EinScan-SP Training SOP

Tool Name and Location

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

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

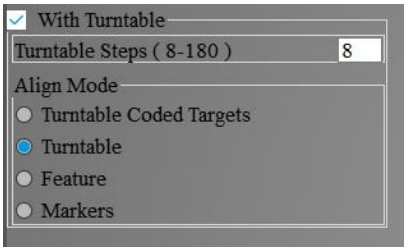
Safe Operation of this Tool

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 New Scan or Open Scan. 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 Brightness slider  until no red areas are visible on the desired part

Scanning With the Turntable: 

1. Check the Use Turntable box and specify the number of increments (8-180 steps). The Align Mode menu will appear.
2. Under Align Mode, select the desired alignment method
    1. Turntable
    2. Features
    3. Markers (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 Start Scan  . Press Pause  or Delete Current Scan Data  if necessry.
2. Use Shift + Left Click and the toolbar to remove any unwanted scan data. Press the Green Check 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 Align  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