and liquids away from the scanner. Failing to do so will damage the machine and its internal components.

Physical:

• The projector emits a bright light. Avoid looking directly into the light source to prevent eye injury.

Training

training requirements: Users must attend the in-person training session and should consult the Safe Operating Procedure and EinScan-SP Manual (both found on the Innovation Workshop GauchoSpace page). **Training Outline**

- 1. Overview of the scanner and the system setup
 - 1. Structured light projector and dual camera setup
 - 2. Electronically controlled turntable
 - 3. Laptop computer
- 2. Safety
 - 1. Machine Limit
 - 1. Do not exceed 5 kg (11 lbs)
 - 2. Hazards
 - 1. Keep well ventilated, away from corrosives, liquids, and flammables.
- 3. Walkthrough of starting up EinScan-S software
 - 1. File formats, different scan types
 - 2. EinScan-S menu
- 4. Scanner Limitations (0.03 mm resolution)
 - 1. Bigger than 30x30x30 mm, smaller than 250x250x250 mm, less than 5 kg
 - 2. Do not scan reflective, transparent, or fuzzy objects
 - 3. Paint or coat dark objects with a light color
- 5. Step by step walkthrough of a scan
 - 1. Scanning with the turntable
 - 2. Scanning without the turntable

- 3. Adjusting the brightness and stitching scans
- 6. Software walkthrough
 - 1. Turntable toolbar
 - 2. Scan editing toolbar
 - 3. Main toolbar (alignment, scans, exporting, brightness)
- 7. Editing, Meshing, and exporting completed scans

Safe Operation of this Tool

Before Using the Scanner: Make sure that the object:

- Is larger than 30x30x30mm (1.2×1.2×1.2in)
- Is smaller than 250x250x250mm (38x38x38in)
- Weighs less than 5kg (11lbs)
- Isn't shiny, transparent, or furry
- Has all dark features lightened with a powder or coating

Sequence of Operation:

- 1. Make sure the scanner is powered on and open the EinScan-S software (on desktop)
- 2. Select EinScan-SP
- 3. Under "Choose Working Mode", select Fixed Scan
- 4. Select <u>New Scan</u> or <u>Open Scan</u>. Name the file and save to your group's folder to define the location for saved scan images (saved as .fix_prj file)
- 5. Select Textured Scan or Non-Textured Scan
 - 1. Textured scan is used to scan colors and fine features. The user must run a white balance test when using this feature.
- 6. Adjust <u>Brightness slider</u> **Example** until no red areas are visible on the desired part



Scanning With the Turntable:

- 1. Check the <u>Use Turntable</u> box and specify the number of increments (8-180 steps). The <u>Align</u> <u>Mode</u> menu will appear.
- 2. Under Align Mode, select the desired alignment method
 - 1. <u>Turntable</u>
 - 2. <u>Features</u>
 - 3. <u>Markers</u> (External markers must be placed on the surface of scanned object)

Scanning Without the Turntable:

1. Place the object in the desired orientation within frame of the two cameras

Starting and Editing Scans:

- 1. Select <u>Start Scan</u> Press <u>Pause</u> or <u>Delete Current Scan Data</u> if necessry.
- 2. Use Shift + Left Click and the toolbar to remove any unwanted scan data. Press the <u>Green</u> <u>Check</u> to confirm.
- 3. Reorient the part and continue to scan until object is fully modeled (Same controls to modify the stitched model)
- 4. Correct misaligned stitches by selecting <u>Align</u> and using Shift+Left Click to choose three common points to manually correct the software.

Exporting and Saving the Scan:

1. When the object is fully scanned, select Mesh

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