Efficient Optimization for Robust Bundle Adjustment

Problem description:
Bundle adjustment [3] is a fundamental building block for visual odometry and SLAM, which typically leads to large-scale non-linear least-squares problems. The state-of-the-art solver for such problem class is the Gauss-Newton algorithm coupled with Schur complement [1]. We shall investigate various modifications for this algorithm, and extend it to robust estimators for the sake of pruning outliers from feature-matching stage. We shall validate our development through experiments on synthetic and real datasets.

Tasks:
- Literature research on bundle adjustment [3] and nonlinear optimization [2].
- Implementation of the Gauss-Newton algorithm [1].
- Algorithmic improvement and extension to robust BA.
- Experimental comparisons on synthetic and real datasets.

Bibliography:

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