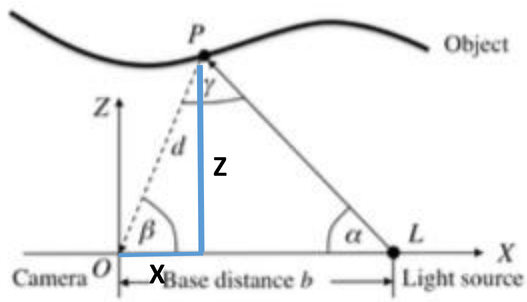
**T1**




The position of the point in the scene can be recovered using the law of sines.

$$\frac{d}{\sin\alpha} = \frac{b}{\sin\gamma}$$

$$d = \frac{b\sin\alpha}{\sin\gamma}$$

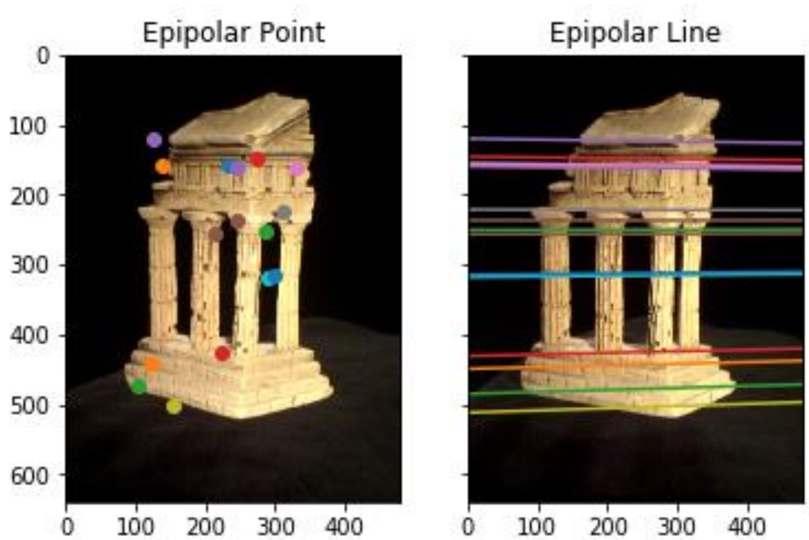
$$Z = d\sin\beta = \frac{b\sin\alpha\sin\beta}{\sin\gamma}$$

$$X = d\cos\beta = \frac{b\sin\alpha\cos\beta}{\sin\gamma}$$

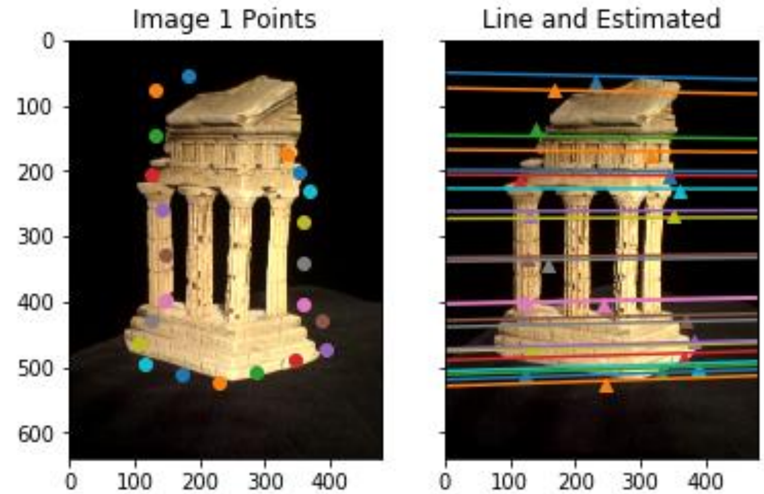
**T2 – Pure Rotation**

Since you are only rotating the camera view and not translating you will not be able to get a 3D reconstruction of the mountain. At the core of reconstruction, triangulation finds a 3D point where the lines from each image plane intersect. Since no translation is occurring, the baseline is zero and lines from the image planes to the point on the object will not intersect, and a 3D point will not result.

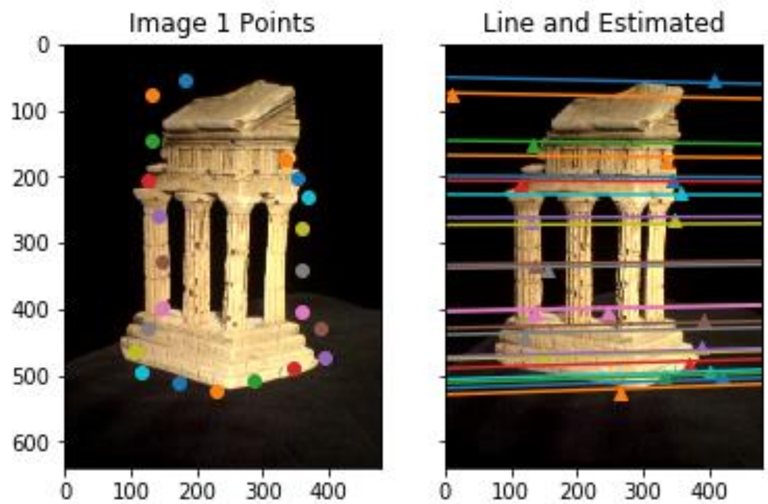
**Q1.1 – Fundamental Matrix**



**Q1.2**




Window: 21x21, Above/Below line: 9




Window: 11x11, Above/Below line: 7

The Euclidean distance metric was used to compare intensities of the grayscale images of the temple. I kept playing with window size until I thought I found the best option. I was also able to adjust the number of pixels below and above the respective epipolar line to compare intensity windows for point correspondence. The algorithm consistently fails around the outline edges of the temple and the points in black space. A lot of this may just be from using grayscale images instead of RGB or a different color space.

**Q1.3 – E Matrix**

| | 0 | 1 | 2 |
|---|---|---|---|
| 0 | -0.0180617 | -0.837143 | -9.70749 |
| 1 | -1.73129 | 0.0463598 | -0.073741 |
| 2 | 9.67963 | -0.295419 | -0.00746456 |

**Q1.5**