

Team13 Exercise05

Q1:

Check if the current frame is the last one, if not, begin and continue the processing.
project the known 3d-landmarks to 2nd camera frame.
detector feature and computer descriptors from current cameras' frames.
traverse all descriptors from a image to another one. and match them
based on the essential constraint to filter inliers out
find the matching relationship among known 3d-landmarks and 2d-feature in left
camera of current frame
localize camera using PnP (corresponding 3d-2d points) and combine it with
Ransac algorithm here.

From stereo_matching feature filter the used landmarks out and add the FeatureId
in specific FrameId in the container for observed landmarks.

remove old keyframes to keep the number of frames, do optimization and project
new landmarks in GUI.

Next Loop and checking if matching pairs between Landmarks and 2d-feature is
enough.

And then running regular tracking under no taking keyframes. System only do
matching 3d-2d and based on these to localize camera. System doesn't expand
and refine its internal map when it should simply track localize cameras based on
the existing map.

Q2: `opt_running` and `opt_finished`. These two variables are used
to indicate whether optimization process is running or has been
finished. If they are removed, the correct timestep for adding
optimized data and thread management (like landmarks, cameras
and Transformation Matrix) would be affected.

Optimization() function in Odometry:

Initiates an optimization process using a separate thread.

Uses `opt_running` and `opt_finished` variables to manage the state of the
optimization process.

The optimization is performed asynchronously.

Optimization() function in Sfm:

Performs the optimization directly within the function without creating a separate thread.