Initialization

Update Pose Graph Links

Map Maintenance

Does Map Have a Pose Graph?

Triangulate New Landmarks/Update Depth Filters

Data Association Between New KF and Neighboring KFs from the Map

New KF to be added to the Map

Is Keyframe?

Map

Camera pose recovery

Homography / Fundamental Estimation and Decomposition

1st Keyframe

Process Keyframe: Extract Features

For Every New Frame:

Triangulation of Initial 3D Landmarks

Is 2nd Keyframe?

Extract and Match Features

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Failure Recovery

Sample Landmarks from Map

Motion Model

Map

Previous Frame’s Pose Estimate

Update Map Maintenance Data

Pyramid Levels/Features/Regions of Interest

Process New Frame

Iterative Pose Estimation

Is Data Association Quality Good?

Monitor Data Association Quality

Data Association between Frame and Map/ Previous Frame

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Pose Estimation

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SLAM

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Mapping Thread

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