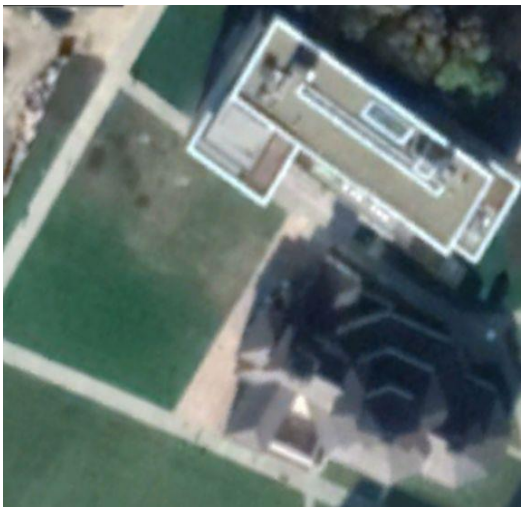
Problemset guidelines

1. Should you have any questions regarding this homework, please post them on Piazza. Chances are your classmates have them too. By posting and answering questions on Piazza, you help your peers to get better understanding of the class materials.
2. You can discuss the problems with your classmates but do not share your code or the answers and do not use someone else's solutions.
3. You can submit writing assignments in any form convenient for you. It could be LaTeX, MS Word, PDF or image. Please make sure it is of good enough quality.
4. For the coding assignment, please submit a Jupyter notebook with your solution. Make sure it can be reproduced without errors and with the same results when running it from scratch.
5. Python 3.6 is recommended for the coding assignment. You can use either the official distribution or Anaconda, which contains many of the required packages pre-installed for you.

Image stitching

[40 points]

In this problem, you are going to use descriptors in order to match objects on two images and stich them together.
You are provided with two satellite images.

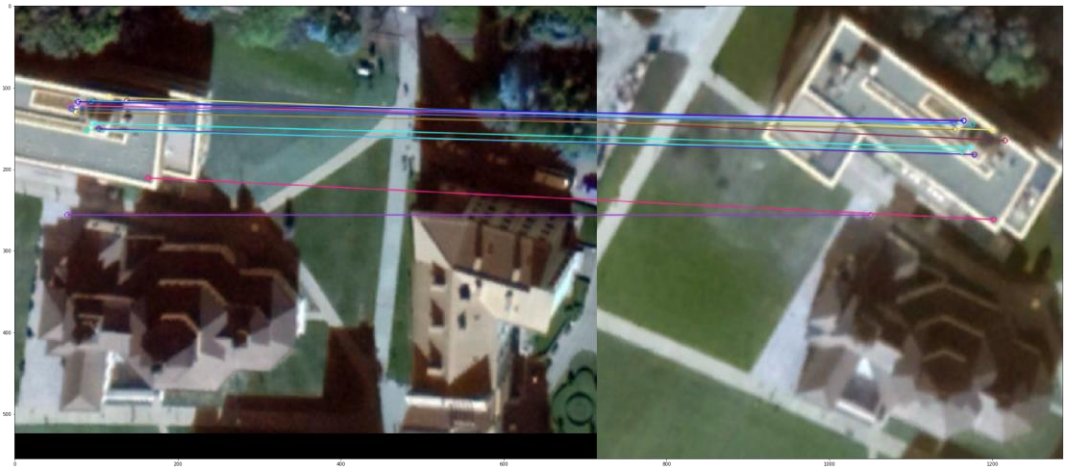



You are going to use OpenCV library for this problem.

1a Finding descriptors

[10 points]

Find ORB or BRISK descriptors on the both photos. Compute how similar they. Filter the most similar descriptors, choose optimal number of matches. Show both images side by side with the lines connecting these most similar keypoints on both images. You are expected to get something like this.



1b Finding homography matrix

[15 points]

Now, find a homography matrix transforming one photo to another. You can make the calculation yourself or use OpenCV findHomography method. Print the homography matrix you have found. Does it make sense to you?

1c Stitch the images

[15 points]

Having the homography matrix, you can stich both images. Show the resulting photo in your homework submission.