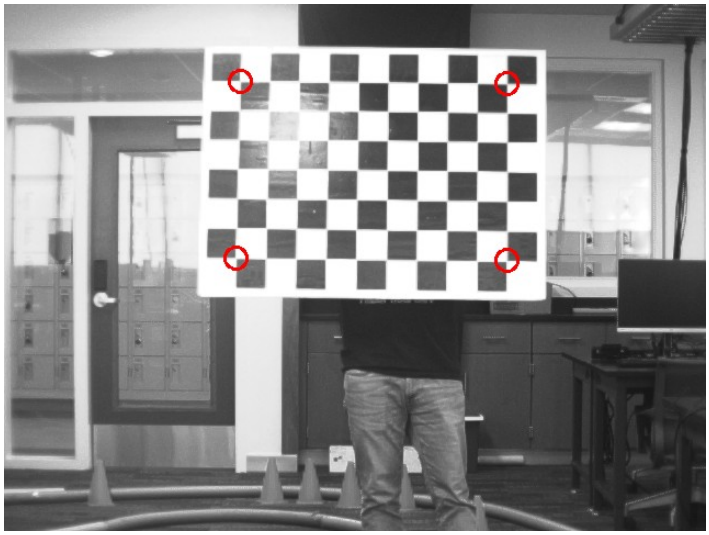
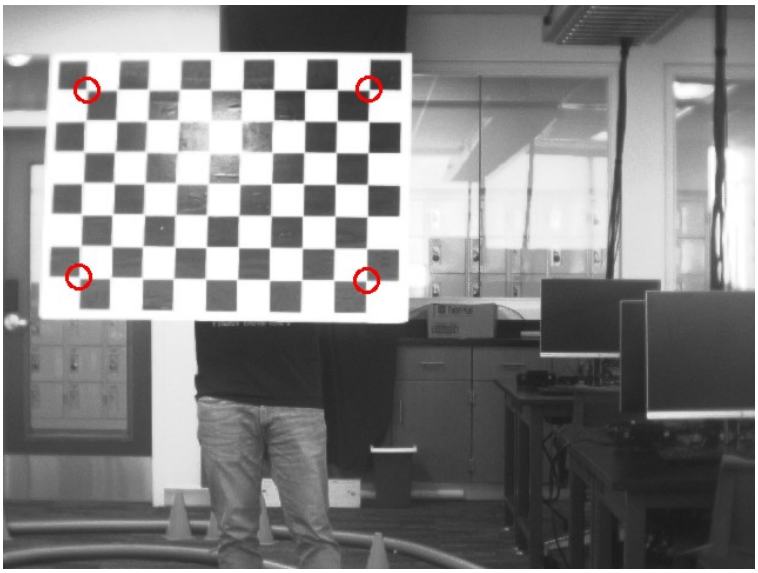
Tyler Quackenbush
3D Reconstruction

Task 1 – 3D Measurement





3D Points (Left):

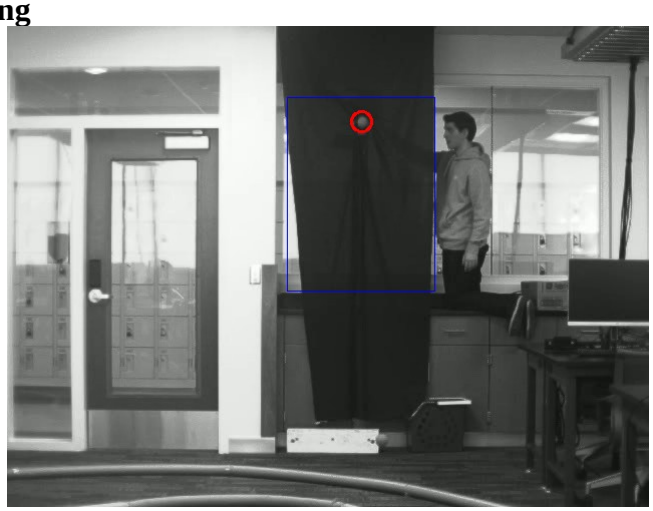
```
[[-39.33149551   -21.1752864   246.06981279]
[ -4.38294564   -20.9110623   248.59067383]
[-39.15833264    1.98685894  242.36382857]
[ -4.35128465    2.2281351   245.49180282]]
```

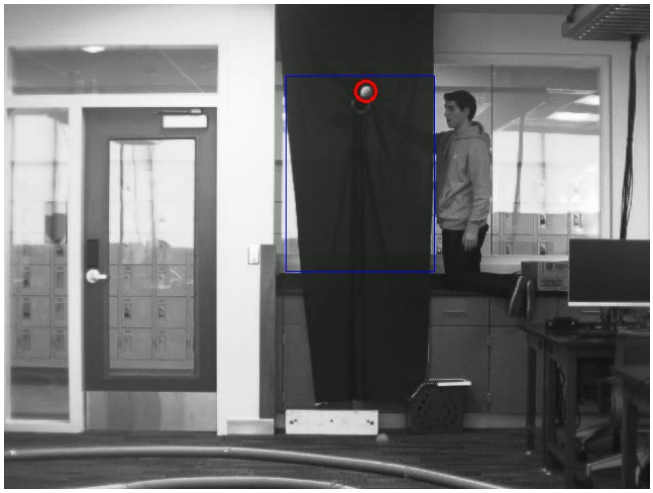
3D Points (Right):

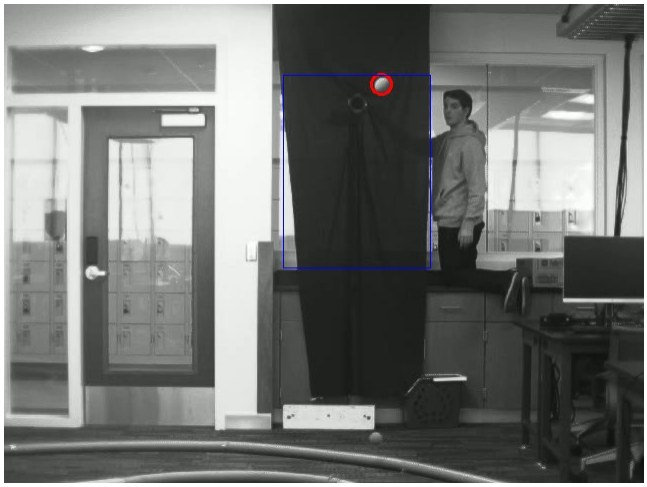
```
[[-59.78876289   -21.1759346   246.06981279]
[-24.84021195   -20.97424172  248.59067383]
[-59.61560001    1.99964883  242.36382857]
[-24.80855095    2.2308891   245.49180282]]
```

These points look mostly correct, since the difference in X between points 0 and 1 for each is about 35”, which is in the ballpark of the actual measurement between upper left and upper right points of the chessboard. The Z measurements look about right, reflecting the tilt of the board in the pictures. Y looks correct as well, since the optical center is slightly above the bottom two points. However, the X=0 datum seems to be too far to the right of the image, far away from the optical center of the image. I can’t figure out what went wrong, and have tried recalibrating the stereo setup with no luck.

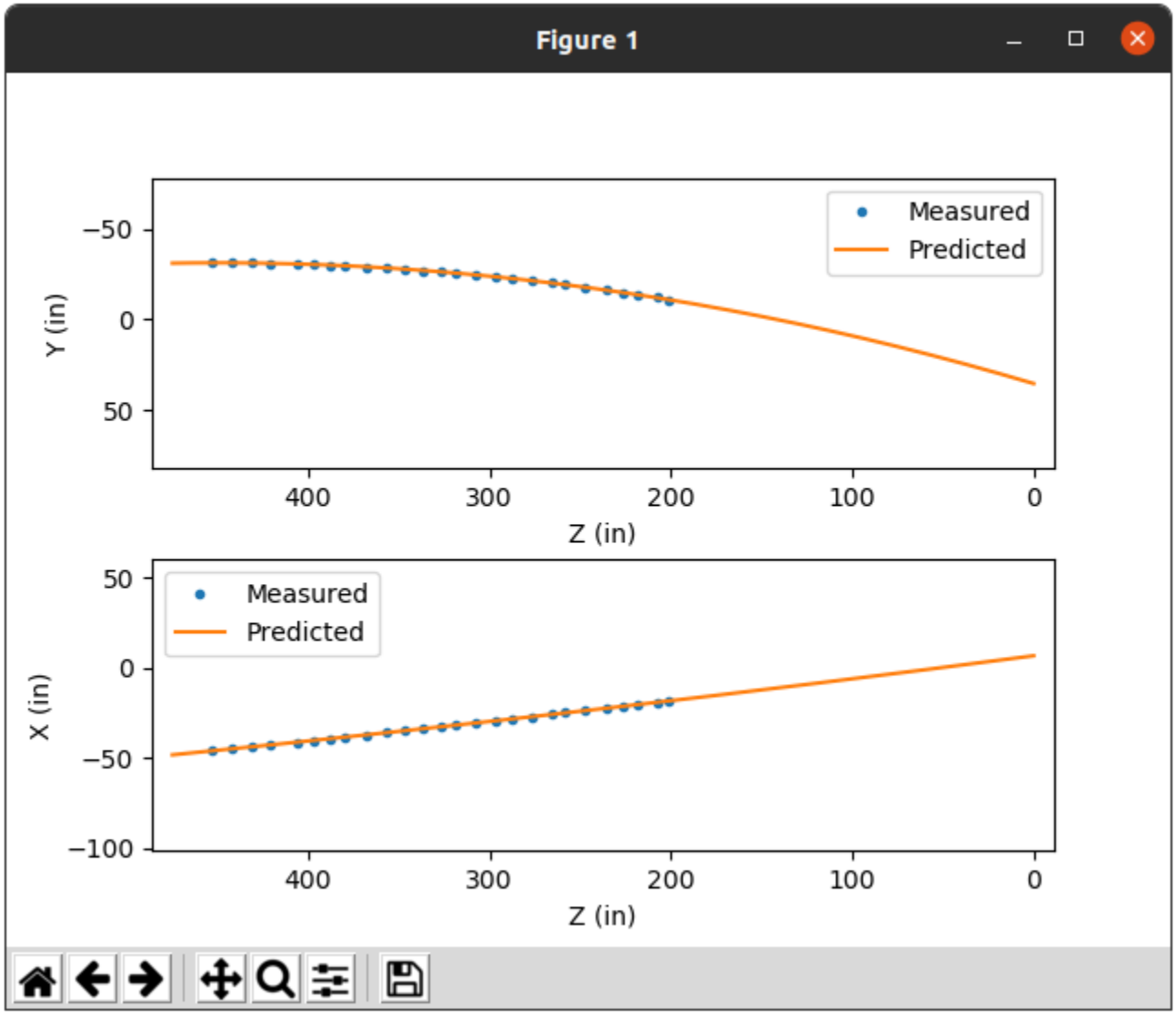
Task 2 – Baseball Tracking







Task 3 – Trajectory Estimation



It looks like the coordinate frame for my left camera is skewed off to the right, which explains all the weirdness I was seeing in task 1.