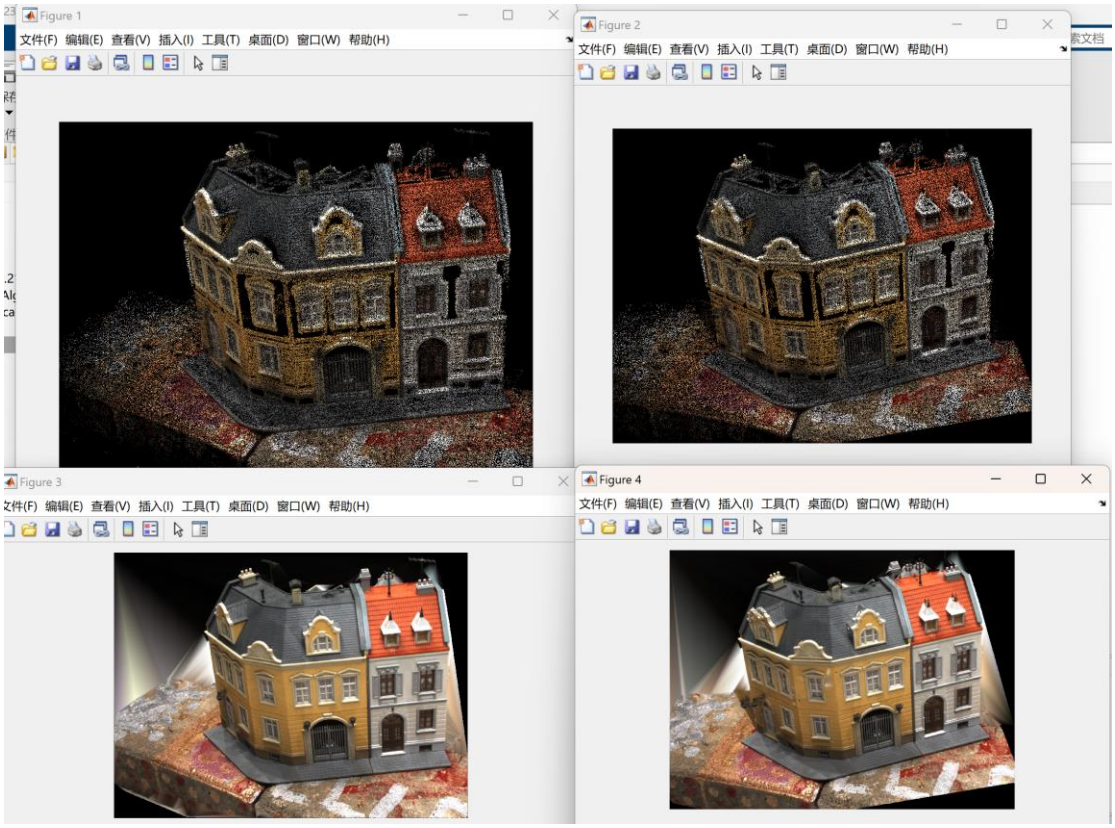
ENGN 1610/2605 Image Understanding

Lab #7 Image Formation and Essential Matrix

Zhuo Wang ScM BME Brown ID# 140641091

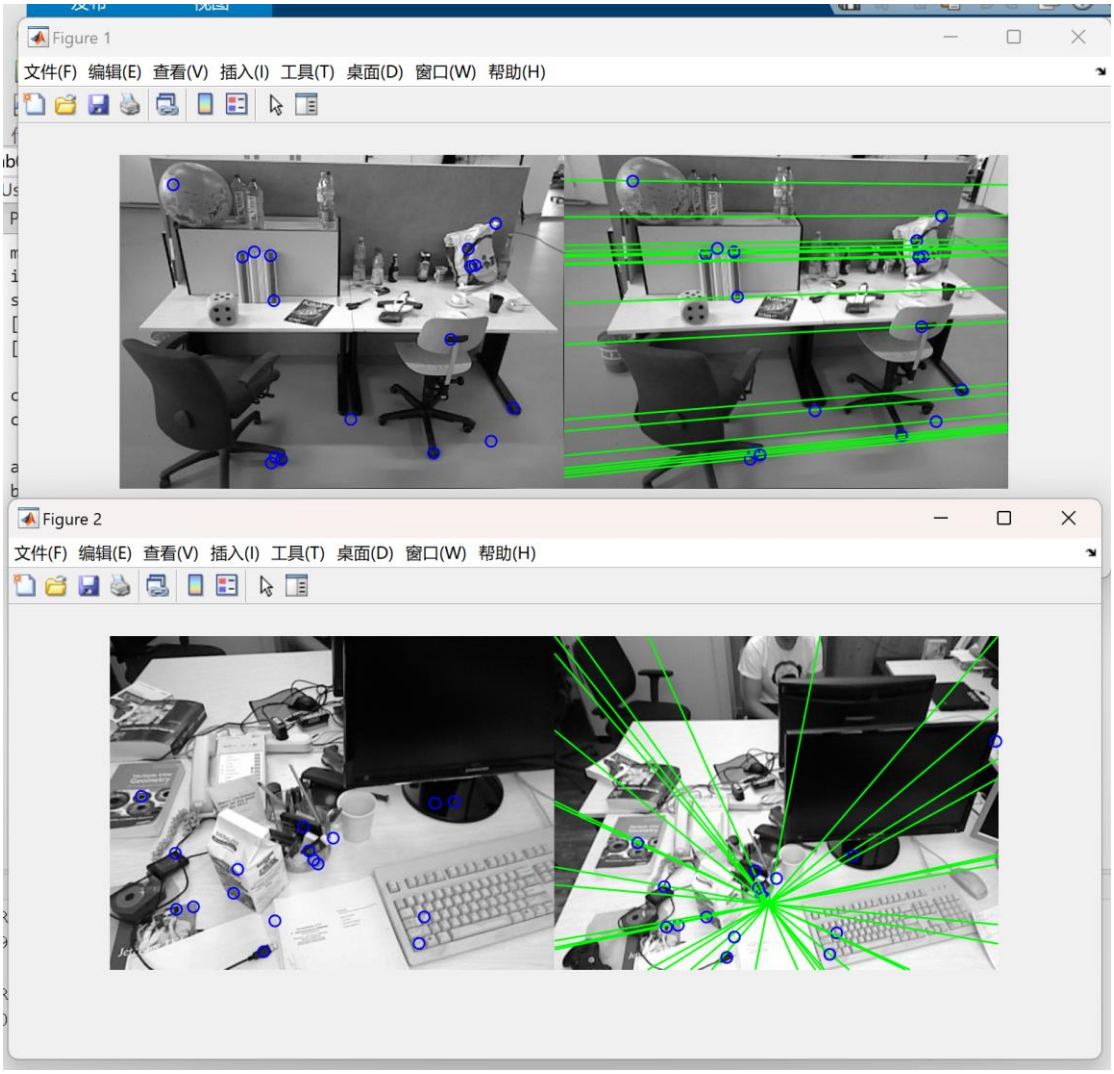
Problem 1. Image Formation

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



Problem 2. Essential Matrix Constraint

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



What is the outlier ratio in the image pair?

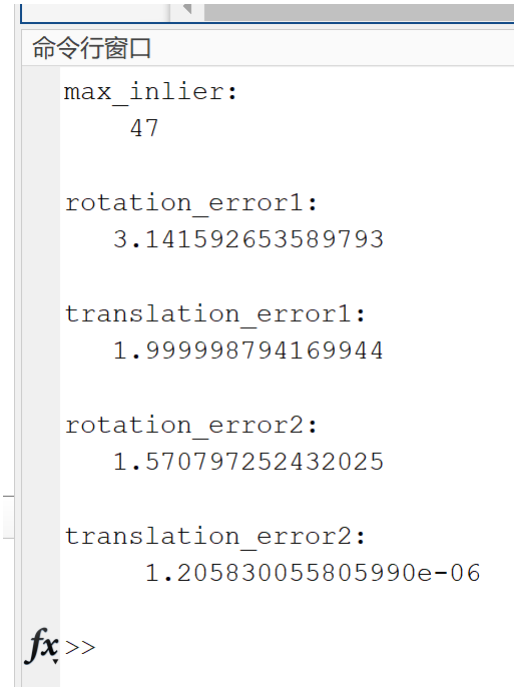
```
145        s = size(I34, 2) /
命令行窗口
  Outlier Ratio (Pair_1):
     0.086956521739130

  Outlier Ratio (Pair_2):
     0.560000000000000

fx >>
```

Problem 3. Compute Essential Matrices under a RANSAC

The code for this result is in "P3.m" file.

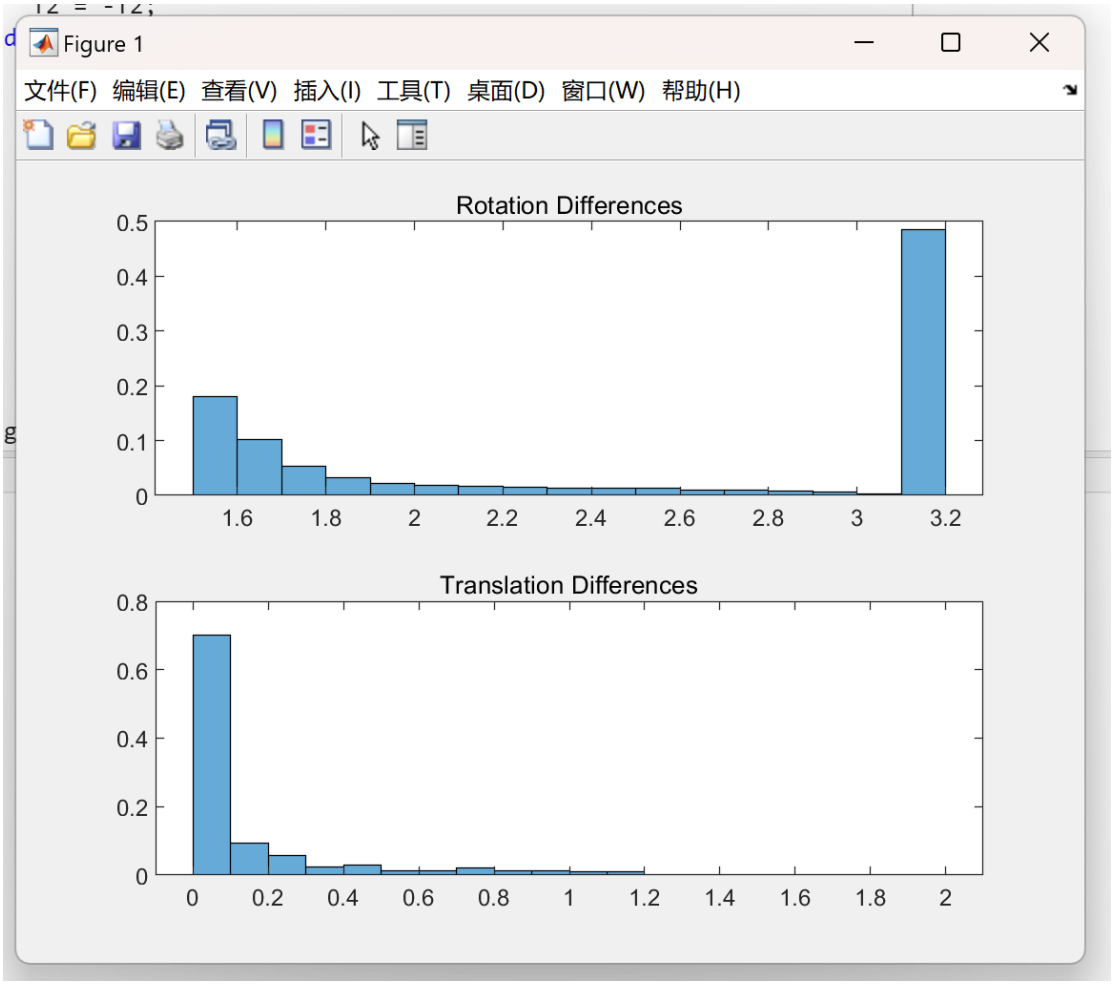


Find the valid relative pose. What are the errors of the rotation and the translation?

R2 and T2 are the valid relative poses, and their errors are shown in the figure above.

Problem 4. Understanding the Variability of Poses

The code for this result is in "P4.m" file.



How does the variability look like?

The rotation difference is more concentrated around 3.1 to 3.2, while the translation difference is more concentrated around 0 to 0.1.