Assignment02 Image Stitching

You need to develop a program for image stitching using homography. Several image pairs are provided and you need to evaluate your developed program over them. The program development will involve several typical steps (for reference only):

Detect and Match Features: You can adopt either Harris corner detector or difference of Gaussian or other detectors for feature point detection. You may implement adaptive non-maximal suppression to improve the feature detection. You need to describe the detected features by using SIFT or other descriptors. Remember to standardize each of your feature vectors: subtract the mean and divide by the standard deviation. You can implement feature matching to compute the distance between pairs of features. You may implement thresholding as well as distance ratio to identify good pairs.

Robust Recovery of Homography: With automatic feature extraction, you may have an overdetermined system of equations for estimating the homography. Some point pairs may be false positives. You may need to identify and remove these outliers with algorithms like RANSAC.

Image Stitching: You will need to composite two images to make a panorama.

More project related information is provided as follows.

Write-up

You need to produce a project report that describes your algorithms, your design choices, etc. You will show and discuss the stitching results of your algorithm. Also discuss any extra designs if available. Feel free to include any other information you feel is relevant.

Submission

You need to submit your solution report in PDF format, and there are no standard templates for your report. Ensure you include your name and matriculation number clearly in the cover page of your report. If completed by a group (max with 3 group members), only one ground member needs to submit but ensure to include the names and matriculation numbers of all group members on the cover page of the assignment report.

Similar to the literature review, your report will be evaluated according to both contents and report presentation.

Please submit your solution through NTULearn before the deadline on Nov 1st 2023. There will be penalty for late submissions.