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

National Center for High-performance Computing, Taiwan
Ashley He
July 16, 2014
Progress

- Fixed code in PMVS2 that was incompatible with how I organized the Bundler-CMVS-PMVS2 code.

- After testing with various image sets, the system is now running and outputting the expected results.

- Identified bottlenecks in Bundler software:
  - Sift algorithm, which is used to find keypoints
  - KeyMatchFull, which is used to match keypoints

- Have begun swapping out Sift with SiftGPU, which uses GPU to accelerate the SIFT algorithm.

- Created repository to better manage the increasing size and complexity of the code.
Upcoming Goals

- Get SiftGPU functioning correctly in the code.
- Write or find and integrate code that will implement KeyMatchFull for GPU.
- Look into where and how to parallelize the code for further speed-up.
- Determine more specific bottlenecks in Bundler and PMVS2 and find solutions to address the issues.
Culture

Fengjia Night Market, Taichung

Downtown Hsinchu
Acknowledgments

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