ETH
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Structure from Motion

My implementation successfully reconstructs the original scene from the sequence of images. The following figures showcase visualizations of the reconstruction:

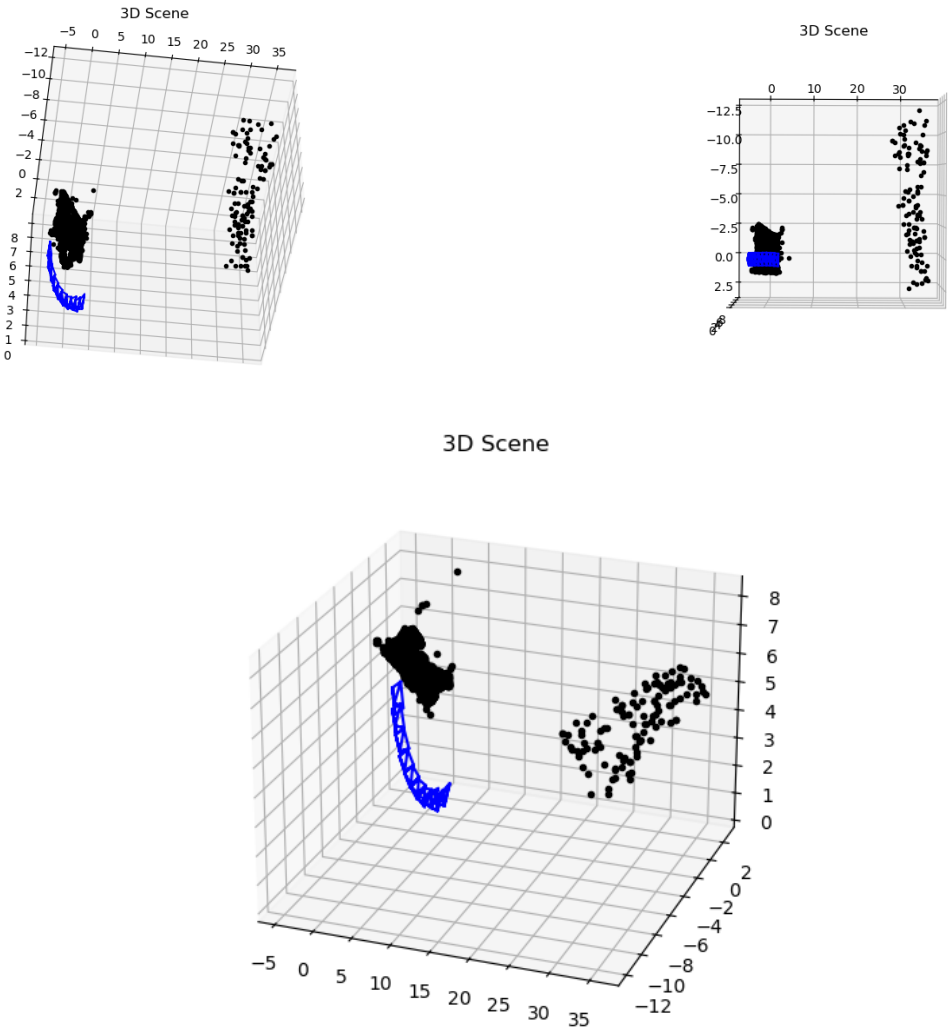

Figure 1: Visualization of the reconstructed scene using the default visualization method

However, as some key points are only present in image 0009.png, the entire visualization becomes very distorted. By simply skipping the image 0009.png in the reconstruction and reducing the size of the individual points in the visualization, the scene becomes easier to recognize. See the following figures:

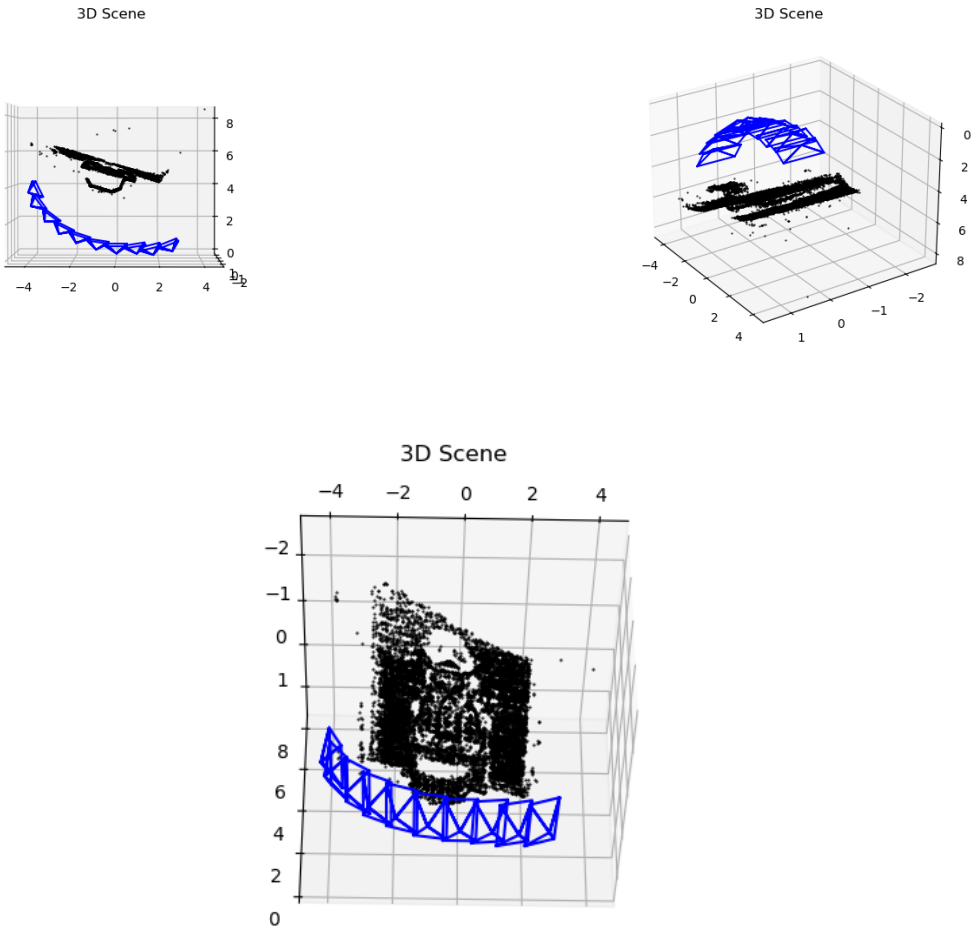

Figure 2: Visualization of the reconstructed scene with a slightly modified version of the visualization method and without using the image 0009.png

RANSAC

In this section of the assignment, we are provided with a set of data points x along with their corresponding labels y, and the objective is to determine the values of k and b that satisfy the linear relationship:

$$y = k \cdot x + b$$

My implementation of `ransac()` and `least_square()` yields the following outcomes:

	k	b
Ground Truth	1	10
Linear Regression	0.616	8.962
RANSAC	0.999	9.997

Note, that I rounded the number to their third digit. The visualization below provides a clear representation of these results. These outcomes showcase how the RANSAC algorithm, is still able to effectively model the ground truth while mitigating the influence of outliers. This is, however, only given, if RANSAC is properly initialized.

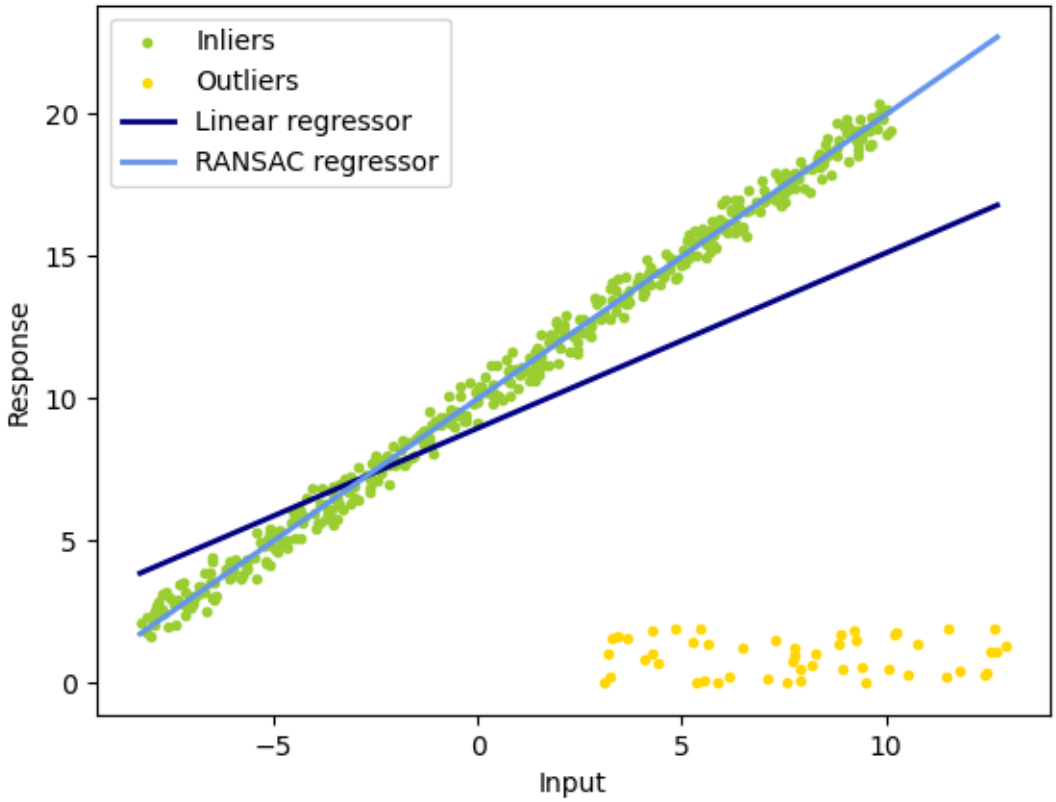

Figure 3: Result Visualization