

PhotoSynth Toolkit



Setup

1. Go to <http://photosynth.net>, sign up for an account, and click “create a synth”
2. Create a folder with your chosen images, and use them to create a new PhotoSynth (there are instructions on the PhotoSynth website to help here)
3. Revise your Synth if it is not 100% “synthy”. Remove images that are not being matched.
4. Download Astre Henri's PhotoSynth Toolkit from <http://www.visual-experiments.com/2010/08/19/my-photosynth-toolkit/> and extract it to where you want to use it (for example, your Desktop)
5. Download the PMVS2 Binaries from <http://francemapping.free.fr/Portfolio/Prog3D/PMVS2.html>
6. Inside the PMVS2 file “pmvs_2_Win_Linux.zip”, find PMVS2\VC\precompiledBinary.zip and extract the PMVS2.exe and pthread.dll files to the Toolkit folder.

Now you should have:

ToolKit\
ToolKit\jpeg.dll
ToolKit\OgreMain.dll
ToolKit\PhotoSynth2PMVS.exe
ToolKit\PhotoSynthDownloader.exe
ToolKit\PMVS2.exe
ToolKit\PoissonRecon.64.exe
ToolKit\pthread.dll
+ some vbs to help

7. If you have not already done so, download and install MeshLab, available at http://downloads.sourceforge.net/meshlab/MeshLab_v123a.exe

PhotoSynth Toolkit Instructions

(Taken from the README.txt that comes with the Toolkit)

There are [5] steps:

- 1_DownloadPhotoSynth.vbs:

- Enter your PhotoSynth URL (eg: "<http://photosynth.net/view.aspx?cid=1471c7c7-da12-4859-9289-a2e6d2129319>") and press OK
- You could type your URL followed by a space and "thumb" to download the thumbnails of the PhotoSynth
- > "<http://photosynth.net/view.aspx?cid=1471c7c7-da12-4859-9289-a2e6d2129319> thumb"

- 2_Put images in distort folder

- If you have downloaded the thumbs you could copy them from thumbs folder to distort folder and run step 3.
- Otherwise you need to copy HD version of your jpeg in the distort folder.
- > Caution : you need to put the same number of images as the ones you submitted to PhotoSynth
- > Caution : I'm parsing the folder with a lexicographical order so thumbs_1.jpg < thumbs_10.jpg < thumbs_2.jpg
- > Caution : It should be fine with picture from an handled camera DSCN3843.jpg < DSCN3844.jpg < DSCN3845.jpg

- 3_PrepareForPMVS.vbs

- Enter your PhotoSynth URL
- It should produce:
 - txt\[??????.txt and visualize\[??????.jpg
 - pmvs_options.txt
 - bin\coord_system_?.ply

4_Configure your pmvs_options

- Edit your pmvs_options.txt according to your needs (level, CPU)
- See PMVS2 documentation (<http://grail.cs.washington.edu/software/pmvs/documentation.html>)

5_launchPMVS2.vbs

- Enter your PhotoSynth URL (it could take a while to complete)
- PMVS2.exe is a 32bit app so it crashes if it memory reaches 2Gb
- To reduce memory you can:
 - you lower resolution image in your distort folder
 - use a higher level in pmvs_options.txt
 - reduce the number of CPU (not I'm not joking !)

- It should produce:

- models\pmvs_options.txt.patch
- models\pmvs_options.txt.ply
- models\pmvs_options.txt.pset

[Poisson mesh reconstruction stage removed and replaced with instructions below]

Mesh reconstruction

1. Once you have a reconstructed dense point cloud .ply file, open the first in MeshLab
2. Remove any noisy points.
3. Select “Filters → Point Set → Surface Reconstruction: Poisson” and use either 6, 6, 1, 1 for a quick test, or 11, 6, 1, 1 for a highly detailed mesh. Experiment with different values of Octree depth, but beware that the larger it is the longer it will take.
4. Select “Filters → Sampling → Vertex Attribute Transfer” and transfer colour from the layer to the new Mesh, with the Max Distance Search percentage to 3.000, then again at 0.010.
5. Save your mesh as an STL file ready for printing.