16-720B Project | **3D Reconstruction using Iterative Closest Point**

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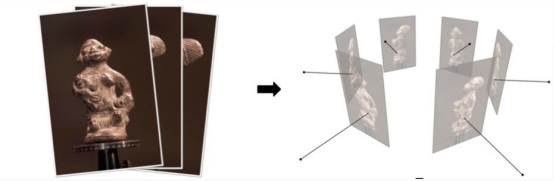
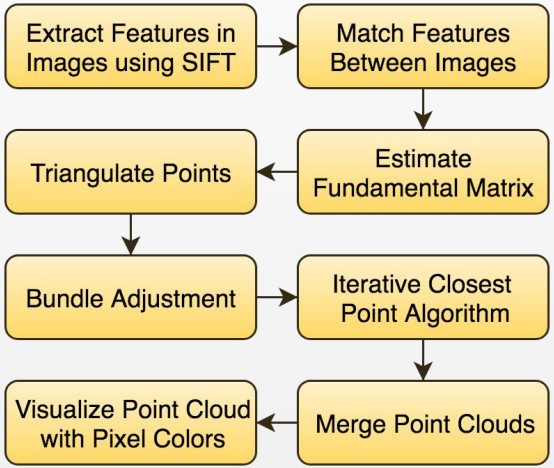
Multi-View 3D Reconstruction



Yasutaka Furukawa - Multi-View Stereo: A Tutorial



Shawn McCann - 3D Reconstruction from Multiple Images
David G. Lowe - Distinctive Image Features from Scale-Invariant Keypoints

Iterative Closest Point (ICP)

1. Iterate:
   a. Find the nearest neighbours between source and destination points
   b. Compute the transformation between source and destination (SVD!!)
   c. Update source
   d. Check error
2. Calculate final transformation

Dataset

http://vision.middlebury.edu/mview/data/

Project Outcomes

1. Used knowledge of generating feature descriptors (BRIEF, SIFT) from HW2
2. Used knowledge of 3D reconstruction and epipolar geometry from HW4
3. Extended HW4 to multi-view stereo reconstruction (using 6 images)
4. Implemented iterative point cloud