CVLab Walkthrough 2 – Feature Matching

This guide walks through the steps of demonstrating feature matching, which is invariant to scale and rotation (mostly). See <https://garretmoore.wordpress.com/> for more information.

Requirements:

Connected and functioning web cam

CVLab executable for Windows (or the project built from github)

An object with dense corners or large text

1. Start CVLab.
2. In the Algorithm column, toggle “ORB with BF matching”, then toggle “Display Video”. This overrides all settings in Linear Spatial Filtering and Estimation.
3. The webcam input (default) should be on the screen. Make sure the object to track is clearly in view and press ‘t’ on the keyboard.
4. Click and drag a box around the object to track to set a query image.
5. Another smaller image should appear with green circles indicating the features (corners) that were found in the query image. At least 10 features are required in the query image for tracking to work properly.
6. Tracking should begin and a blue rectangle object should be attempting to track. If tracking is not occuring, press ‘t’ again and set a larger query image.
7. In the case where there are many features in the query image, it may be subject to incorrect matches. CVLab offers a way to filter out the bad matches through the match distance threshold value. The correct setting for this value differs for every video and query image. The lower the value, more matches will be filtered out of the algorithm based on the distance value calculated between the matches.
8. If everything is working, the blue box should be able to track an object as it changes in rotation and scale. Note, because we are working with video, feature matching is sensitve to noise.