**CSE327 Fall 2023 Homework 9 (10pts)**

**Due Nov 29 2023, 11:59PM, submitted via Brightspace**

This project includes corner detection (homework 6), feature matching (4pts), homography matrix computation (homework7), RANSAC algorithm for inlier detection (6pts), image warping (homework 7), and image mosaic (2 bonus pts).

(0) You can use the images provided by the instructor, but you are strongly encouraged to use your camera to take a few images in the campus for this project. Keep in mind that a good image pair should contain a predominantly planar scene structure, or else be taken from a camera that is only rotating (e.g., panning, tilting), with very little translation.

(1) Read in the two images.

(2) Detect corners in source and destination images;

(3) Extract intensity patches around corners in source and destination images;

(4) Match the patches. NCC is used as the metric to compare patches. Two directional matching can be used to find good matches. Note, a gating region can be used to reduce the search range if the displacement between the two images is known to be within the gating region.

(5) Use RANSAC algorithm to find the inlier set of correspondence points by matching patches. Use the inlier set of correspondence points to compute the Homography matrix.

(6) Based on the homography matrix and your warping method, warp the source image to the coordinate of the destination image.

(7) Bonus: create a mosaic image to combine the source and target images, using the feathering technique for smooth blending.

Upload your running codes with comments and a brief written report showing the results of each step to Brightspace by the due date/time.