CPSC 643 Introduction to Robot and Computer Vision on Multiple View Geometry
Project #1

We have learned how to remove the projective distortion from a perspective image of a plane in the class. This purpose of this project is to test your knowledge of rectification in real problems.

(a)

(b)

Using the two images (a) and (b) here to do the assignment. For software package, you can use Matlab, Gnu Octave, or OpenCV.

Question 1 (30%): Use the four point rectification method to rectify the image (a). (Page. 35 of the textbook).

Question 2 (30%): Using the line at infinity to rectify the image (a) to affinity

Question 3 (40%): Built on 2, using two step rectification using C_∞^*

Challenge 1: Using one step rectification using using C_∞^*.

For all questions, please follow the requirement below:

- Using google doc to write your report and submit it via google classroom
- The original images and the rectified images (I do not care the whether images are colored or not.)
- The data point you extracted from the original image. Please superimpose them on both original images and the rectified images. For example, the values of lines and points in vector format.

- The important results such as the H matrix, C_∞^*, and line at infinity on the original image.
- Detailed description about how you do it in mathematics. The textbook only give you a sketchy description but you need to fill in all the details regarding how you compute it.
- Discussions about pros and cons of each approach.
- Link to your source code.