



Large-Scale, Real-Time 3D Image Reconstruction Using Multi-View Stereo Algorithms

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July 9, 2014

Project Overview

The goal of the project is to implement a system that takes a large-scale set of two-dimensional images and output a three-dimensional stereoscopic image accurately in real-time.

The focus will be on creating and optimizing a system that integrates structure-from-motion (SfM), Clustering Views for Multi-view Stereo (CMVS), Patch-based Multi-view Stereo Software (PMVS), and Poisson Surface Reconstruction (PSR).

Progress

- Wrote top-level Makefile to simplify compilation when making changes in any of the programs' codes.
- Started learning bash scripting and writing a script that would integrate the code.
- Switched to learning and using Python after meeting with my host-site mentor and getting his input.
- Attempted to fix Bundler code so that the output could go to a specific directory rather than filling up the current directory with many files. This proved to be more time-consuming than anticipated so decided to focus on higher-priority tasks.

Progress

- Fixed errors in Bundle2PMVS.cc, which was causing the bash script that it created to move incorrect files.
- Fixed Bundler and CMVS so that:
 - ◆ the codes worked together to produce the expected outputs
 - ◆ the codes would run correctly from the current directory
- Wrote Python script that runs Bundler, Bundler2PMVS, prep_pmvs.sh, CMVS, and genOption, to produce the correct outputs that are used as inputs into PMVS2.
- Also fixed PMVS2 and got it running from the Python script, but still need to confirm that it is outputting all the expected files.

Upcoming Goals

- Confirm running PMVS2 outputs correct results. If not, address the problems.
- Test and verify that my script is working correctly for varying sample image sets.
- Fix issues that come up during testing.
- Figure out which code to focus on for optimization (and get mentor input).

Culture



Taipei 101 – went up to 89th floor!



Din Tai Fung – famous for their xiaolongbao.



Acknowledgments

- National Center for High-Performance Computing
 - ◆ Dr. Fang-Pang Lin
 - ◆ Karen Chang
- University of California, San Diego
 - ◆ Dr. Philip Papadopoulos
 - ◆ Dr. Gabriele Wienhausen
 - ◆ Teri Simas
- PRIME alumna Haley-Hunter Zinck
- National Science Foundation