Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Computer Vision
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3D-Image Reconstruction

Homework-6

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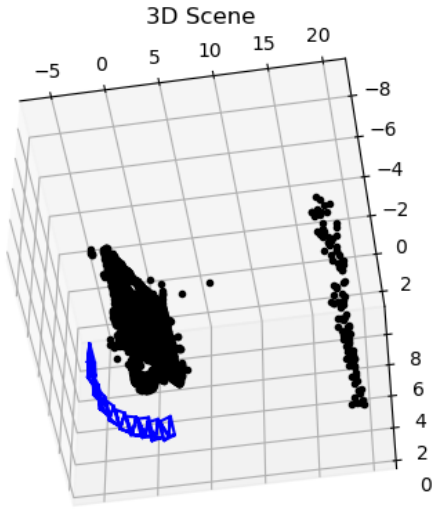
Alpay Ozkan

aoezkan@student.ethz.ch

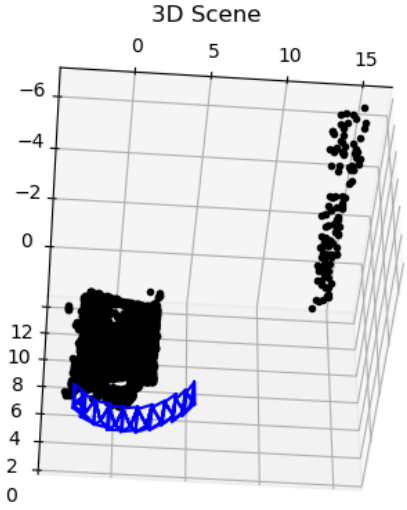
By submitting this work, I verify that it is my own. That is both implementation and report are my own work.

Contents

1 Structure From Motion (SFM)



((a)) Initial_Images: (1,2)

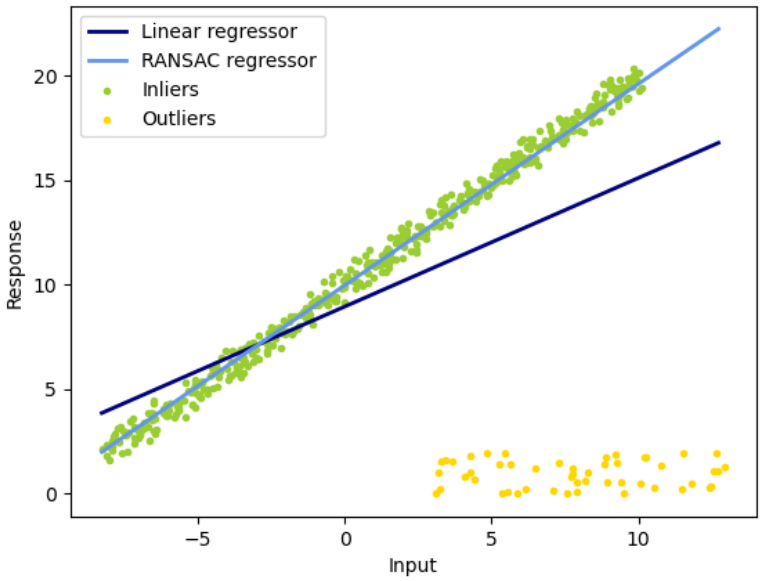


((b)) Initial_Images: (5,6)

Figure 1: SFM Results

The fountain pointcloud is roughly reconstructed as the dense set on the left in both Figure 1(a) and 1(b). However, the algorithm is sensitive to the initial images and it does not work for other initial images. These are the two cases that I found it working properly. I also some pictures result in some distortions. For example, the outlying vertical point cloud on the right. These could be removed by just ignoring these pictures.

2 Ransac



((a)) Ransac

Figure 2: Ransac Result

Estimated coefficients (true, linear regression, RANSAC):
1 10 0.6159656578755459 8.96172714144364 0.9643894946568986 9.98292129496683

The ransac result is illustrated in Figure 2.