Assignment 1

Assignment 1-1 : Image Rectification

1. Goal : Generating metrically rectified images from projective distorted images.
2. Preliminary: study the lecture note about metric rectification in the lecture W2b
3. Detailed implementation
   a. Take two projective distorted images.
   b. You will also get credits for good preparation of test images.
   c. For the size of your input image, $480P(854 \times 480) \sim 720P(1280 \times 720)$ is recommended.
   d. Generate metrically rectified images with two-step method and one-step method respectively.
   e. The rectified image by one-step method may seem erroneous. In this case, you can adjust the scale factor s in $H = U diag(\sqrt{\lambda_1}, \sqrt{\lambda_2}, s)$. And discuss why the one-step method is unstable in your report.
   f. Programming language: Matlab or Python

Assignment 1-2: Automatic Homography using RANSAC

1. Goal : Stitching three images into one mosaic image using homography matrices H1 and H2, which are computed automatically.
2. Preliminary: study the lecture note of the lecture W3a
3. Detailed implementation
   a. Take three images for homography. (Please note that the provided images 'sample_1~3.jpg' are just examples.)
   b. For the size of your input image, $480P(854 \times 480) \sim 720P(1280 \times 720)$ is recommended..
   c. Use forward or backward warping methods for stitching three images.
   d. For feature extraction, you are recommended to use one of SIFT, SURF, FAST or ORB.
   e. Programming language: Matlab or Python

Submission guidelines
- **Due : Oct. 8, 1:00PM**
- In your report, answer the following questions.
  - Describe how and what you implemented.
  - Visualize your results.
  - Focus on analysis and discussion rather than method descriptions or code explanations
- On the top of your report, clarify your name, ID number, and the assignment title.
- Make your report as a single PDF file with title "A1_firstname_lastname.pdf" (e.g., A1_Gildong_Hong.pdf).
- Write your report in either Korean or English.

- If there are additional files for assignments, put them into a folder along with your report, and then compress into a zip file (e.g., A1_Gildong_Hong.zip).
- Upload your report (or zip file) to the submission page of the KLMS.

What to submit for assignment 1
- A report.
- Code files (Detailed annotations are required)