



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

---

National Center for High-performance Computing, Taiwan

Ashley He

August 6, 2014

# Progress & Challenges

- Successfully got my code running on the NVIDIA graphics card (GeForce 9800 GX2).
  - ◆ Initially, I was only able to run my program using the OpenGL implementation.
  - ◆ Discovered issues with my CUDA library installation and linking. Fixing the issues allowed me to run my code using the CUDA libraries.
  - ◆ Significant improvements in execution time of SIFT on current computer set-up:

CPU: ~8.8s | OpenGL: ~5.4s | CUDA: ~3.5s

# Progress & Challenges

- Have been working on replacing ANN library with KNN CUDA library.
  - ◆ Challenge has been figuring out how to rewrite the code to utilize the same inputs as KeyMatchFull and ANN and produce the same outputs.

# Goals for the next three weeks

- Replace ANN/KeyMatchFull with KNN CUDA. This will take up a large chunk of time due to how the Bundler software is designed.
- Parallelize SiftGPU, KNN CUDA, and/or PMVS2, depending on amount of time I have.

# Culture

Tamsui Old Street



Bali Wharf/Old Street



A-Gei (front bowl), specialty dish originating from Tamsui



# 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