

**CMPS 260**  
Homography Computation  
Assignment 3  
Target Date: May 11, Thursday, 10:00am

Form groups of 1 or 2. You are encouraged to form a new group (different than one used in Assignment 2). If you need to identify corners or point correspondences in the images, you can do so by clicking at the image or hand computing them on a piece of paper. In other words, the accuracy or the quality is not important for this assignment. I am looking for the proof-of-concept. Create a brief (2-5page) report including the images, showing all intermediate steps, and all the computed numbers and images in the intermediate stage.

**Homography Computation using Point Correspondences:**

Pick an outdoor scene with plenty of geometric information so that you can identify corner points of interest. Take another picture of the scene by rotating the camera and having a significant overlap with the previous scene.

Identify feature points and corresponding putative feature points in the two images by clicking or hand selection.

Use RANSAC (as described in Algorithm 3.6) to compute the homography  $H$  with the largest number of inliers. Demonstrate each intermediate step showing all numbers, images, and visualization as demonstrated in Figure 3.9 (Page 111) of the old edition of the Book.

Extra Credit (Optional): Use optimal estimation of Algorithm 3.6 to improve the Homography  $H$ , that is, use the ML Cost function and Levenberg-Marquadt algorithm.