How to Use Kinect as A 3D Scanner

Integrated Hardware/Software Platform

SKETCHUP

.3ds

3D Scanners

Kinect for Xbox

Kinect for Windows

Processing

Reconstruct Me

Rhino/Grasshopper

CATCH

netfabb®

Netfabb

MeshLab

Repair and Clean Up (**STL**)

3D Digital Model
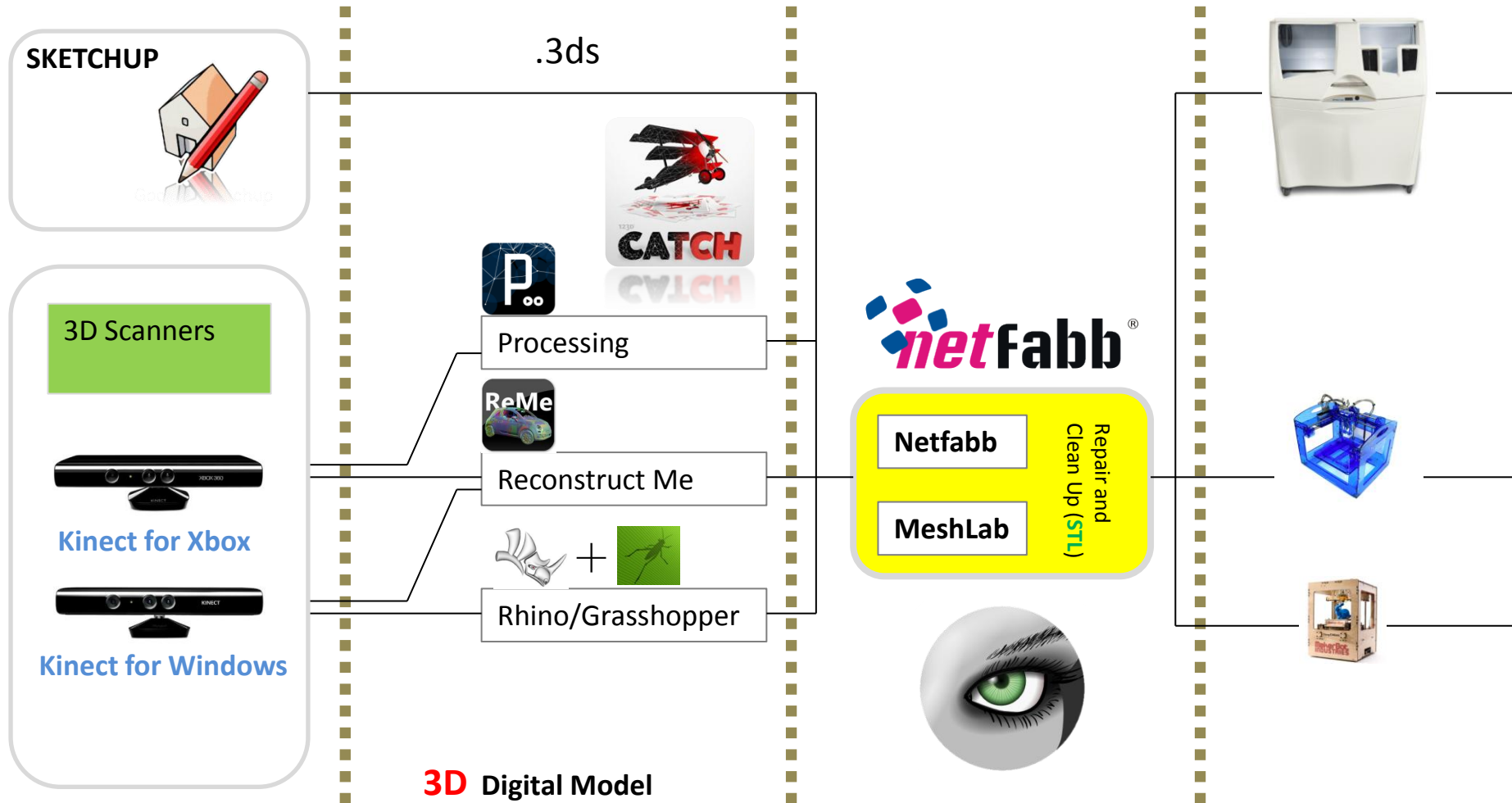
Install Software for 3D Scanning and Model Repairing

http://reconstructme.net/projects/reconstruct me-console/installation/

http://www.netfabb.com/download.php

http://sourceforge.net/projects/meshlab/files/ meshlab/MeshLab%20v1.3.2/

Step 1: Scanning in 3D Using Reconstruct Me

1. In the Windows Explorer, go into the ReconstructMe director
2. Double click Start ReconstructMe Scan MSKinect.bat if you have a Microsoft Kinect
3. Double click Start ReconstructMe Scan OpenNI.bat if you have a Xbox Kinect or Asus Xtion
4. To continue, press the key *y*, then ***Enter***
5. Click that GUI Window, and press ***p*** to switch between *play* and *pause* mode to start reconstruction.
6. After you have finished scanning, press ***Esc***. This will close the GUI window.
7. To save your scan, answer the question Save content? (y/n): by pressing the key *y* and then Enter.
8. Enter a filename *with extension stl*. (e.g., enter *MyScan.stl*)
9. The resulting file will be written in the same directory as ReconstructMe, scroll up and down a bit in the Explorer to find it.
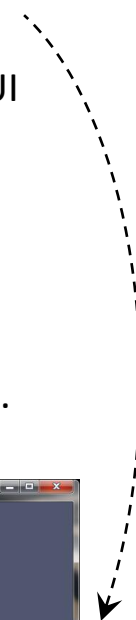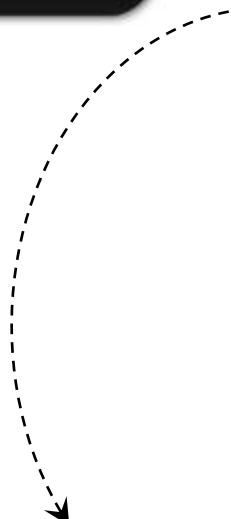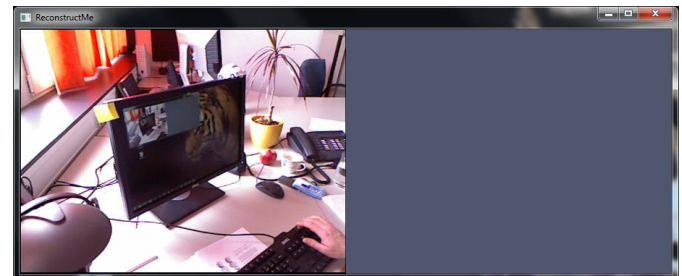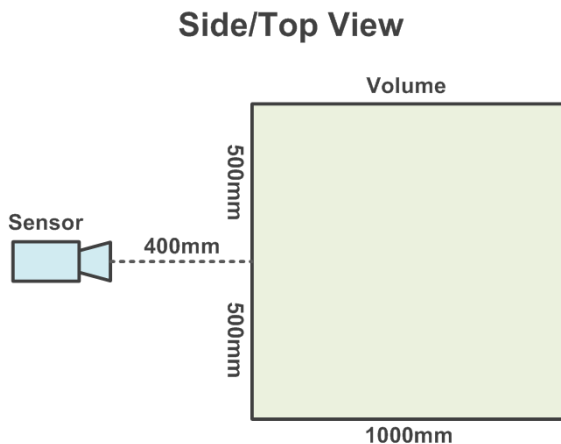
Step 2: Scanning People

Side/Top View
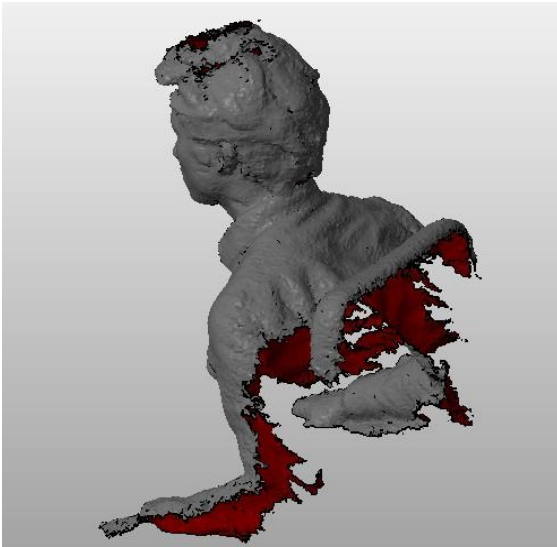
1. Sit in a spinnable office chair
2. Position your Kinect or Xtion so that only your upper body is visible in the scan area.
3. Slowly, spin yourself around in the chair while keeping your upper body in a static position.
4. Save the file as a STL

TIP:

When scanning yourself, sit with your back to the Kinect with your computer in front of you. That way your arm movements will not be captured when you press the keys on your computer to start and end the scan.

Reconstruction happens in a predefined volume. By default the size of this cube to a side-length of one meter. When you press 'p' for the first time, the position of the volume will be fixed relative to the current sensor position as illustrated in the top/side view sketch on the left side.

Step 3: Cleaning and Repairing Scans for 3D Printing

Netfabb

MeshLab

Repair and Clean Up (**STL**)
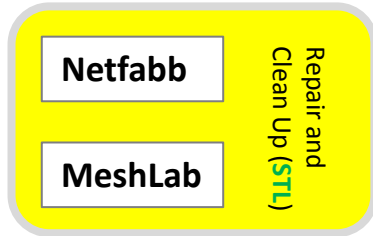
netfabb ®

1. Open netfabb Studio Basic and open the STL file of the model **(Project →) Open**.
2. select **View → Show Platform**.
3. select **Part → Move**, then select the **To Origin** button from the dialog box and click **Move**.
4. Click the model to select it, then move the selection tool over the green corner that appears around the selected model. When the selection tool is over the green corner bracket, it will appear as a rotation symbol. Rotate the model, tilting it so the head is pointing up and the body is pointing down towards the platform

TIP:

You can change your view from the View menu or click on the cube faces in the main toolbar at the top of the screen.
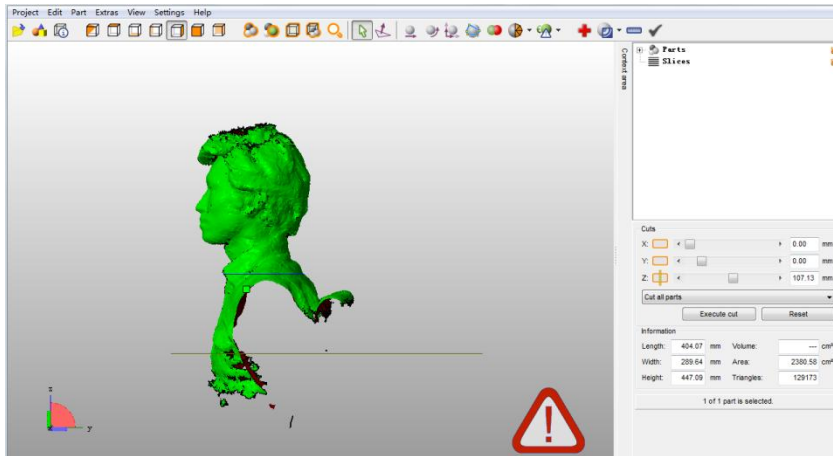
Click and mouse pulley to move the vision

Click the green rectangle in the center of the model to move it

Click and hold the right mouse button to rotate the model

Roll mouse pulley for zooming in or zooming out

Step 3: Cleaning and Repairing Scans for 3D Printing


Slice Off the Jagged Bits

1. Use the Cuts tools on the right of the screen to cut a flat bottom for the model. Drag the Z slider so the bottom of the blue cut line is cutting off the scan's jagged edges. Click the Execute Cut button then click Cut. You can then click on the part of the cut model that you want to remove.
2. Click the jagged part and click delete
3. Use X and Y slider in the same way
4. Move the clean part to the platform in the way in the previous step.
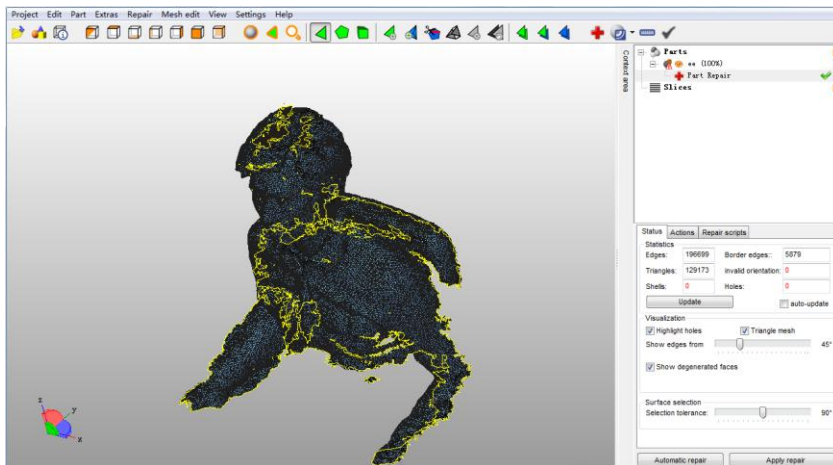
Repair the Holes

1. Select the Repair tool (looks like a red cross).
2. click the Automatic Repair button.
3. Then select Default Repair from the dialog box and press the Execute button. netfabb will ask you if you want to remove the old part. Click Yes.
4. Then click the Apply Repair button at the bottom of the right-hand side of the screen.

# Step 3: Cleaning and Repairing Scans for 3D Printing

Netfabb

MeshLab

Repair and
Clean Up (**STL**)
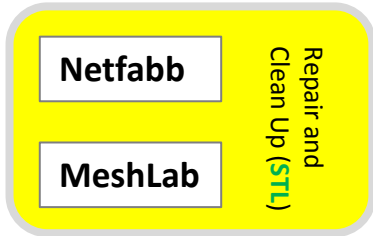
netfabb ®

1. Export a STL file using **Part → Export Part → STL**. netfabb may warn you that there are issues with your file. If you see a big red X when you attempt to export your model, click the Repair button on the dialog box. The X will become a green checkmark. Then click Export to save the STL.
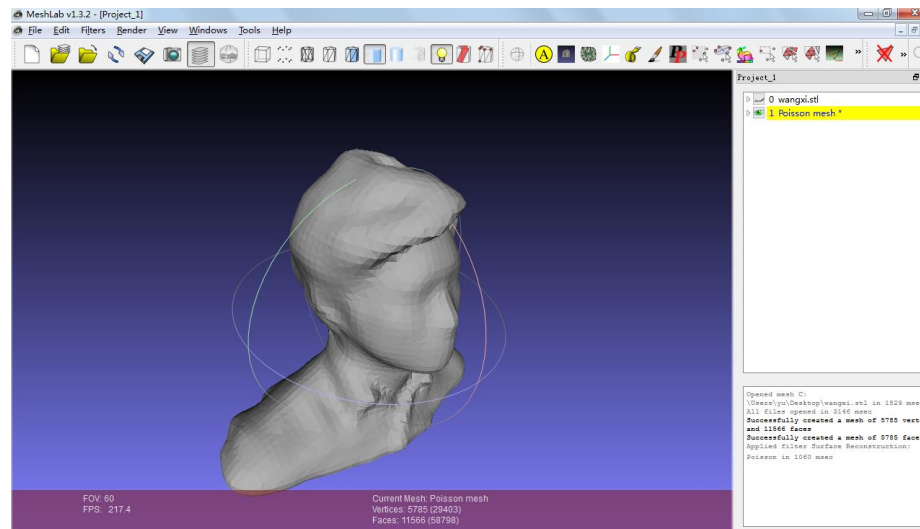
# Step 3: Cleaning and Repairing Scans for 3D Printing

Smoothing Out the Surface of Meshes in Meshlab

Netfabb

MeshLab

Repair and Clean Up (STL)
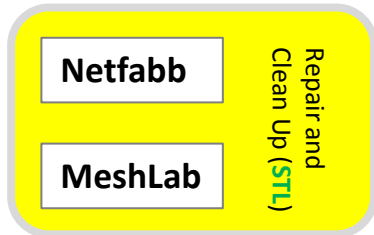
1. Create a new project from **File → New Empty Project**. Then select **File → Import Mesh** to open your STL file in Meshlab. When the dialog box pops up that asks you if you want to **Unify** Duplicated Vertices, click **Ok**. Turn on layers

2. Apply the Poission Filter Select **Filters → Point Set → Poisson Filter → Surface Reconstruction Poisson**. In the dialog box, set Ochre Depth to **11**. Click **apply**. Hide the original mesh After applying the poisson filter. Click on the green "eye" icon of the file name to hide the original file and keep the Poisson mesh.

3. Save as a STL file Go to File → Export Mesh As. Use the default export options.

Step 3: Cleaning and Repairing Scans for 3D Printing

Netfabb

MeshLab

Repair and Clean Up (**STL**)
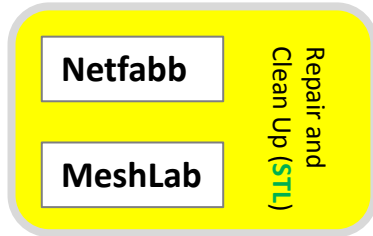
Final Cleanup/ Repair in netfabb

1. Open the STL back up in netfabb. If you used the poisson filter in Meshlab, the formerly smooth bottom of your model will be bumpy. To fix this we need to re-cut the bottom of our model to make it flat. Re-slice off the bottom. Repair the model and export as an STL.

Very Useful Links :
http://www.grabcad.com/

http://www.thingiverse.com/