Grafica 3D per i beni culturali: Photosynth Toolkit

Lezione 13: 27 Aprile 2012

Image-based 3D Reconstruction

☐ Advantages:
- ■ Automatic
- ■ Fast (relatively to manual built)
- ■ Good scalability (both small and huge model can be acquired)
- ■ Non-expert users can create his/her 3D model.
- ■ Cheap!

☐ Disadvantages:
- ■ Accuracy (not so accurate)
- ■ Not all the objects can be acquired

Photosynth Toolkit

- ☐ This toolkit is produced by a small community of photographers.

- ☐ http://www.visual-experiments.com/demos/photosynthtoolkit/

- ☐ It uses the code which was released by two different research projects: Photosynth (the heir of PhotoTourism) and PMVS.

- ☐ MeshLab is indicated as the "official" tool for the processing of the 3D data!

Photosynth Toolkit

- ☐ The input of the toolkit is a web address of the reconstruction provided by Photosynth

- ☐ To use Photosynth: sign in, download the upload tool, upload the images, go and have a look at he corresponding page.

Photosynth Toolkit

- ❑ To use the Photosynth toolkit: follow the ReadMe.txt file!
- ❑ 1) DownloadPhotoSynth: use the photosynth URL
- ❑ 2) Put images in distort folder: just do that!
- ❑ 3) PrepareForPMVS : use the photosynt URL
- ❑ 4) Configure your pmvs_options: see next slide
- ❑ 5) launchPMVS2: launch and wait for the result, which will be saved in models folder

Photosynth Toolkit

- The options for PMVS are well explained at
- http://grail.cs.washington.edu/software/pmvs/documentation.html
- But the most important parameters are:
- *Level: the subsampling rate of images: (0=full resolution)*
- *Csize: density of reconstruction (the lower the denser)*
- *minImageNum: min number of images sharing a point in 3D (similar to count in Arc3D)*
- *CPU: support for multi-core systems*

Photosynth Toolkit: final comments

- Photosynth is more robust tha Arc3D in reconstruction, but since it's not fully integrated in MeshLab, you have less control on the production of the model

- The points produced by PMVS are a bit more "sparse" than Arc3D, but if you play with the parameters maybe you can improve the results

- The reconstruction is fully local, so it's necessary to have adequate hardware…

Next in line…

Next lesson:

- Dense Stereo Matching: using MeshLab

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