Lab 4: Image Matching Using SIFT

Due date: March 28, 2021

Prelab work:

- Read Lecture 4.
- Download and install vl_feat library for MATLAB

Procedure:

1. Extract SIFT features for all twelve test images as well as the reference image (ref.jpg). Match the reference image to each test image and keep all matches. Visualize top 10 matches for each test image (your solution document should have 12 pictures).

2. For each test image use the top 3 matches from the previous step to solve the transformation between the features in the two images. Which transformation did you use?

3. For each test image count the number of inliers for the transformation you computed in the previous step. Explain how you found the inliers. In your solution document, please rank all the images according to the number of inliers. That is, first show the image which has the most inliers, then the image with second highest number of inliers, etc.

4. Take the test image that had the most inliers. Re-compute the transformation using all the inlier matches. Visualize the transformation by plotting the rectangle from the reference image transformed to the second image with the computed transformation.

Submission: You need to submit:

1. A report including results (pdf or word),
2. The MATLAB code,

to the D2L DropBox folder by the deadline of this assignment.