AER1516 Assignment 3
By: Kevin Hu
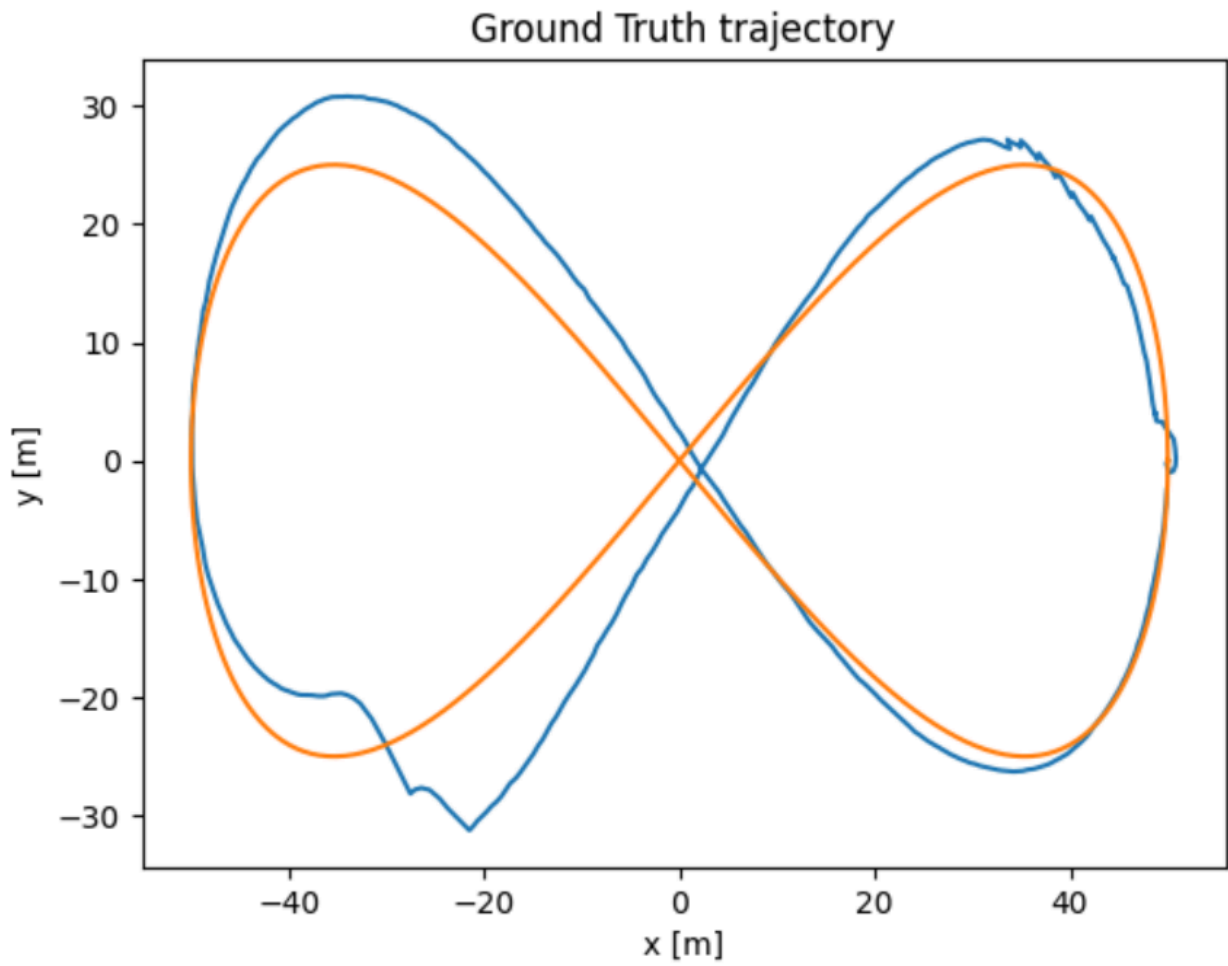
Ground Truth trajectory

Figure 1: Ground Truth Trajectory for State Estimation using Landmark 1 Measurement Only
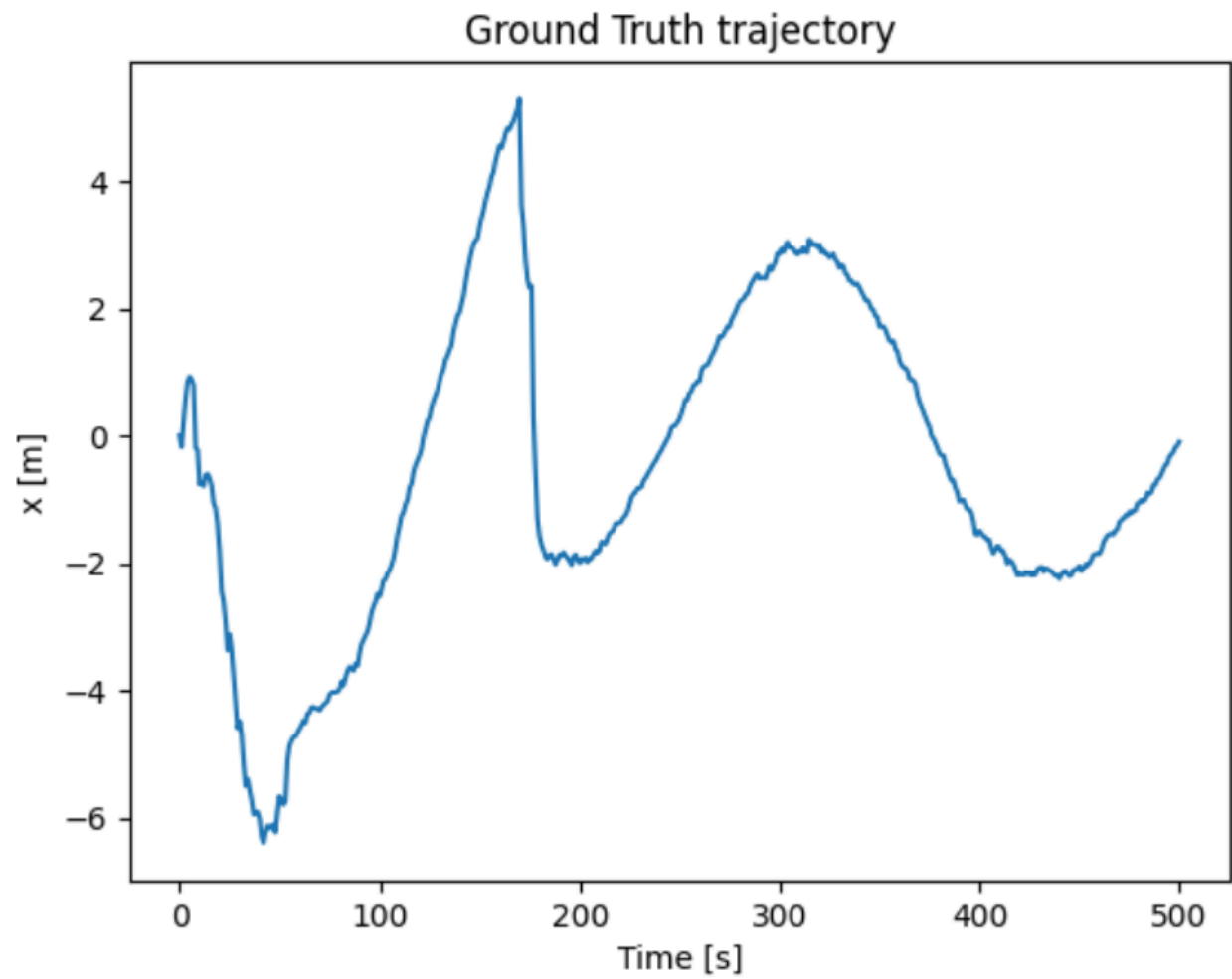
Figure 2: X Position Error for State Estimation using Landmark 1 Measurement Only
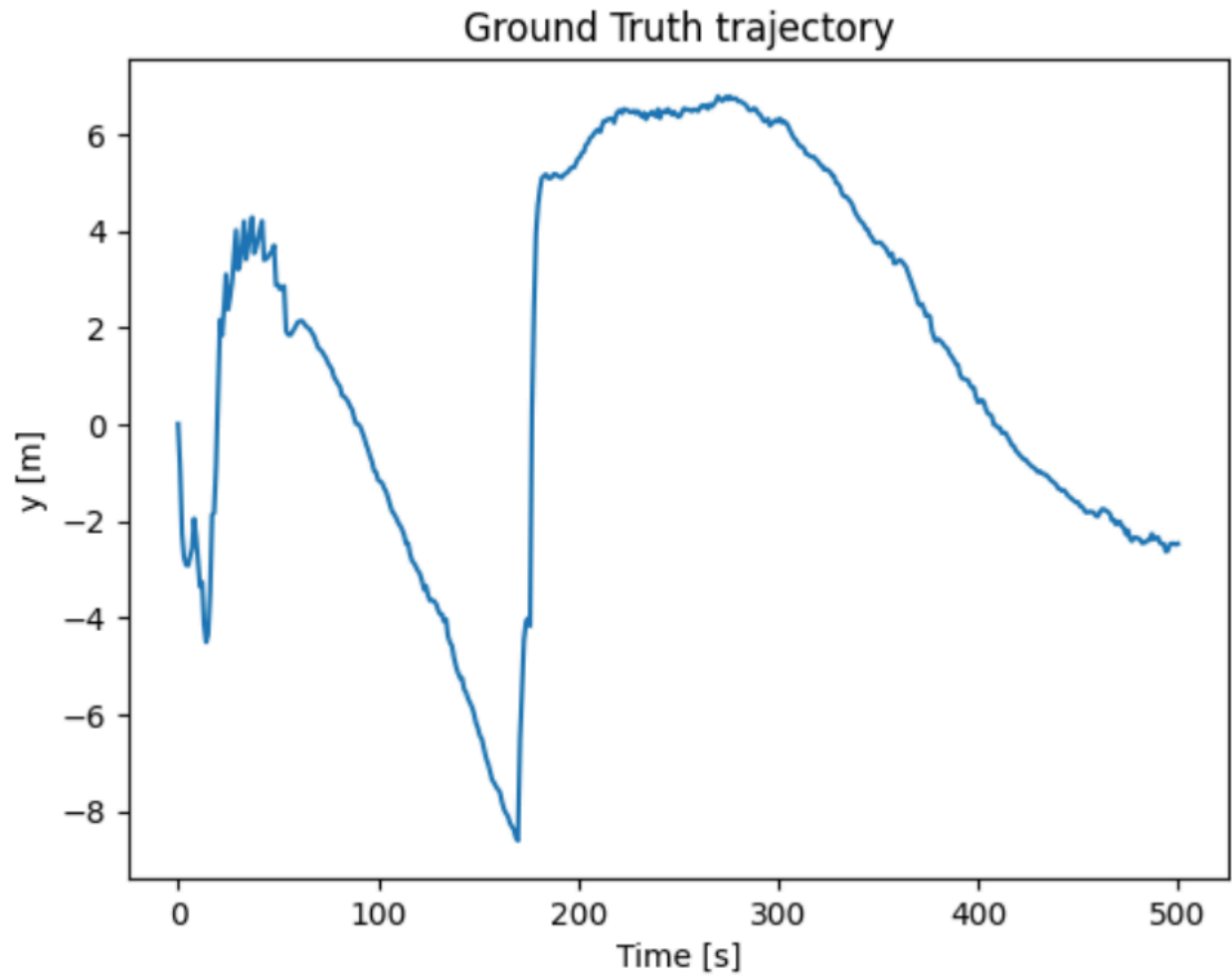
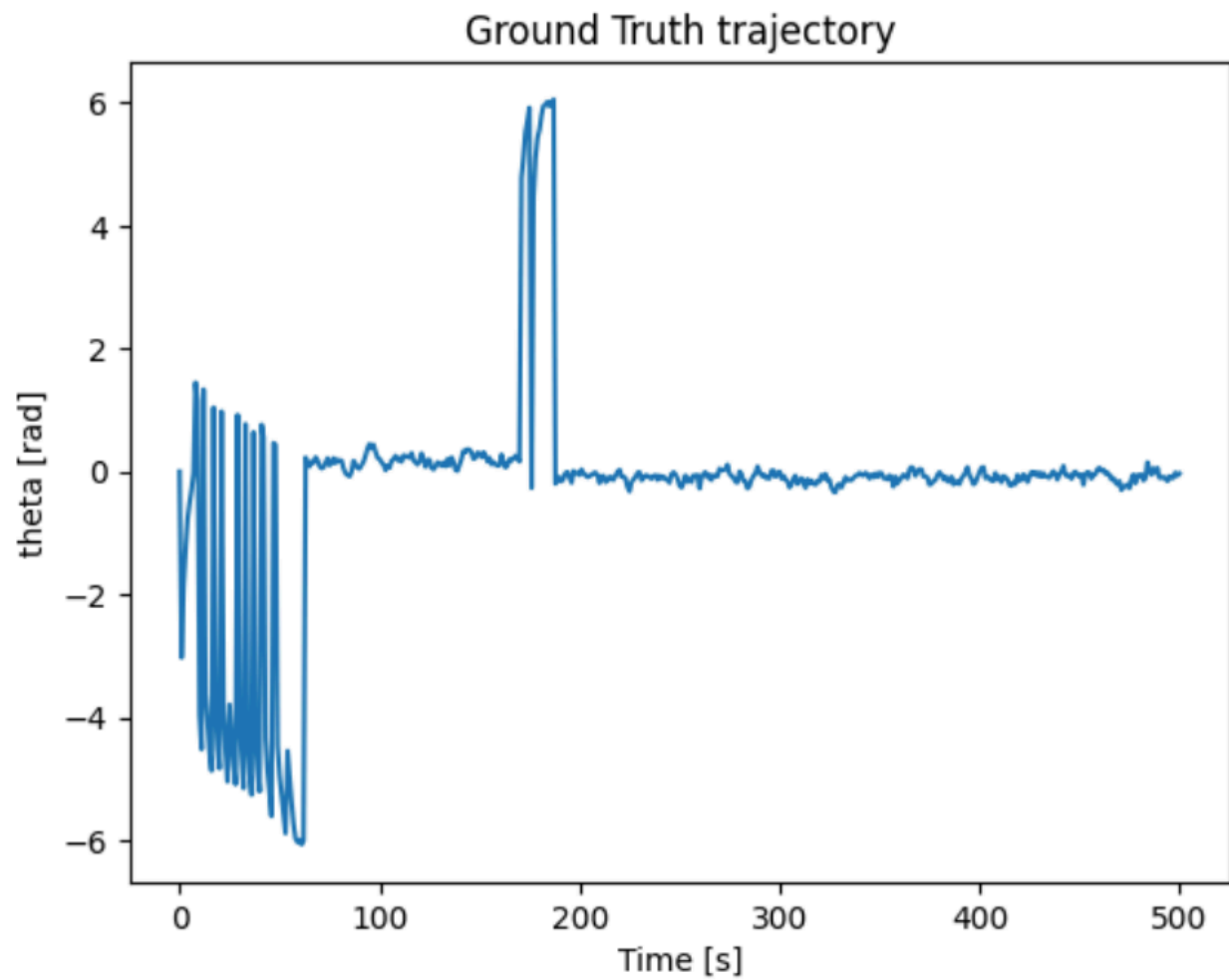Figure 3: Y Position Error for State Estimation using Landmark 1 Measurement Only

Figure 4: Angle Error for State Estimation using Landmark 1 Measurement Only
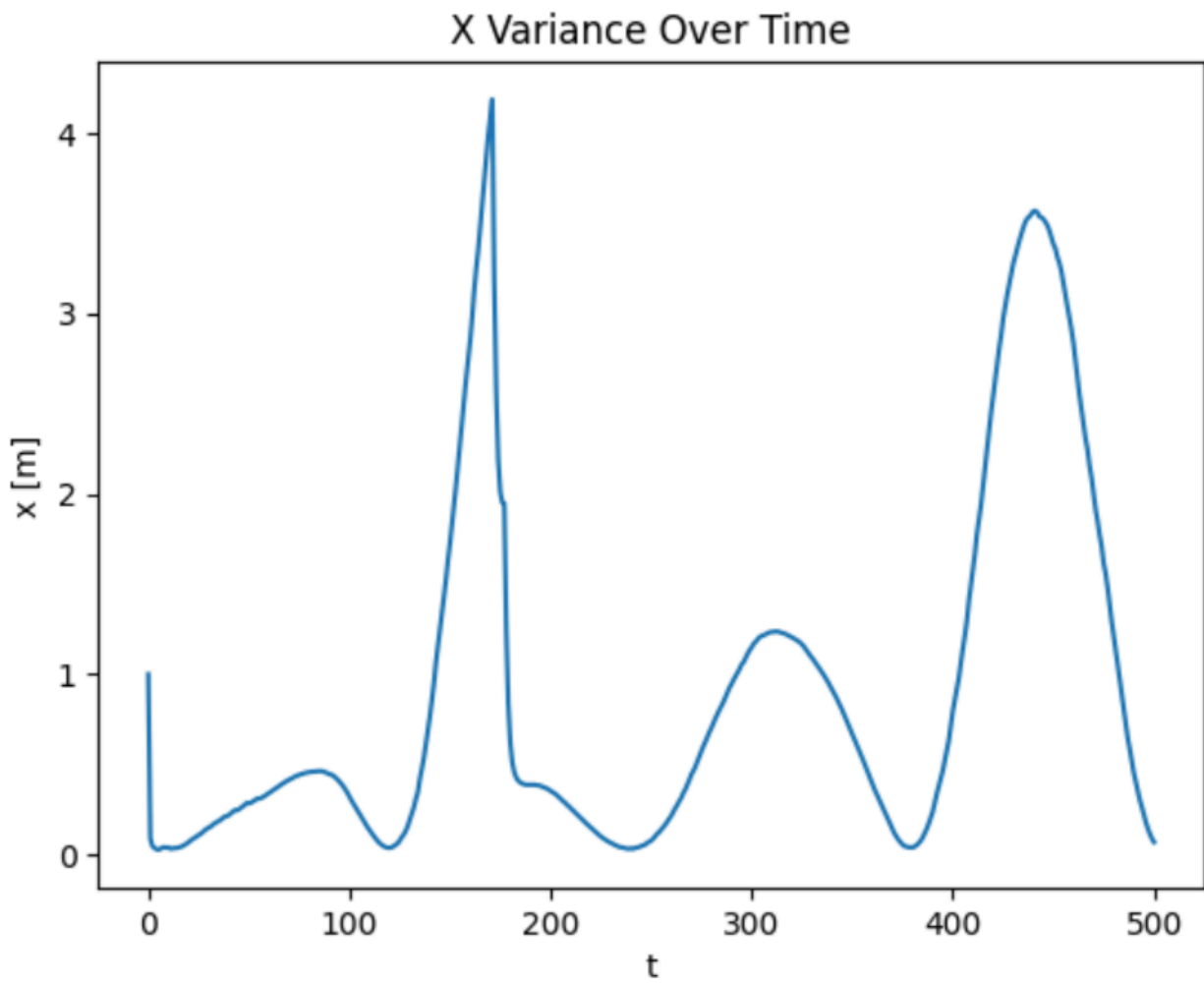
Figure 5: X Variance for State Estimation using Landmark 1 Measurement Only
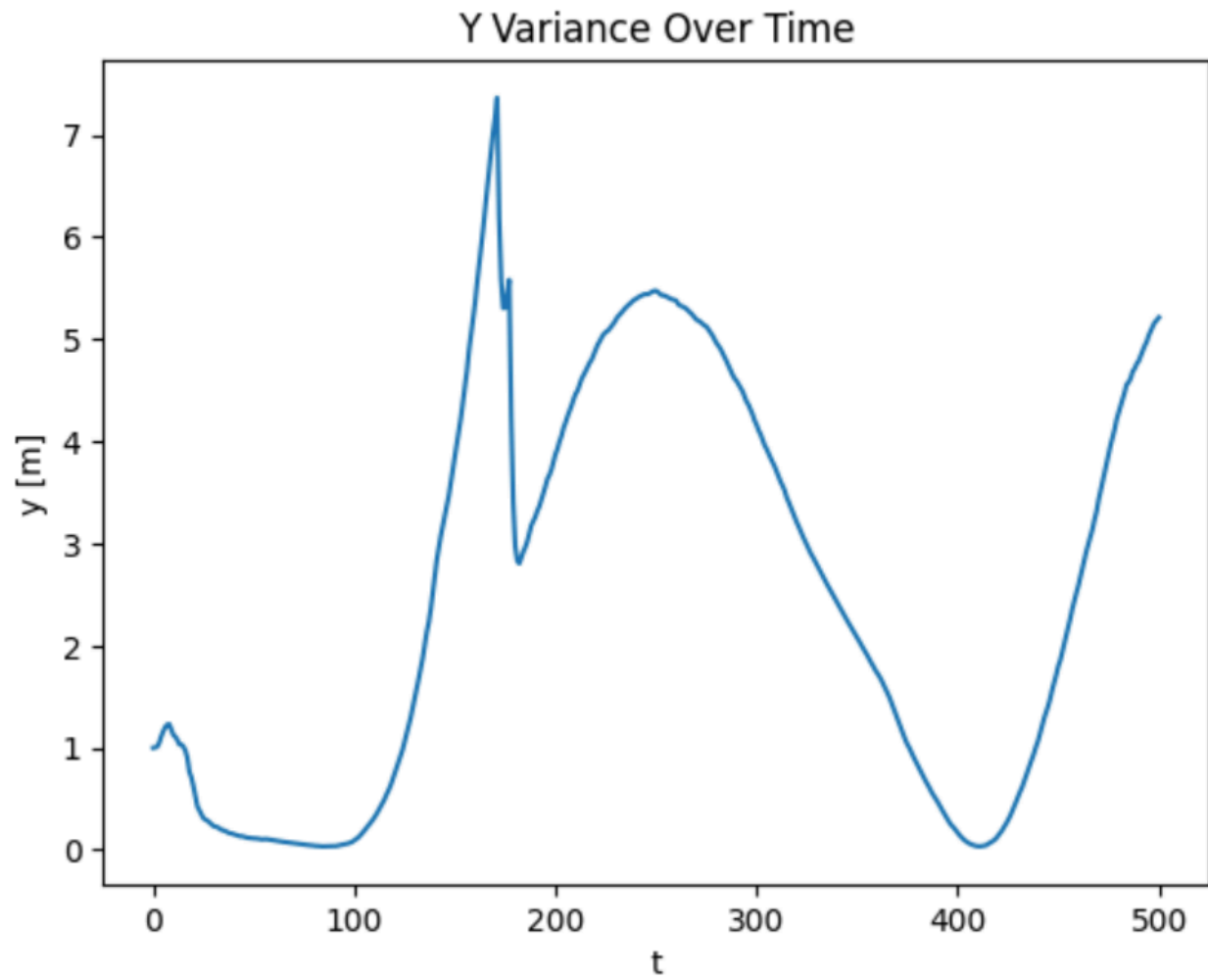
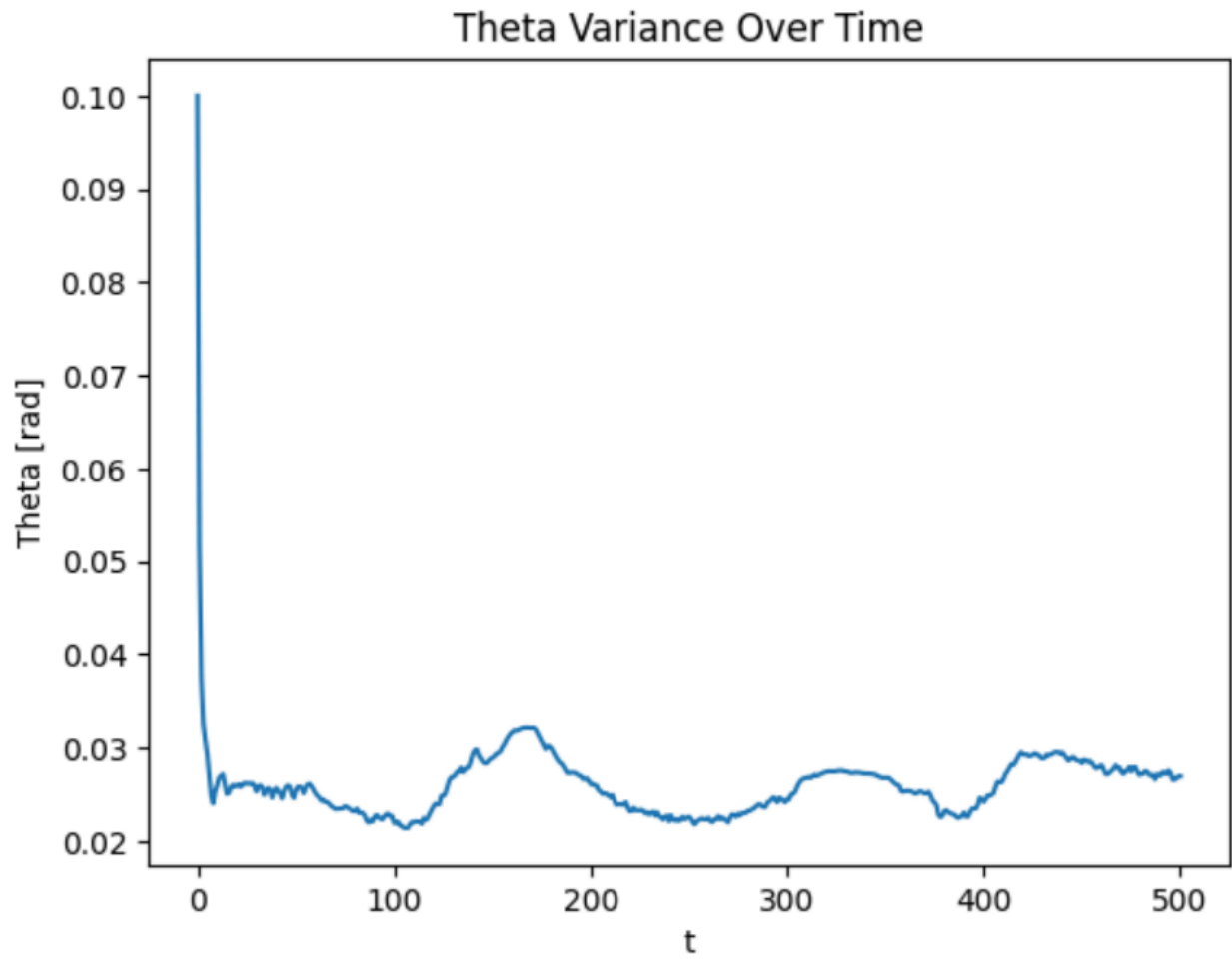Figure 6: Y Variance for State Estimation using Landmark 1 Measurement Only

Figure 7: Angle Variance for State Estimation using Landmark 1 Measurement Only

Observations:
The variance of the pose estimate initially decreases due to the observation of a single landmark for the first few time steps since the landmark helps the robot reduce its uncertainty in its position. As time goes on the variance of the pose estimate fluctuates quite a bit. This trend makes sense since all observations of landmarks are relative to the position and orientation of the vehicle. If the position and orientation of the vehicle is closer to a landmark, the observation may be more reliable and accurate, have less uncertainty, and have a lower variance as a result. Also, if the state of the vehicle is closer to the ground truth, the correction won't be as big and variance would be lower.