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Digital_Fabrication_Studio.05

3D Scanning – from atoms to bits

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10.10.2012

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Today:

* 3D scanning: examples
* 3D scanning: tools and softwares
* 3D scanning: process

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01.
3D scanning:
bits from atoms

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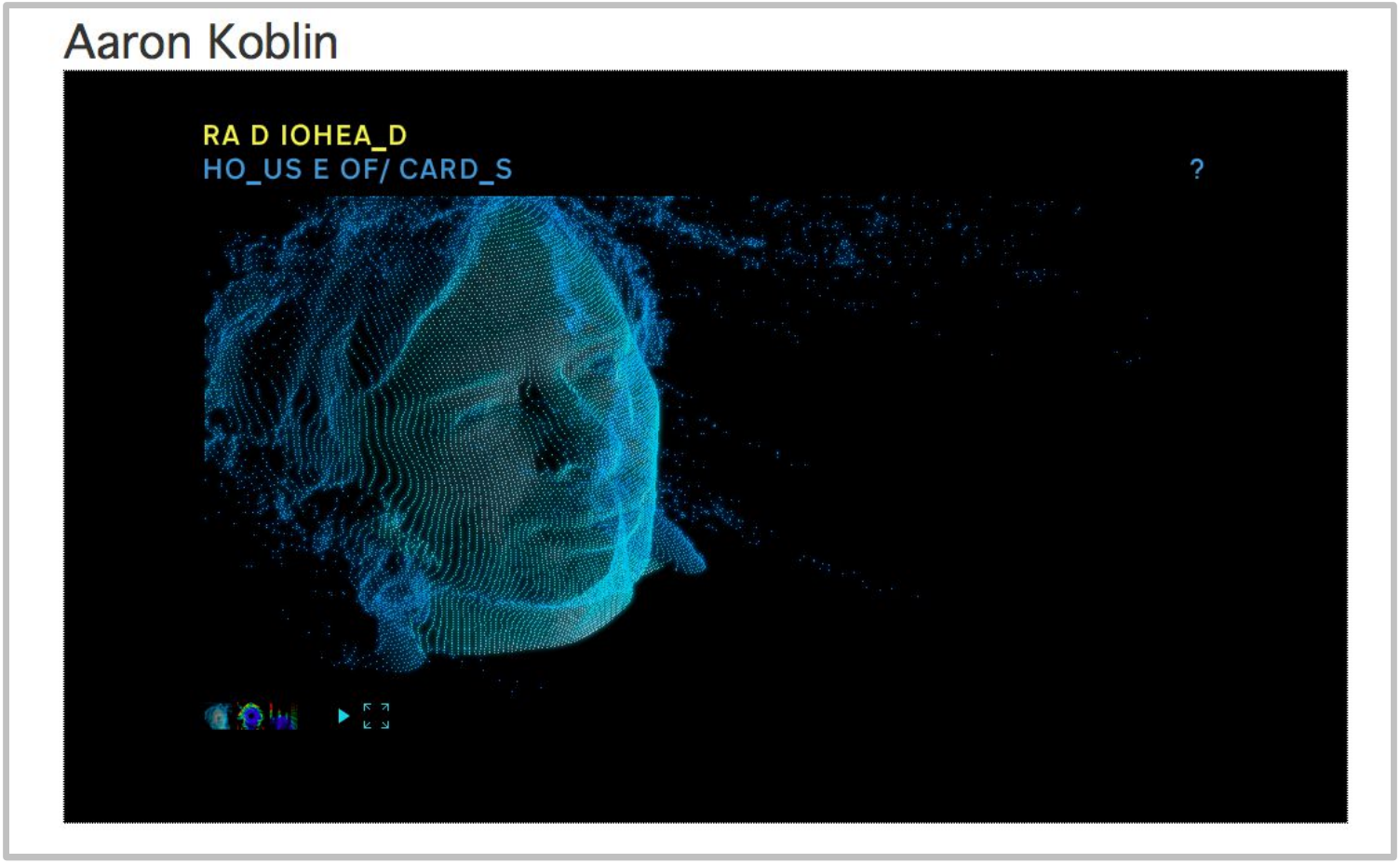
Radiohead: *House of Cards* video

No cameras / lights: 3D scanning collected information about the shapes and relative distances of objects. The video was created with visualizations of the data.

Source: http://vimeo.com/2037463

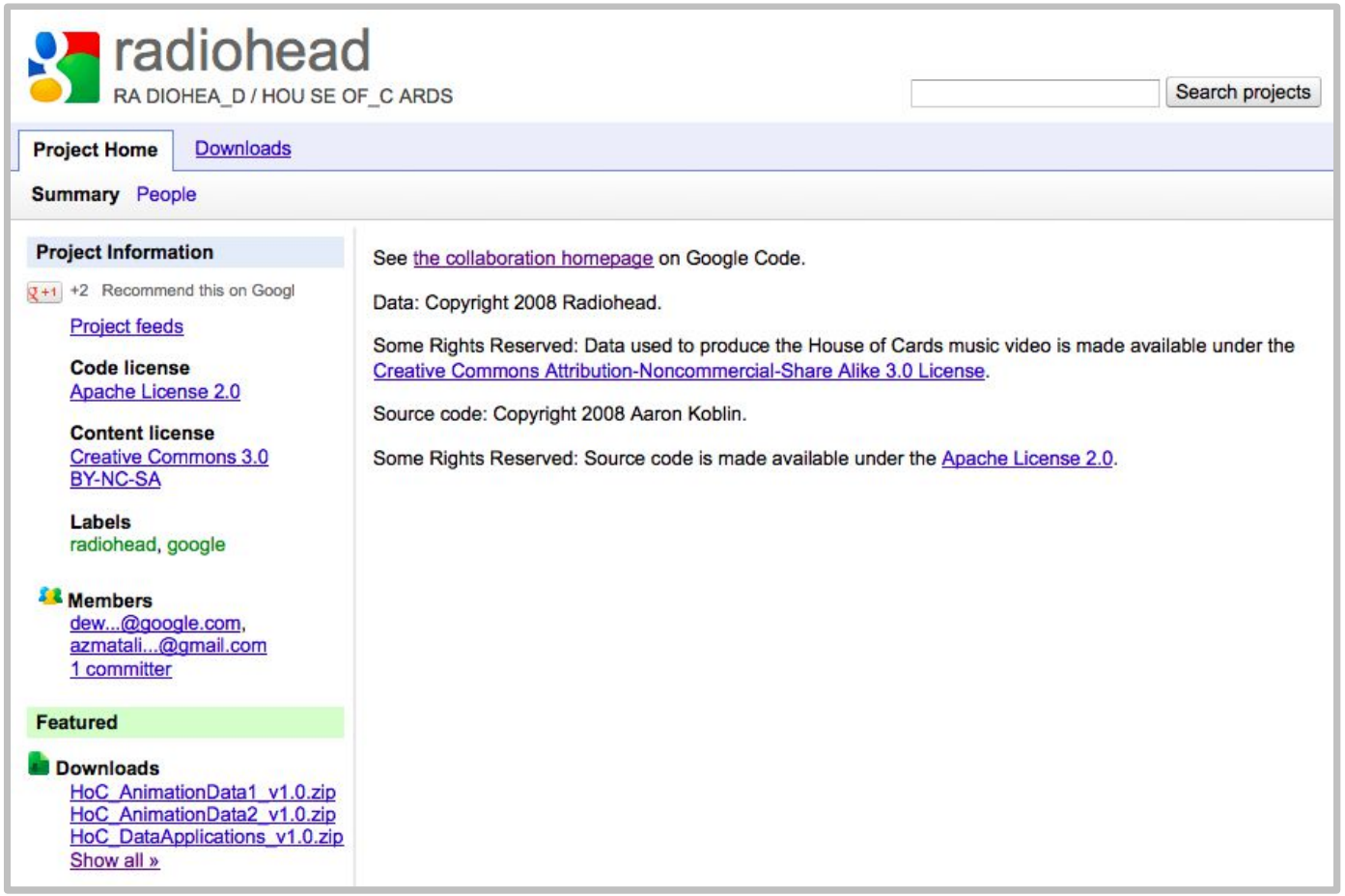
Radiohead: *House of Cards* video



No cameras / lights: 3D scanning collected information about the shapes and relative distances of objects. The video was created with visualizations of the data.

Source: http://www.aaronkoblin.com/work/rh/index.html

Radiohead: *House of Cards* video



An open data / open source project on Google Code: point cloud data and Processing software are available!

Source: http://code.google.com/p/radiohead/

Radiohead: *House of Cards* video

Learn about how the video of "House of Cards" was made and the various technologies that were used to capture and render 3D data.

Source: http://youtu.be/cyQoTGdQywY

Smithsonian 3D scans its objects

A new effort under way at the world's largest museum could bring more of its 137 million objects will be publicly available.

Source: http://youtu.be/cyQoTGdQywY

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02.
3D scanning:
tools and softwares

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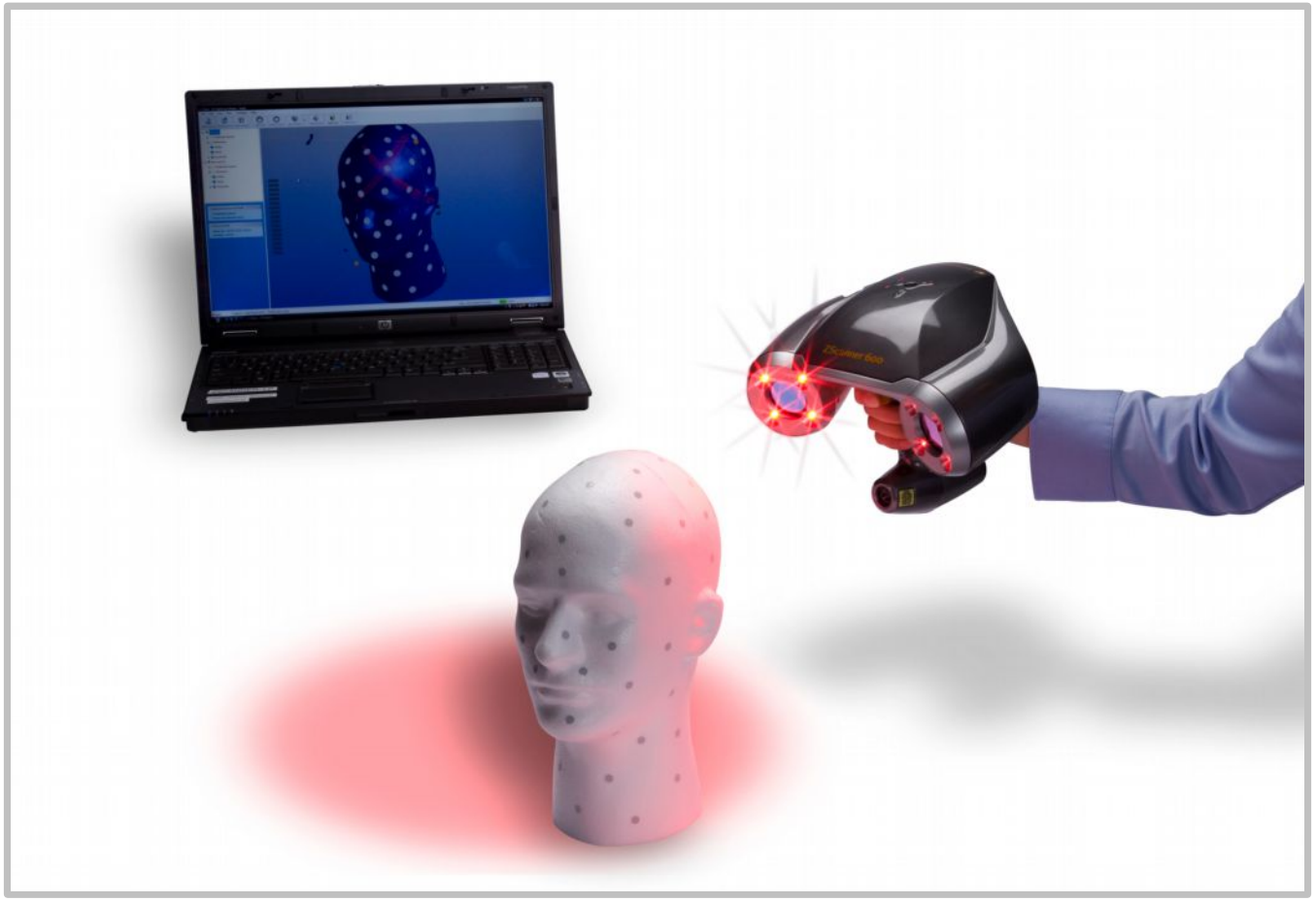
Hardware: expensive and not complete



There is still the problem of stitching together the meshes obtained.

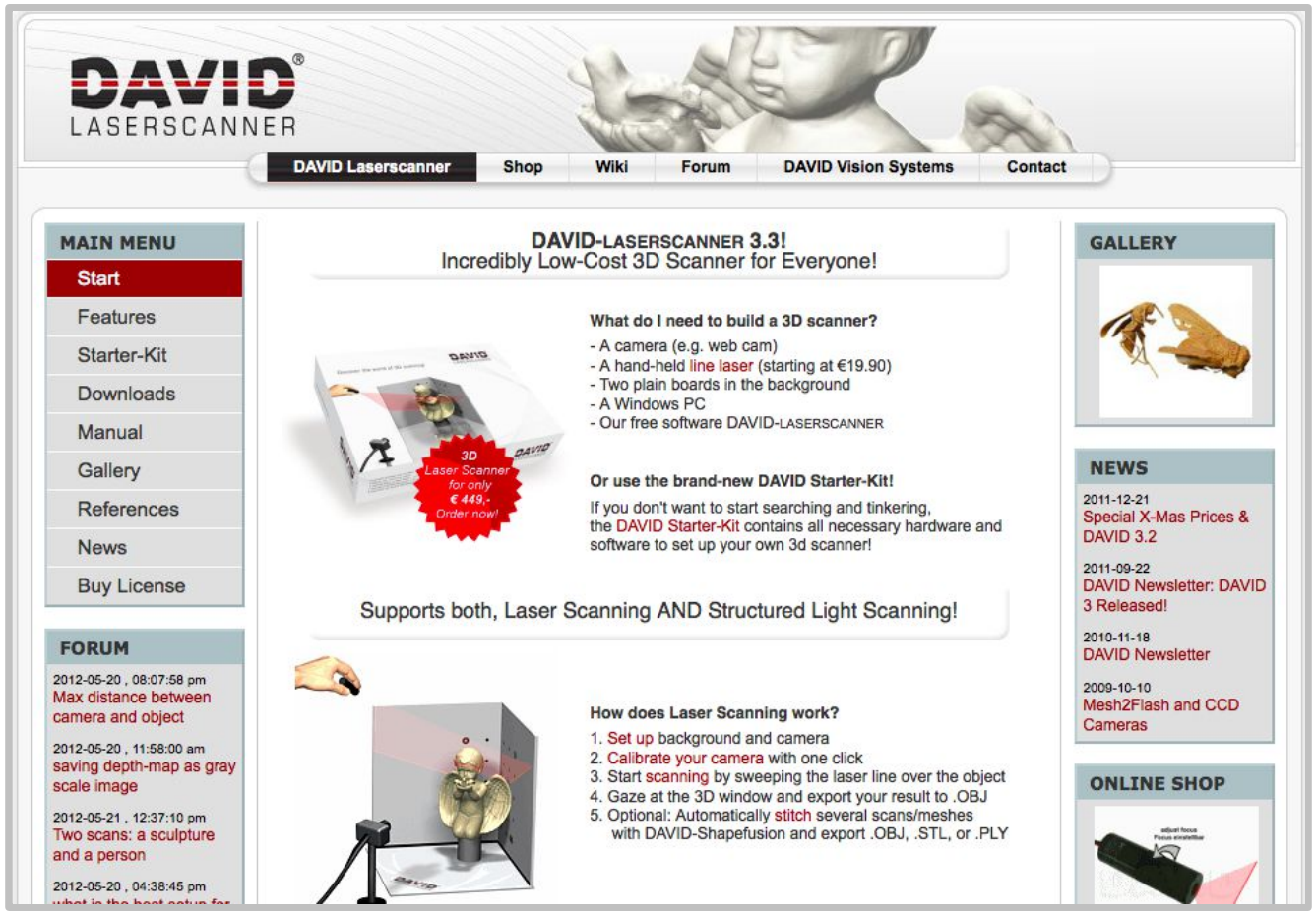
Source: http://www.zcorp.com/en/Products/3D-Scanners/ZScanner-600/spage.aspx

Hardware: a very good option

The NextEngine 3D Scanner captures objects in full color with multi-laser precision.

Source: http://www.nextengine.com/

Hardware: cheap DIY version



DAVID-laserscanner is a low-cost system for scanning of 3d objects. Requirements are a commercial hand-held laser and a standard camera.

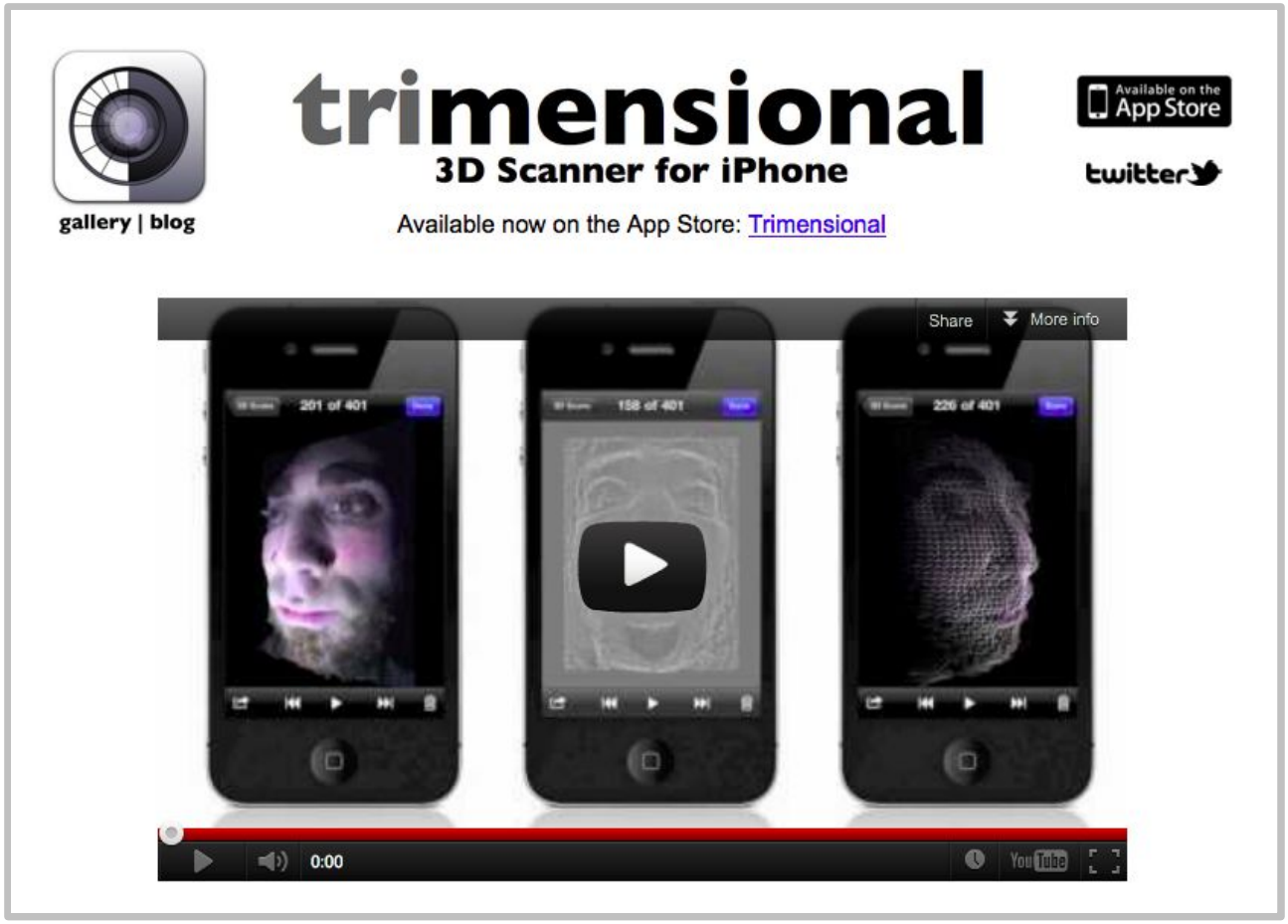
Source: http://www.david-laserscanner.com/

Hardware: Modela MDX-20

You can scan also with the Modela, with a special head.

Source: http://youtu.be/1jEb22OSKAg

A 3D scanner app for iPhone



Trimensional uses both the screen and the front-facing camera on an iOS device, detecting patterns of light reflected off your face to build 3D model.

Source: http://www.trimensional.com/
http://youtu.be/IEZtiDrxh-E

A 3D scanner with Kinect: ReconstructMe

ReconstructMe is a software tool for Windows that uses the Microsoft Kinect (or Asus Xtion PRO LIVE) to capture 3D models in real-time.

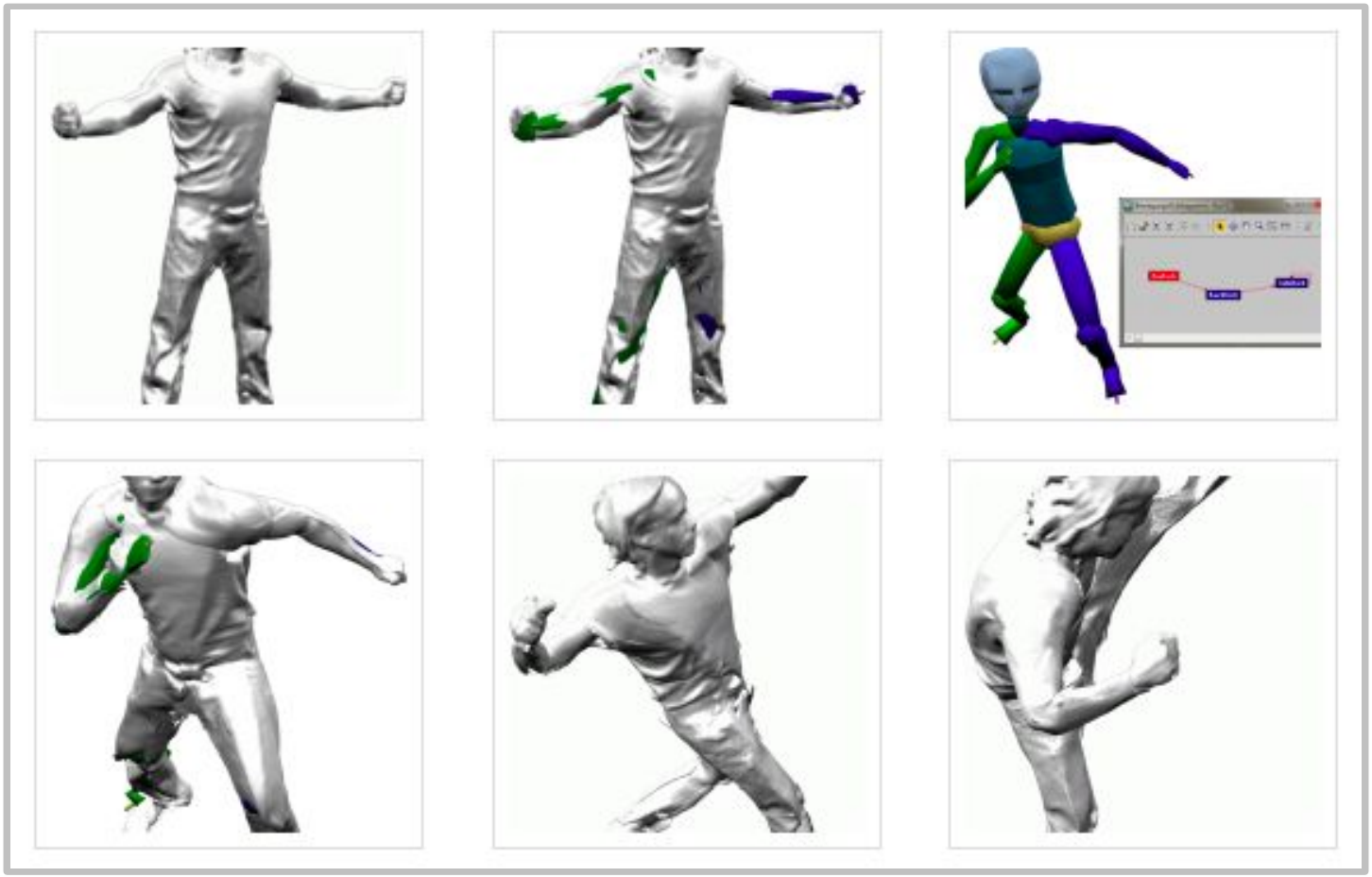
Source: http://youtu.be/LZZqffZkOw0

3D Scanning and character animation

"We have created a full body scan one of our coworkers while using a bigger volume, and he used this as the basis for a character animation."

Source: http://youtu.be/uimmxD0a_lM
http://reconstructme.net/2012/03/20/character-creation-with-a-reconstructme-scan/

3D Scanning and character animation



"We have created a full body scan one of our coworkers while using a bigger volume, and he used this as the basis for a character animation."

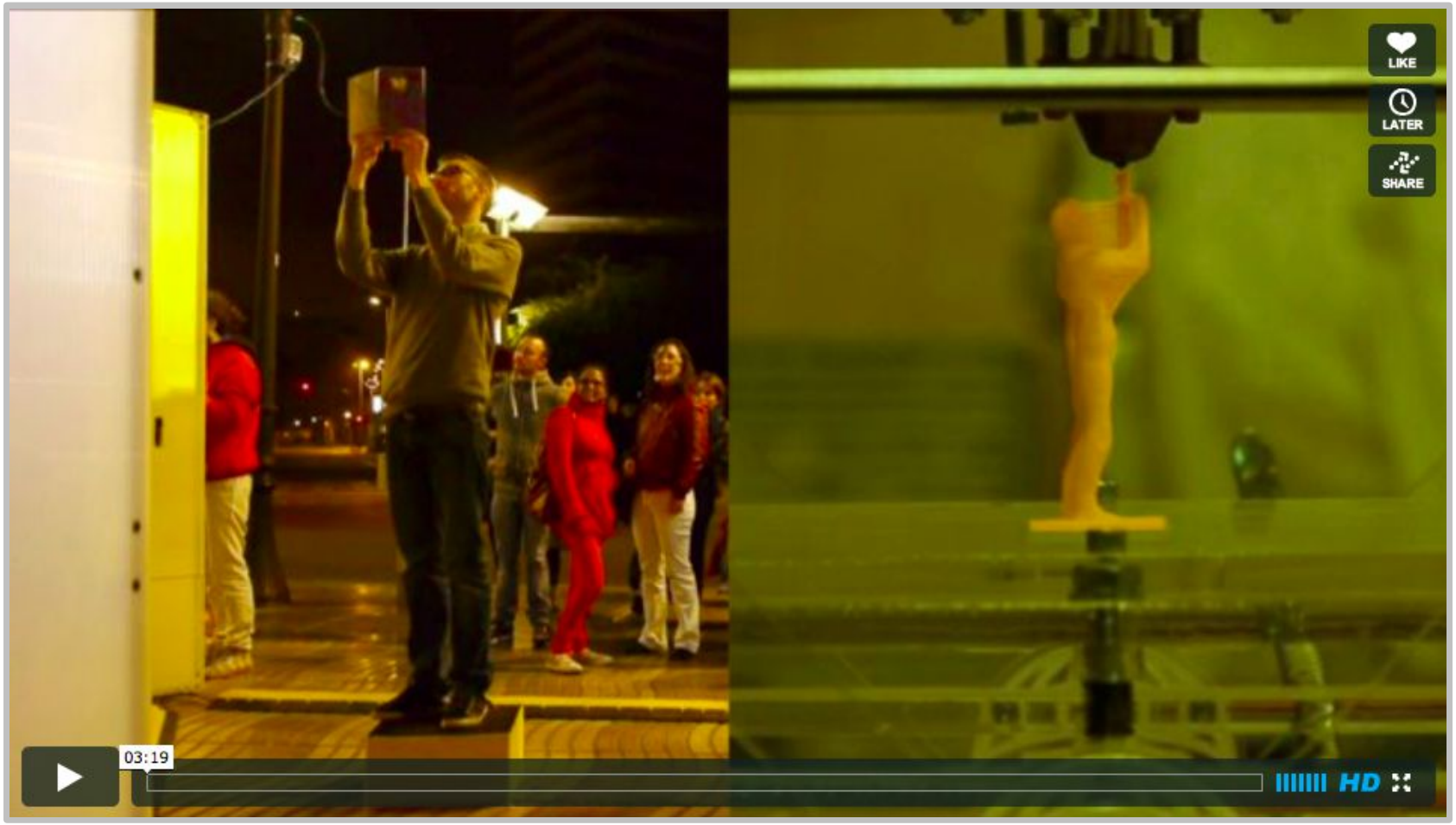
Source: http://reconstructme.net/2012/03/20/character-creation-with-a-reconstructme-scan/

Be your own souvenir

The project from blablabLab uses custom software developed using openKinect and openFrameworks (and Meshlab and Blender).

Source: http://www.notcot.com/archives/2011/04/be-your-own-souvenir-by-blabla.php
http://www.blablablab.org/

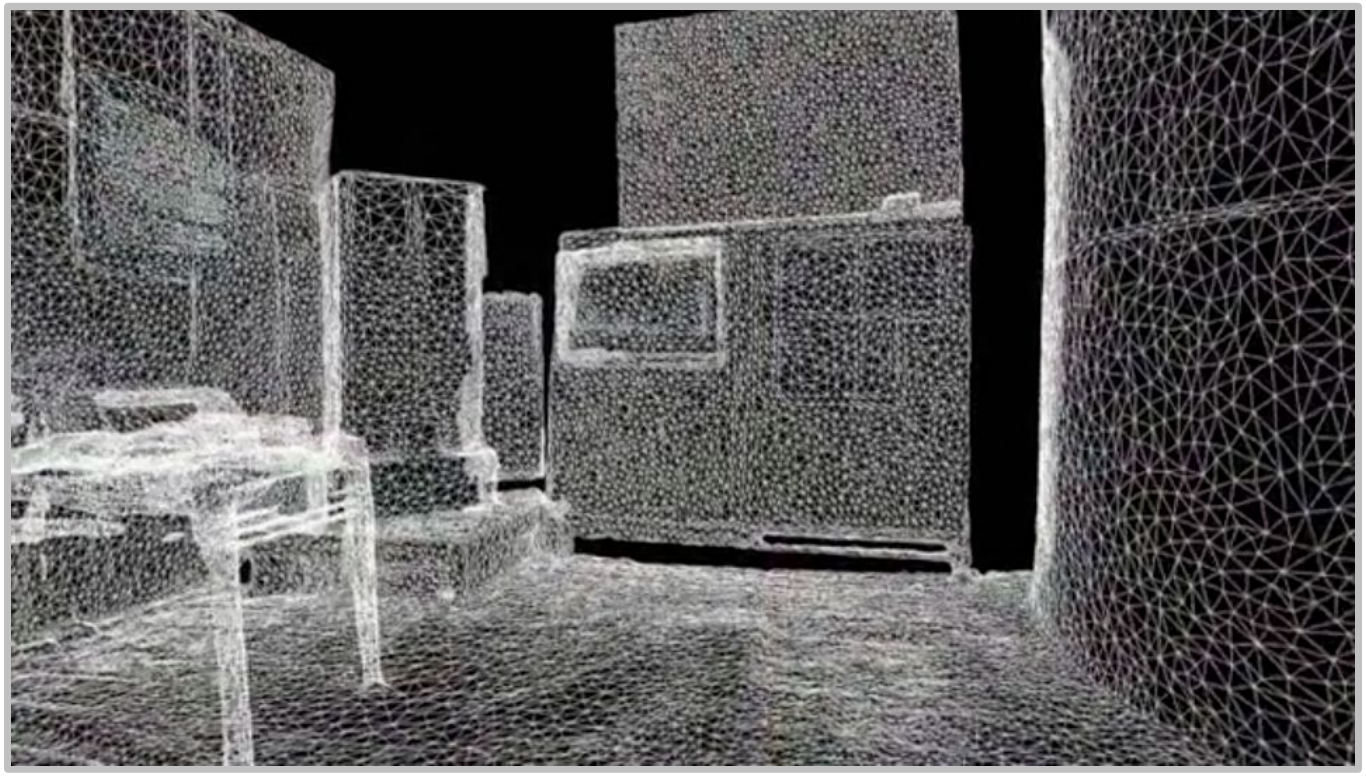
Be your own souvenir



The project from blablabLab uses custom software developed using openKinect and openFrameworks (and Meshlab and Blender).

Source: http://vimeo.com/21676294
http://www.blablablab.org/

Scan spaces with Kinect



Matterport is creating a 3D reconstruction system that allows anyone to create 3D models of physical objects and interior spaces.

Source:http://matterport.com/our-scanner/

Scan with light pattern

A technology for measuring objects in 3D, using only a camera and projector: patterned light is projected and read with a camera.

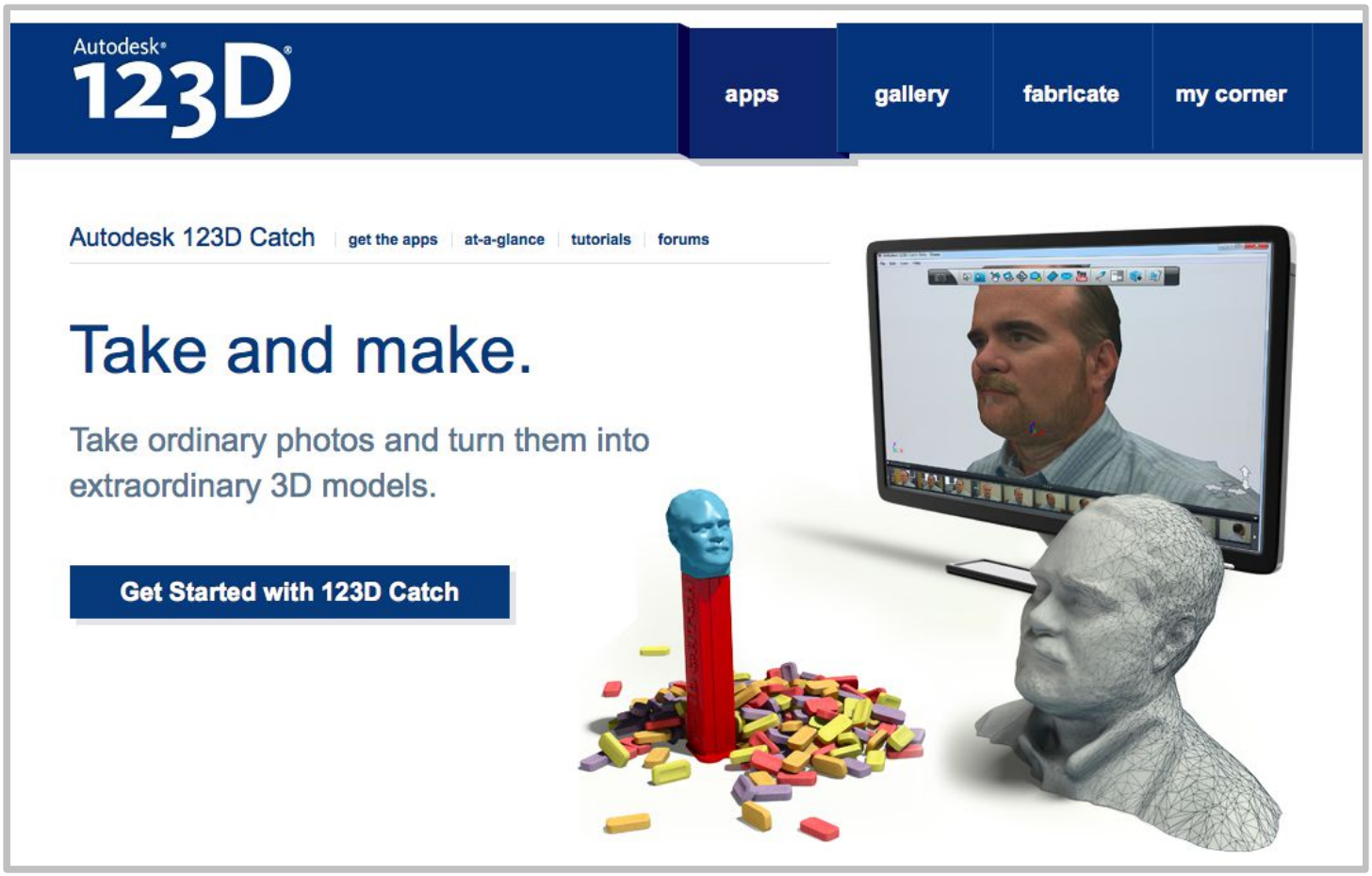
Source:http://www.youtube.com/watch?feature=player_embedded&v=YH-ehE6NVFM
http://www.diginfo.tv/v/12-0159-r-en.php

Scan with light pattern

Janne Parviainen: topographic light paintings circumscribe surfaces and people, creating captivating 3-D models in the process.

Source:http://www.flickr.com/photos/jannepaint/sets/72157631039444612/with/7761613920/
http://www.wired.com/rawfile/2012/08/topographic-light-painting/?pid=3455

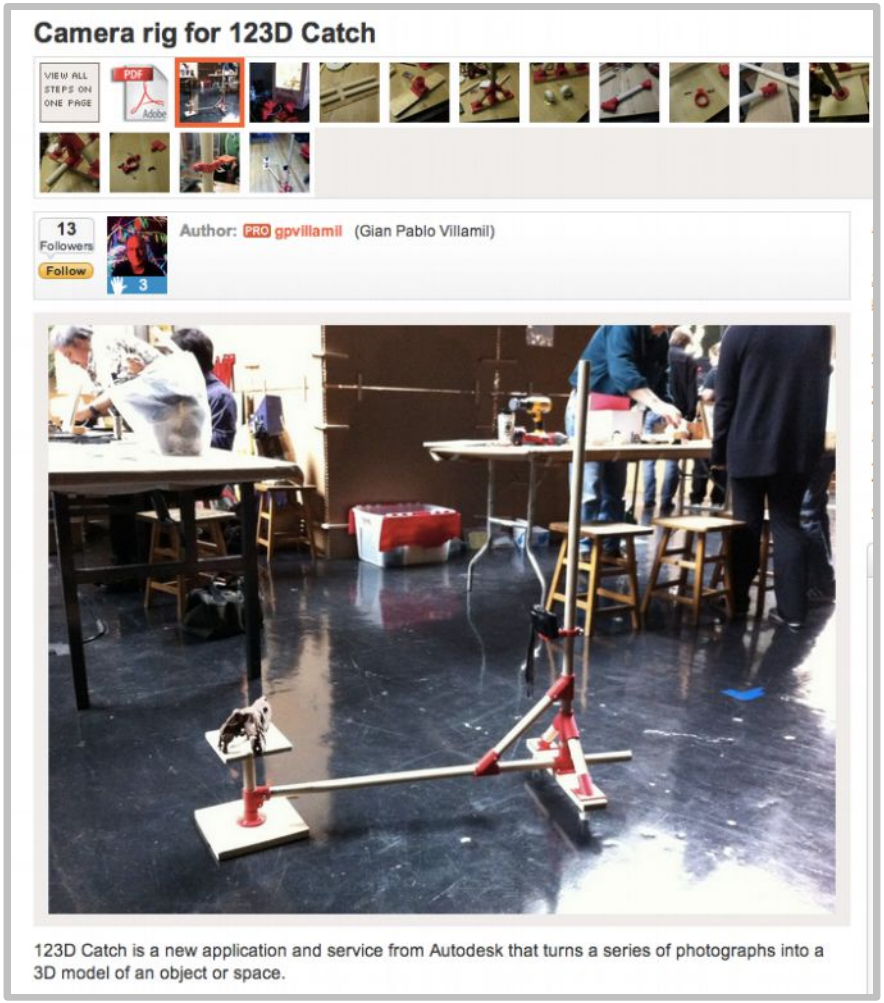
The easiest way: 123D Catch



The easiest and cheapest way, just take many pictures (but no reflective and transparent materials).

Source: http://www.123dapp.com/catch

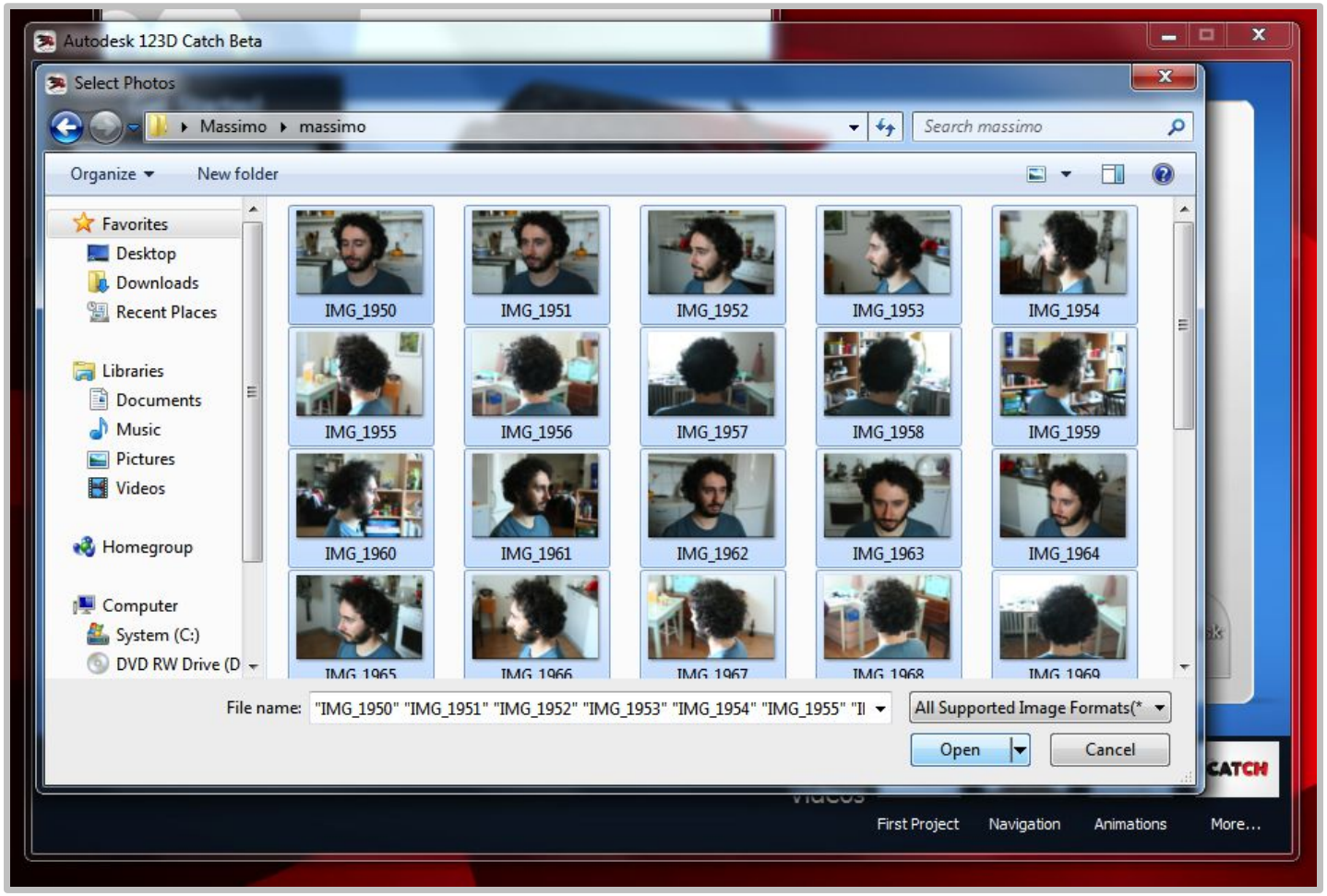
The easiest way: 123D Catch



The rig helps you structure the photos for best results. It lets you spin the camera around the object at a constant height and distance.

Source:http://www.instructables.com/id/Camera-rig-for-123D-Catch/

123D Catch: workflow



Read the whole workflow here (exercise 10):

Source: http://academy.cba.mit.edu/2012/students/menichinelli.massimo/index.html

123D Catch: workflow

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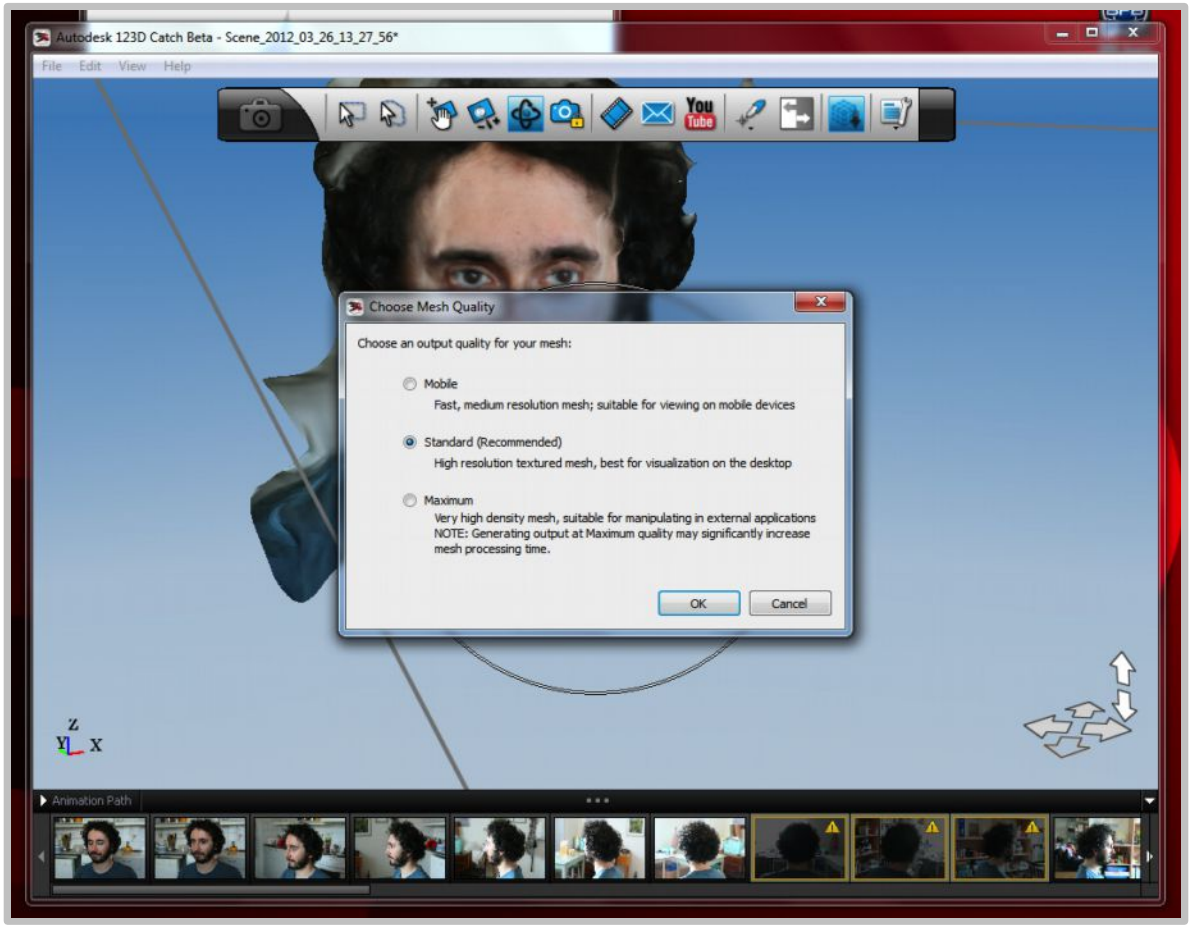

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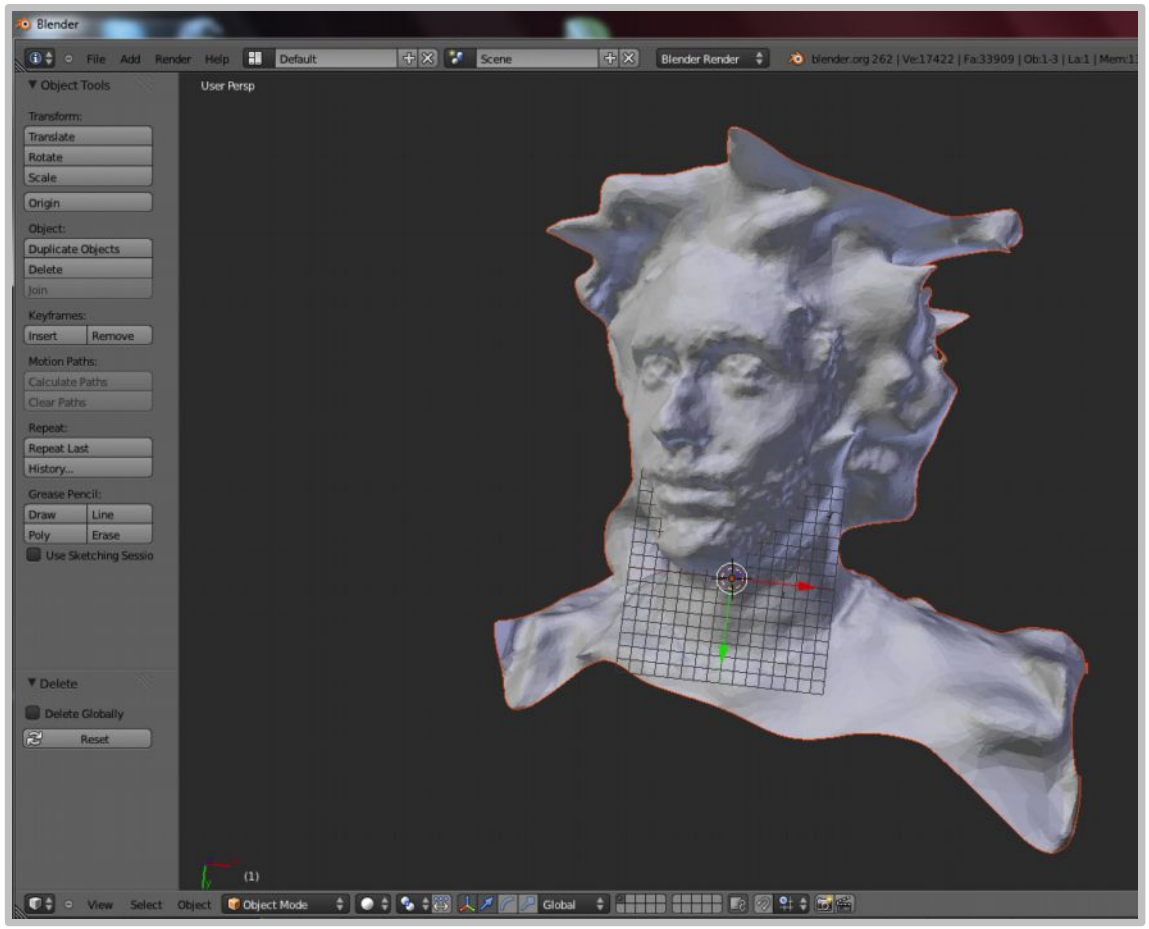

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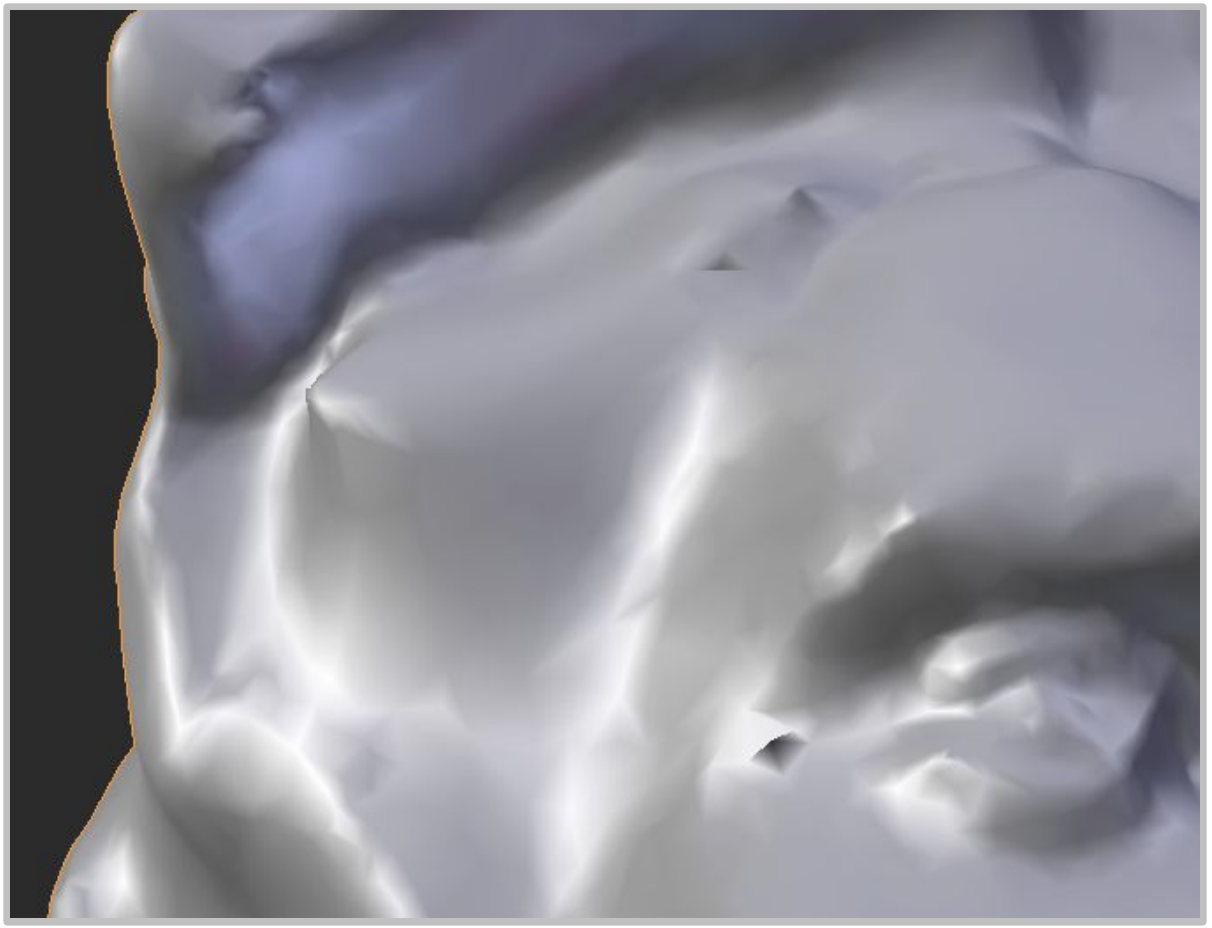

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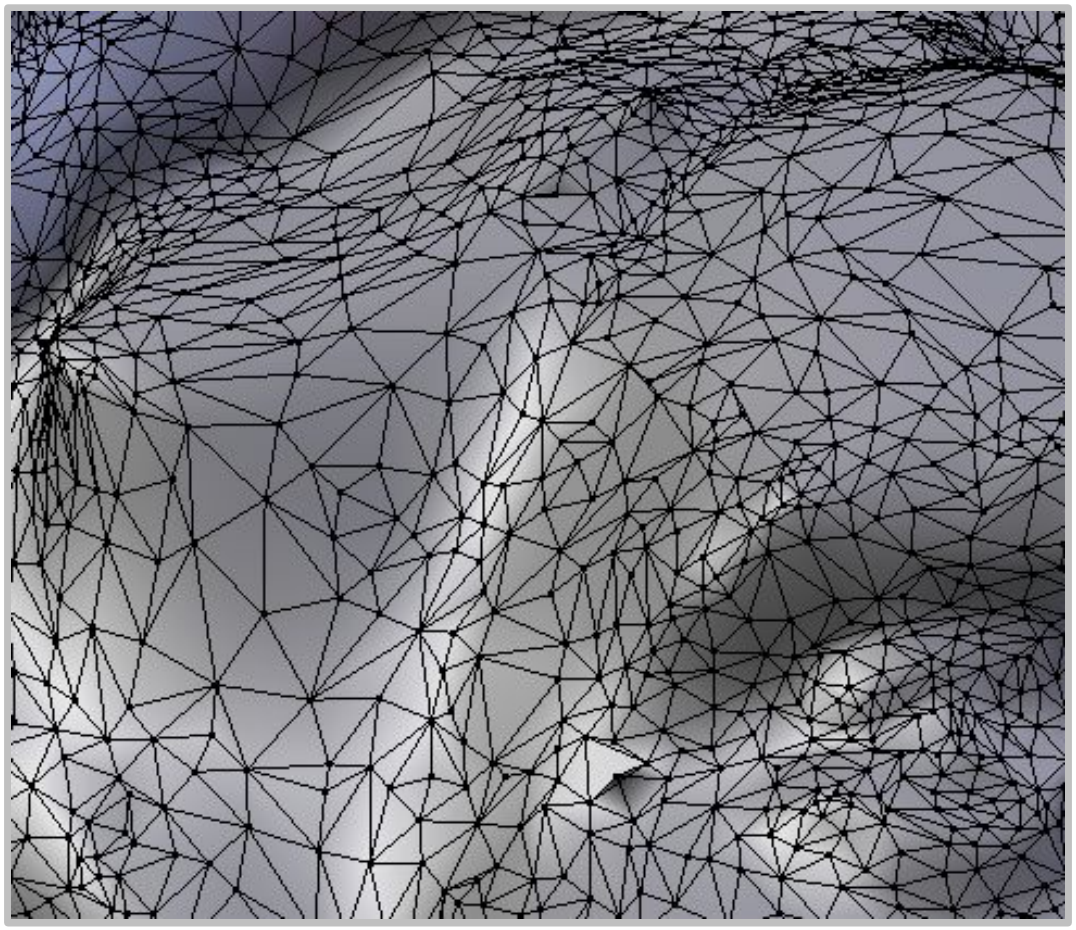

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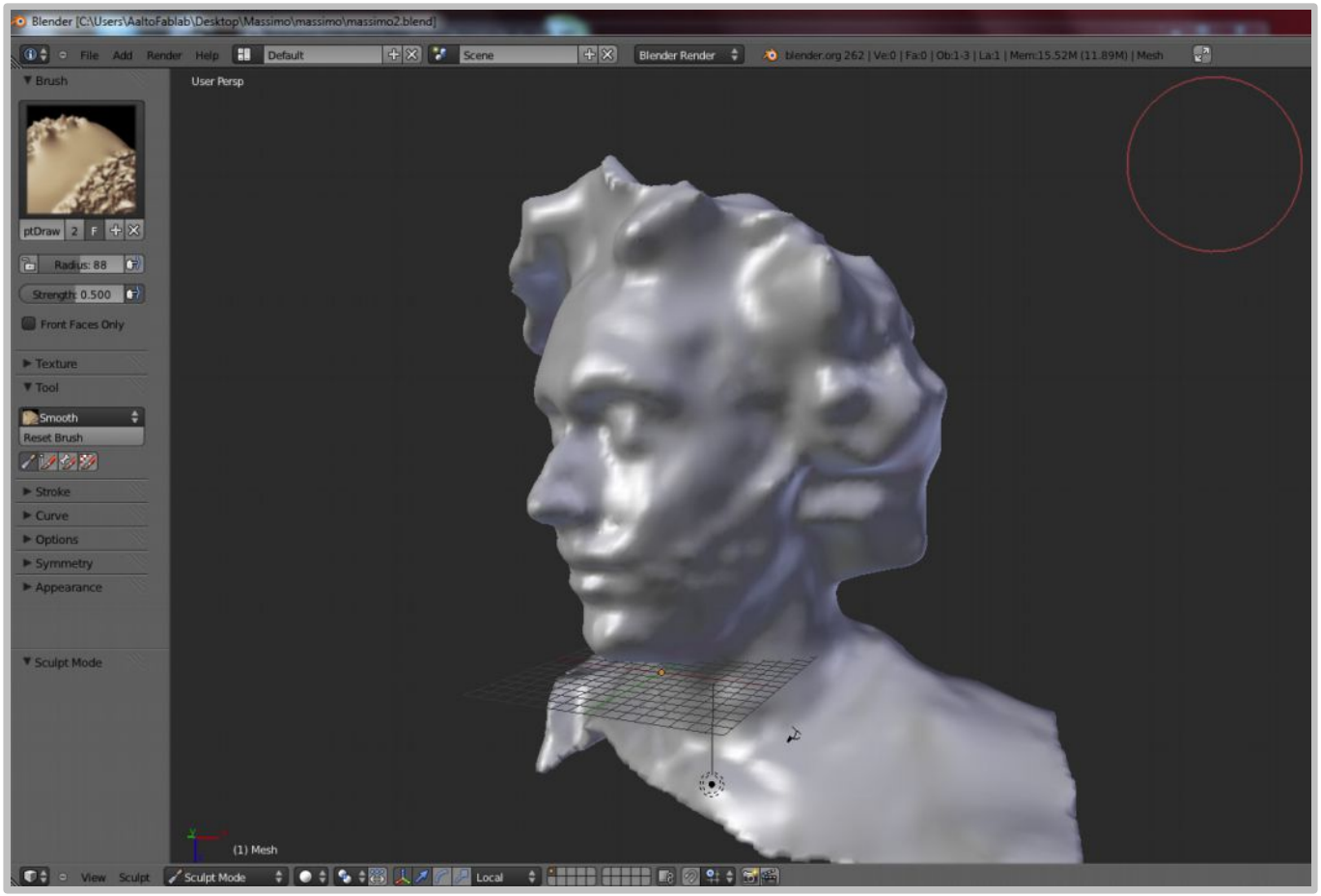

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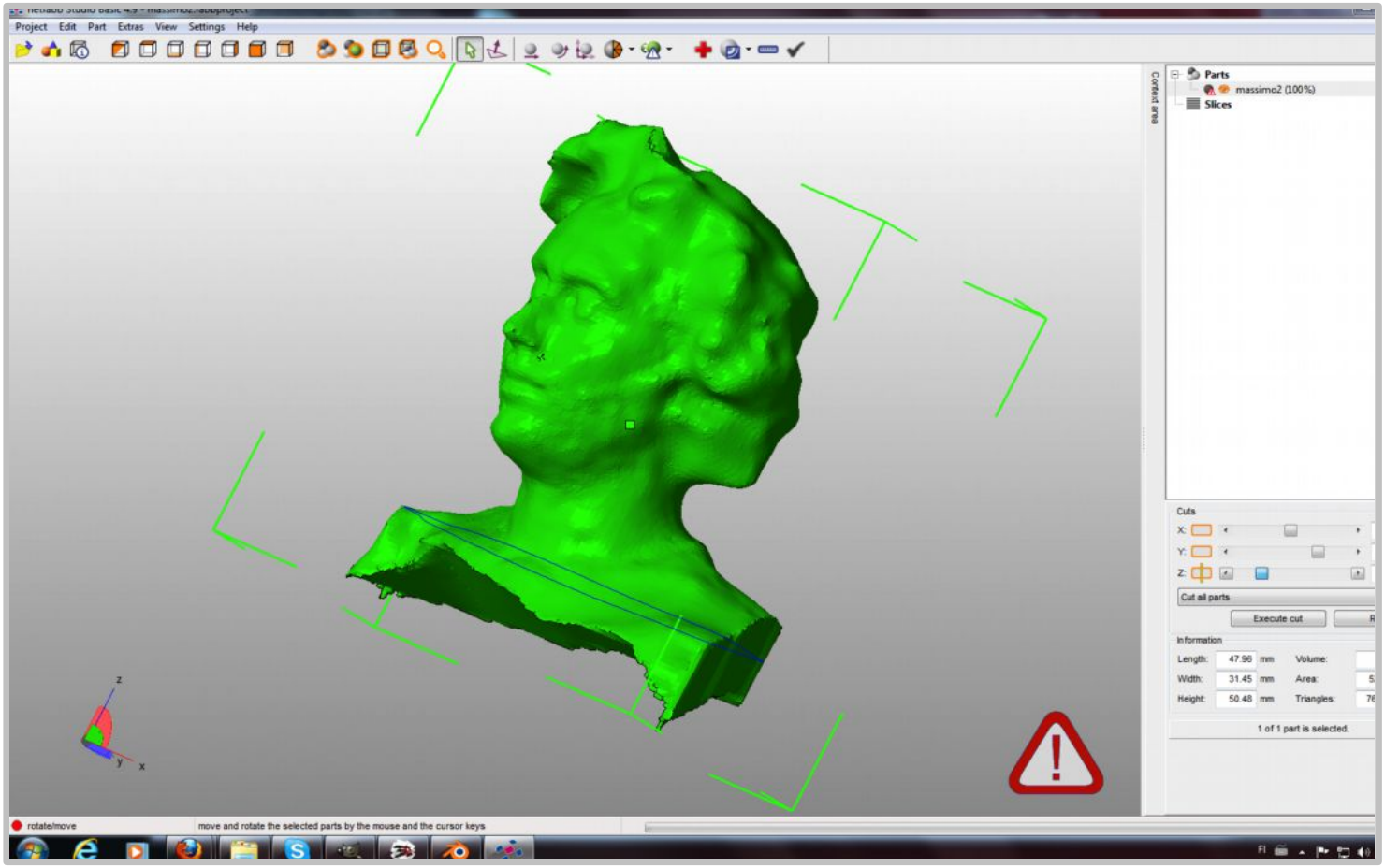
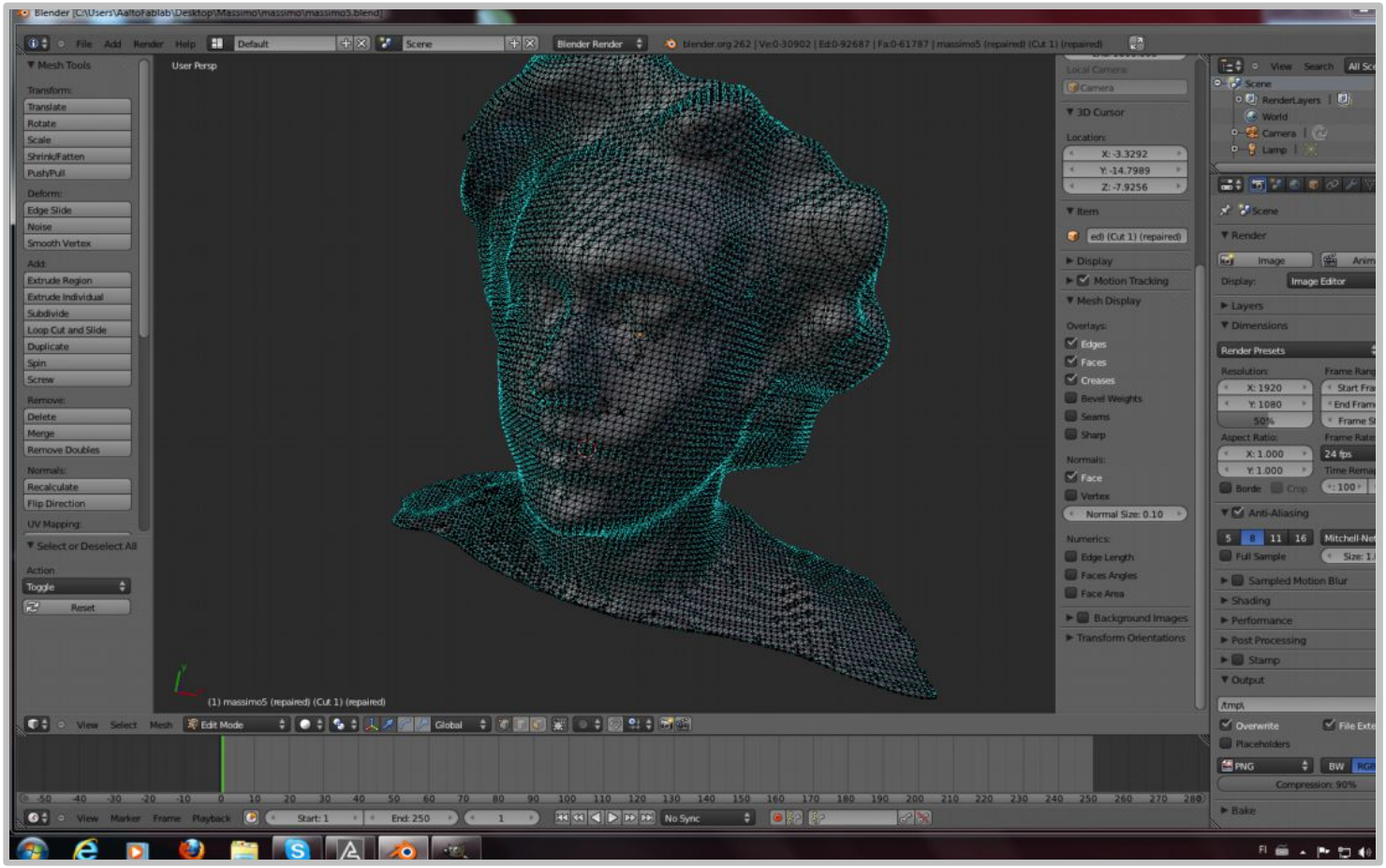


"... and I will probably design and make my own tools" [metadesign]

Source: http://web.media.mit.edu/~amitz/Amit_Zoran_home_page/the_freeD.html

123D Catch: workflow



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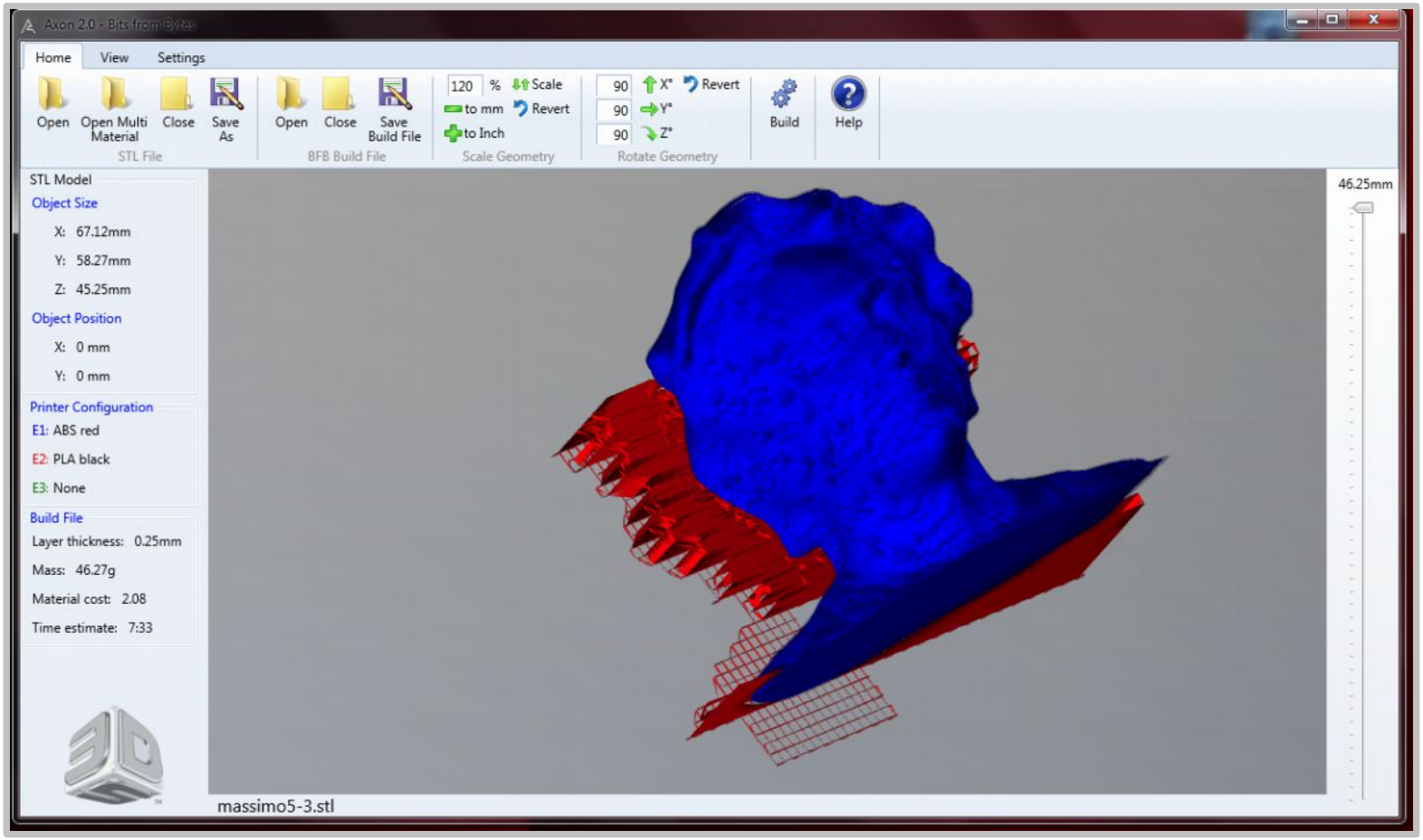

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123D Catch: art projects!

THE OPEN CROWD PROJECT

a collaborative project to build a 3D printed crowd

about / individuals / crowd / participate / news / resources / example image set / contact

ABOUT

The Open Crowd Project is a collaborative project using 3D scanning and printing technology to create a "crowd" of people printed with 3D printers.

The goal of this project is to collaborate with people who may be in different geographic areas, but who are willing to come together and collaborate through an online space. We encourage everyone that is interested in this project to participate! All you have to do is follow the instructions provided on the "participate" page of this website and we'll create a 3D model of you, 3D print it, and include you in the crowd!

The Open Crowd Project is a collaborative project using 3D scanning and printing technology to create a "crowd" of people printed with 3D printers.

Source:http://www.theopencrowdproject.com/

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05.
Exercise:
3D scan your head or an object

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Thank you!!

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