g2o: A General Framework for Graph Optimization

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2 Basic Information

2.1 Authors

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2.2 Conference

2011 IEEE International Conference on Robotics and Automation (ICRA 2011, Shanghai)

2.3   Abstract

- Simultaneous Localization And Mapping (SLAM) or Bundle Adjustment (BA) can be phrased as **least squares optimization** of an error function that can be represented by a **graph**.

- g^2o[1] is an open-source C++ framework for optimization graph-based nonlinear error functions.

2.4   Keywords

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3   Introduction

3.1   Problem & Solution

Awide range of problems in robotics as well as in computer-vision involve the minimization of a non-linear error function that can be represented as a graph. The overall goal is to find the configuration of parameters or state variables that maximally explain a set of measurements affected by Gaussian noise.

A naive implementation using standard methods like Gauss-Newton, Levenberg-Marquardt (LM), Gauss-Seidel relaxation, or variants of gradient descent typically provides acceptable results for most applications. However, to achieve the maximum performance substantial efforts and domain knowledge are required.

3.2   Objective

A general

3.3   Formulation

3.4   Contributions

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4   Related Work

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5   Method Description

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6   Experiment Evaluation

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7   Conclusion

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8   Note

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[1]https://github.com/MengwenHe-CMU/g2o