

Citations Needed

CS 378: 3D Reconstruction with Computer Vision

Guest Lecturer: Chris Slaughter & Nick Shelton

This list provides citations for some of the most modern approaches to architecting *live 3D reconstruction systems*. There is likely significant overlap with covered material in the course. Bolded entries correspond to advanced materials, usually theoretical frameworks overarcng specific systems implementations.

Live 3D Reconstruction Systems: Dense Volumetric

- Kinect Fusion: Real-time dense surface mapping and tracking - Newcombe et. al. (2012)
- DTAM: Dense tracking and mapping in real-time - Newcombe et. al. (2011)

Live 3D Reconstruction Systems: Dense 2.5D

- Live dense reconstruction with a single moving camera - Necombe et. al. (2011)
- Semi-Dense Visual Odometry for a Monocular Camera - Engel et. al. (2013)
- LSD-SLAM: Large Scale Direct Monocular SLAM - Engel et. al. (2014)

Live 3D Reconstruction Systems: Point Clouds

- RGB-D Mapping: Using depth cameras for dense 3D modeling of indoor environments - Henry et. al. (2010)
- Parallel Tracking and Mapping for Small AR Workspaces - Klein et. al. (2007)
- Parallel Tracking and Mapping on a Camera Phone - Klein et. al. (2009)

Tracking

- A generalized solution of the orthogonal Procrustes problem - Schonemann et. al. (1966)
- A Method of Registration of 3D Shapes - Besl et. al. (1992)
- Lucas-Kanade: 20 Years On: A Unifying Framework: Part 1 - Baker et. al. (2002)
- Lucas-Kanade: 20 Years On: A Unifying Framework: Part 2 - Baker et. al. (2002)
- Lucas-Kanade: 20 Years On: A Unifying Framework: Part 5 - Baker et. al. (2002)
- **A tutorial on $SE(3)$ parametrizations and on-manifold optimization - Blanco et. al. (2010)**

Integration

- A volumetric method for building complex models from range images - Curless et. al. (1996)
- A new approach to linear filtering and prediction problems - Kalman et. al. (1960)
- **An introduction to the Kalman filter - Welch et. al. (1995)**
- **Beyond the Kalman filter: Particle filters for tracking applications - Ristic et. al. (2004)**