3D Scanner
(Shining 3D Scanner)

What is provided:
- Scanner & Calibration Board
- EinScan-S Scan Software

What to bring:
- The object you want to scan
- Flash Drive or External Hard Drive (to save your scans)

Instructions:
- Call 330-722-2681 to schedule an appointment.
- Review…
  - Scanning Limitations
  - Calibration Process & Tips
 - Scan Process
  - After Scanning Instructions

Scanning Limitations
- **What can be scanned:**
  - Objects between 1.2 x 1.2 x 1.2 inches and 10 x 10 x 10 inches (30 x 30 x 30 mm and 250 x 250 x 250 mm
  - Objects weighing less than 5 kg (11 pounds)

- **Difficult to scan:**
  - Transparent objects like glass.
  - Shining or reflective objects like varnished metal parts.
  - Dark colored object like black keyboard.
  - Fuzzy objects like hair.
  - NOTE – Chalk spray or paint on objects may improve the scan quality.

- **Not recommended for scanning:**
  - Moving objects.
  - Hollow pattern objects like Eiffel Tower souvenirs.
  - Objects with holes or concave parts.
  - Objects smaller than 30 x 30 x 30 mm (1.2 x 1.2 x 1.2 inches)

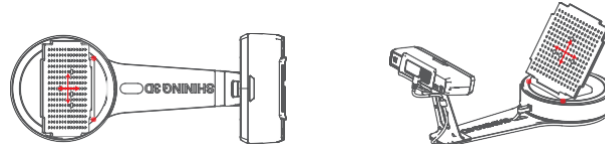**Medina County District Library • mcdl.info**

Calibration

- Calibration Board Placement
    - Insert calibration board onto the board holder.
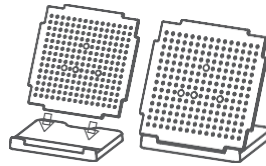
    - Place the calibration board on the center of the turntable facing the scanner.

- Run Calibration
    - Open software, choose scanner model EinScan-SE and click NEXT.
    - Follow the on-screen instructions to rotate the calibration board.

Calibration Tips

- You should calibrate the scanner prior to use.
- You should calibrate the scanner if you move the scanner or turntable.
- You should re-calibrate the scanner if scan quality diminishes after use.
- You should re-calibrate the scanner if you encounter frequent alignment mistakes or failures during the scanning.

Scan Process

- Build Project
    - Click "New Project" button to start a new scan.
    - Texture Scan Option
        - Choose texture scan if color texture is needed for scanning.
            - White balance test should be done before texture scanning.
        - Choose non-texture scan if texture scan is taking too much time.
    - Place Object
    - Make sure the object is stable during the scanning.
    - Adjust Brightness
    - Choose the brightness setting according to your object's surface condition. Too much red appears on the object shown in the window means over bright. Note: Please check the exposure instruction in the user manual.

- Stage Rotation: You'll want to keep rotation steps relatively low (the lowest is 8 steps). This will help you keep the size of your file small and the time it takes to scan low.
- HDR Camera: Turn this on if your object has both bright and dark textures (i.e., a checker/chess board, a zebra model, etc.)
- Scan
- Click the Scan button to start scanning.

- Re-Scan, Re-Scan, Re-Scan!
  - 3D scanning is an additive process, in which each subsequent scan is added to the last to help get as complete of a model as possible
  - If you notice that a certain area of the model isn't scanning well, try scanning from a different angle (rotate the object on the stage) or changing the brightness

After Scanning
- Aligning Scans
  - Sometimes the software will get confused and misalign extra scans. To fix this, click on the Align tool. A window will pop up with model viewers of your scan. To align, select 3 distinctive points on your scan and shift+click them on both model windows.
  - If the alignment fails again, press escape to close the Align tool and try again or delete current scan and try scanning again.

- Creating a Model for 3D Printing
  - When happy with your scan, create a model (called "Mesh" in the software).
  - Click the Mesh tool to begin the mesh creation process.
    - Select Watertight or Unwatertight. *Watertight required for 3D printing!*
  - Select the level of detail you want for the model
    - If you plan to use the 3D Printer in the MCDL Makerspace, use the "low detail" option. The MCDL 3D Printer quickly runs out of processing power with high detail models, crashing the print before it can even be started.
  - Check the boxes for both Smoothing and Sharpening
  - Keep scale at 100% unless you need the model resized
    - Resizing can also be done in Cura once the STL file is saved. This is much easier than trying to resize the model in EinScan-S software.
  - Save your new file as an **STL**
    - A note on file size: as stated above, large files have a tendency to crash the MCDL 3D Printer. If a file is coming out to be more than 100 megabytes, make sure you selected low detail for your model. If you did, you may need to go back and rescan your object in fewer steps.

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