iSAM: Incremental Smoothing and Mapping M. Kaess, A. Ranganathan, and F. Dellaert (TR 2008)



- Simultaneous localization and mapping
- Requirements for SLAM: incremental, real-time, applicable to large-scale environments, and online data association
- An incremental smoothing and mapping approach based on fast incremental matrix factorization
- Efficient and exact solution by updating a QR factorization of the naturally sparse smoothing information matrix
- Recalculating only the matrix entries that actually change
- Periodic variable reordering to avoid unnecessary fill-in (trajectories with many loops)
- Estimation of relevant uncertainties for online data association
- Evaluation on various simulated and real-world datasets for both landmark and pose-only settings