ENGN 2560

Lab #04 Absolute Pose and Visual Odometry

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Problem 1. Absolute Pose Estimation

The code for this result is in “P1_main.m” file.

Evaluate the estimated absolute pose using the provided ground truth pose. What are the errors of your absolute rotation and translation?

```
命令行窗口
  Veridical R and T are R2 and T1
  rotation_error:
      0.0122

  translation_error:
     3.2895e-04

fx >>
```

Which method of estimating the camera pose of the third image is more accurate? Why and why not?

```
命令行窗口
  Veridical R and T are R2 and T1
  rotation_error:
      0.0018

  translation_error:
     8.3714e-05

  Veridical R and T are R2 and T1
  rotation_error (propogate):
      0.0120

  translation_error (propogate):
     2.6145e-04

fx >>
```

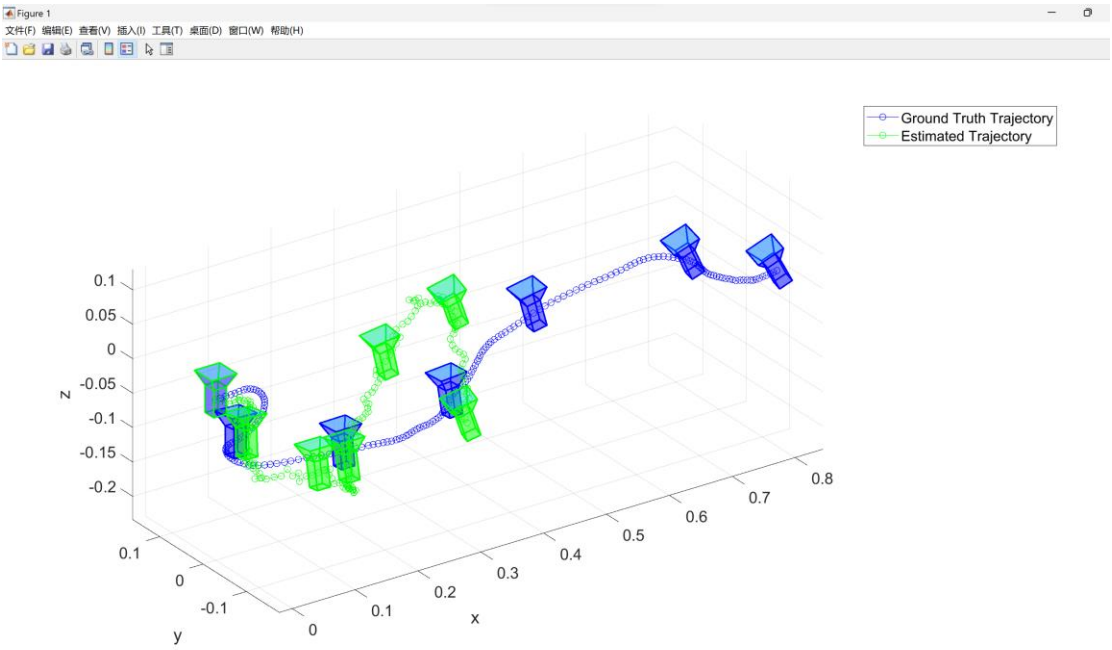
Absolute pose estimation is more accurate.

Propagating relative poses may introduce error accumulation, especially if there are errors in the relative pose estimation between image pairs. This can lead to less accurate results compared to absolute pose estimation.

Problem 2. Visual Odometry Part I

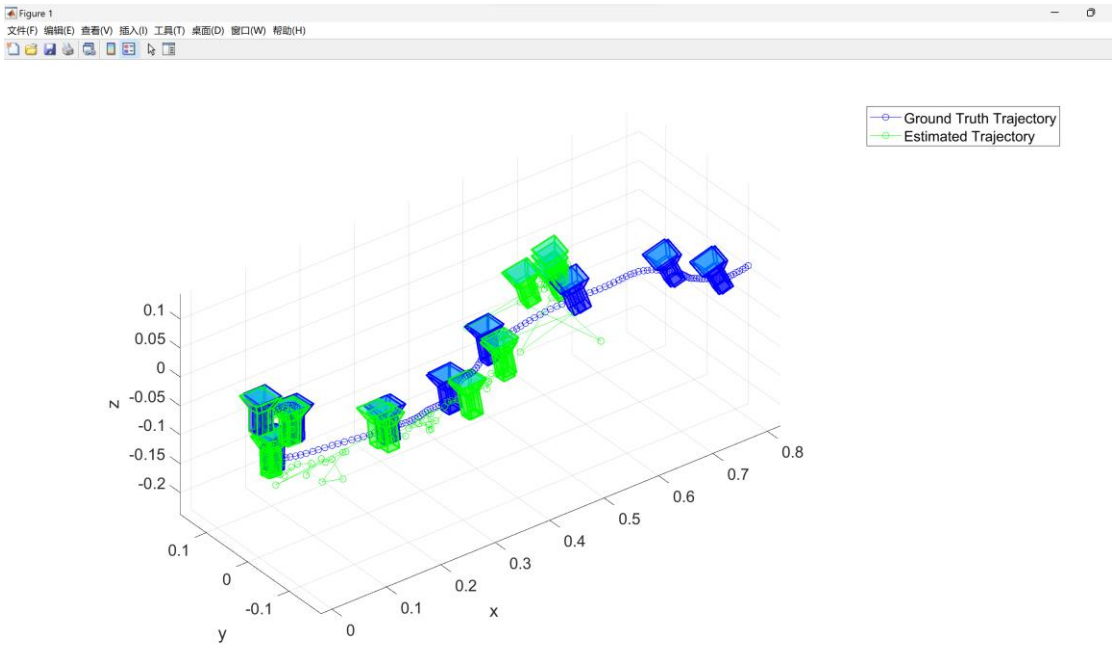
The code for this result is in “P2_main.m” file.

```
命令行窗口

RMSE for rotations
    0.0750

RMSE for translations
    0.1533

fx >>
```



Problem 3. Visual Odometry Part II

The code for this result is in “P3_main.m” file.



命令行窗口

```
RMSE for rotations
    0.0849

RMSE for translations
    0.0287

fx >>
```

How much improvement does the second visual odometry pipeline (Problem 3) provide over the first pipeline (Problem 2)?

RMSE for translations greatly improved.