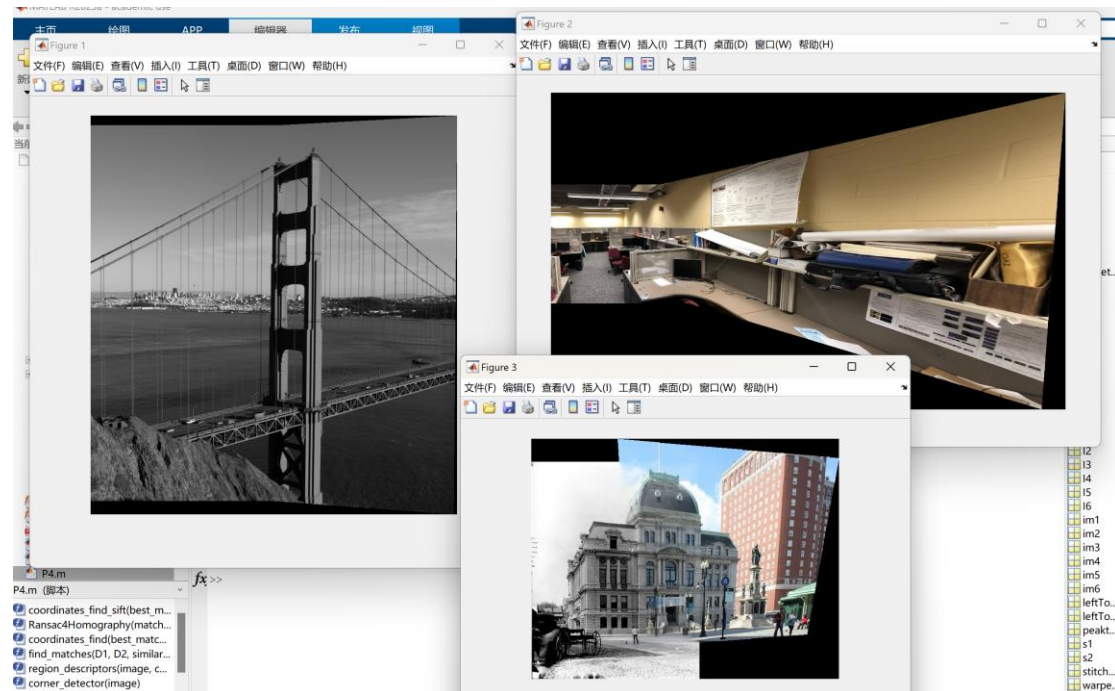# ENGN 1610/2605 Image Understanding

Lab #6 Panoroma / Image Stitching

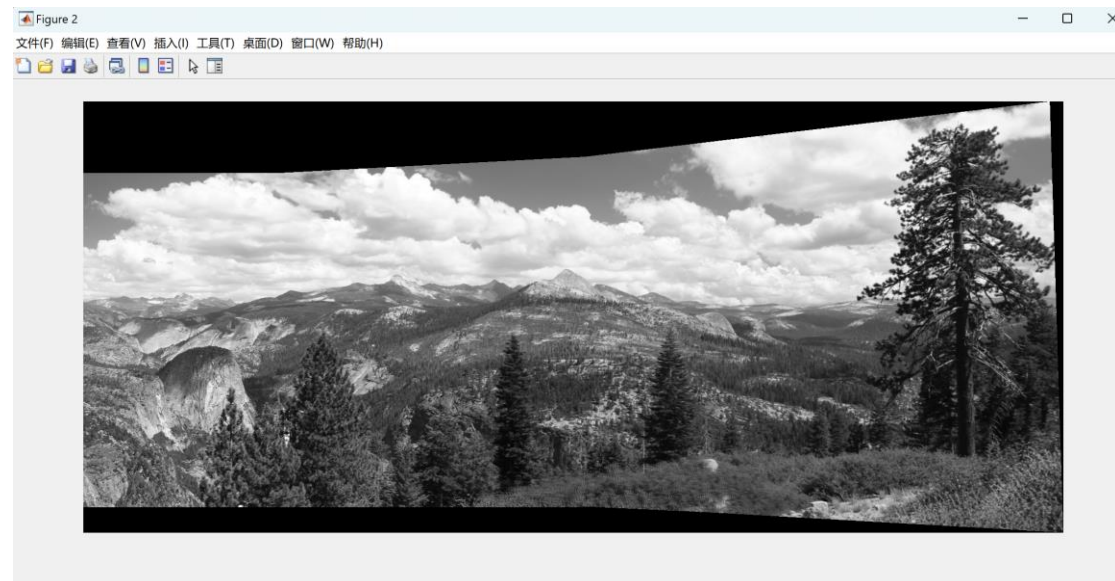### Zhuo Wang ScM BME Brown ID# 140641091

Problem 1. Image Stitching From Two Views

The code for this result is in "P1.m" file.

Problem 2. Image Stitching From Triplet Views

The code for this result is in "P2.m" file.

Problem 3. Answer the Following Questions

Q1

The RANSAC has the benefit of assuming both accurate and inaccurate feature correspondence during matching. But the least squares solution includes every point without distinction. As a result, the wrong conclusions will also have an impact on the ultimate answer.
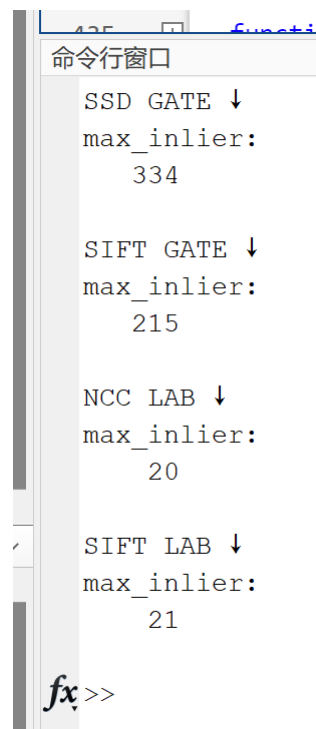
Q2

When four pairs of feature correspondences are on the same line, the rank of the homologous matrix will become a non-full rank matrix. In this case, the homography matrix will not be computed.

Problem 4. Try Other Features

The code for this result is in "P4.m" file.
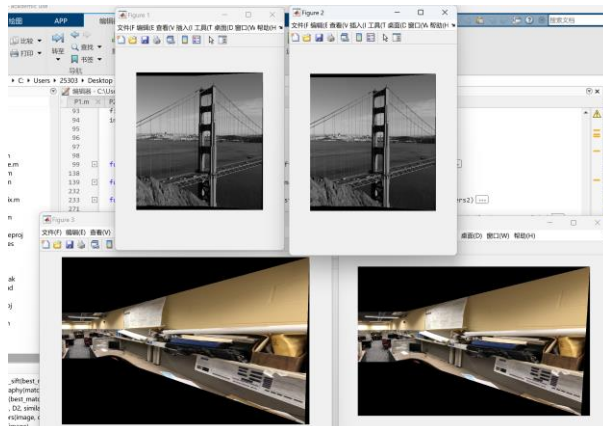
How well do they perform in terms of image stitching?

Both performed well, and in the gate scenario, SSD performed slightly better than SIFT. In the laboratory scenario, SIFT is slightly better than NCC.

Do they have any advantage over SIFT features in terms of homography matrix estimation?

In image stitching, corner points can be used to locate unique points in the image. One advantage of SSD/NCC methods over SIFT features is that they can find similarity correspondences faster, so SSD/NCC methods may be faster than SIFT in some cases.