Learning predictive error models for monocular graph SLAM
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Mission goal: produce accurate map

Online replanning
- Online map building (SLAM)
- Assess map quality = error model
- Predictive model

Monocular Graph SLAM

Estimating Map Error

Features $\rightarrow$ NN $\rightarrow$ Weighted Graph $\rightarrow$ NN $\rightarrow$ Relative Error Estimate

- $\forall$ edges = overlapping image pairs
- $\forall$ pair of nodes = poses

Good keyframe position precision
Worse map quality

- Keypoint matching errors
- SLAM marginalizes map points
- Covariances = too optimistic
Wrong error estimate

- Learn errors from ground truth
- Take into account graph structure
- Need data for ground truth (either from simulation or offline opt.)

Simulation Framework architecture

SAPLING
SLAM+error model + CPP
IGN ORTHO-HR database
ROS
DASAAM
Wind + Turbulences

Future works
- Implementation still ongoing
- How to predict features, given a pair of poses?
- Can features be learned directly from the images and positions?

Wind and turbulences = holes
Texture changes = map less precise