



Closed-Loop Multi-Sensor SLAM for Fixed-Wing UAVs.

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Master Thesis

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Motivation

Develop localization framework which can simultaneously:

- Estimate local navigation solution with minimal latency
- Find optimal solution given all the measurements

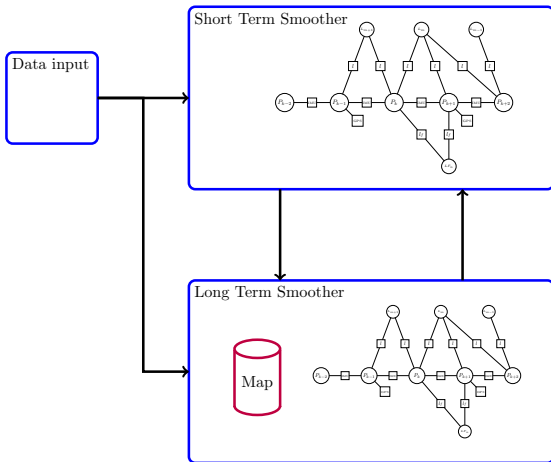


Trajectory estimated on a replayed test data.

Approach

Splitting the problem into short and long term problems

- Short
local navigation solution
- Long
solution given all data,
loop closure



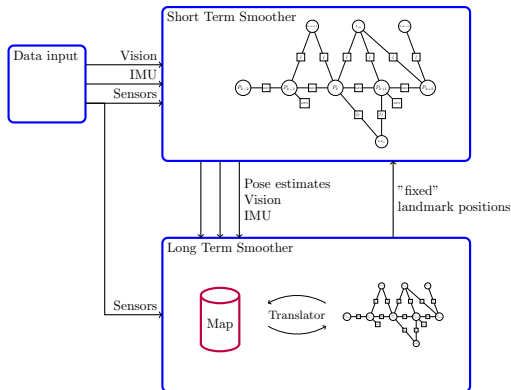
Work done so far

Short Term Smoother

- building a full factor graph given sensor data
- localization
- passing data to LTS

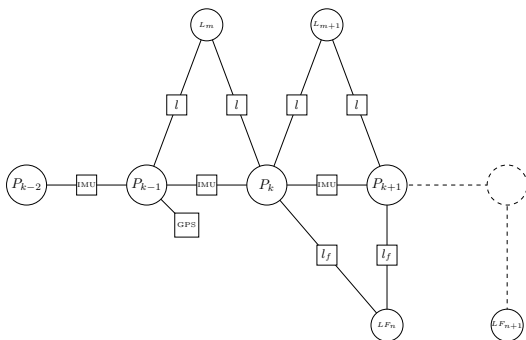
Long Term Smoother

- building a map
- building a full factor graph based on the map
- localization



Current status

- Optimization of the factor graph
- Keeping map and factor graph updated
- Inserting fixed landmark positions to STS



Next steps

- 3-stage landmark initialization

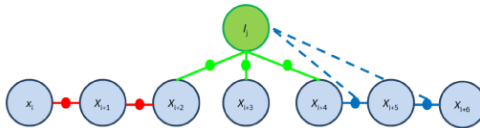


Image from [1].

- Sliding-Window STS
 - Marginalize old factors
- Loop closure
- Tests on UAV

[1] H.-P. Chiu, S. Williams, F. Dellaert, S. Samarasekera, R. Kumar (2013). Robust vision-aided navigation using sliding-window factor graphs. In IEEE International Conference on Robotics and Automation (pp. 46-53)