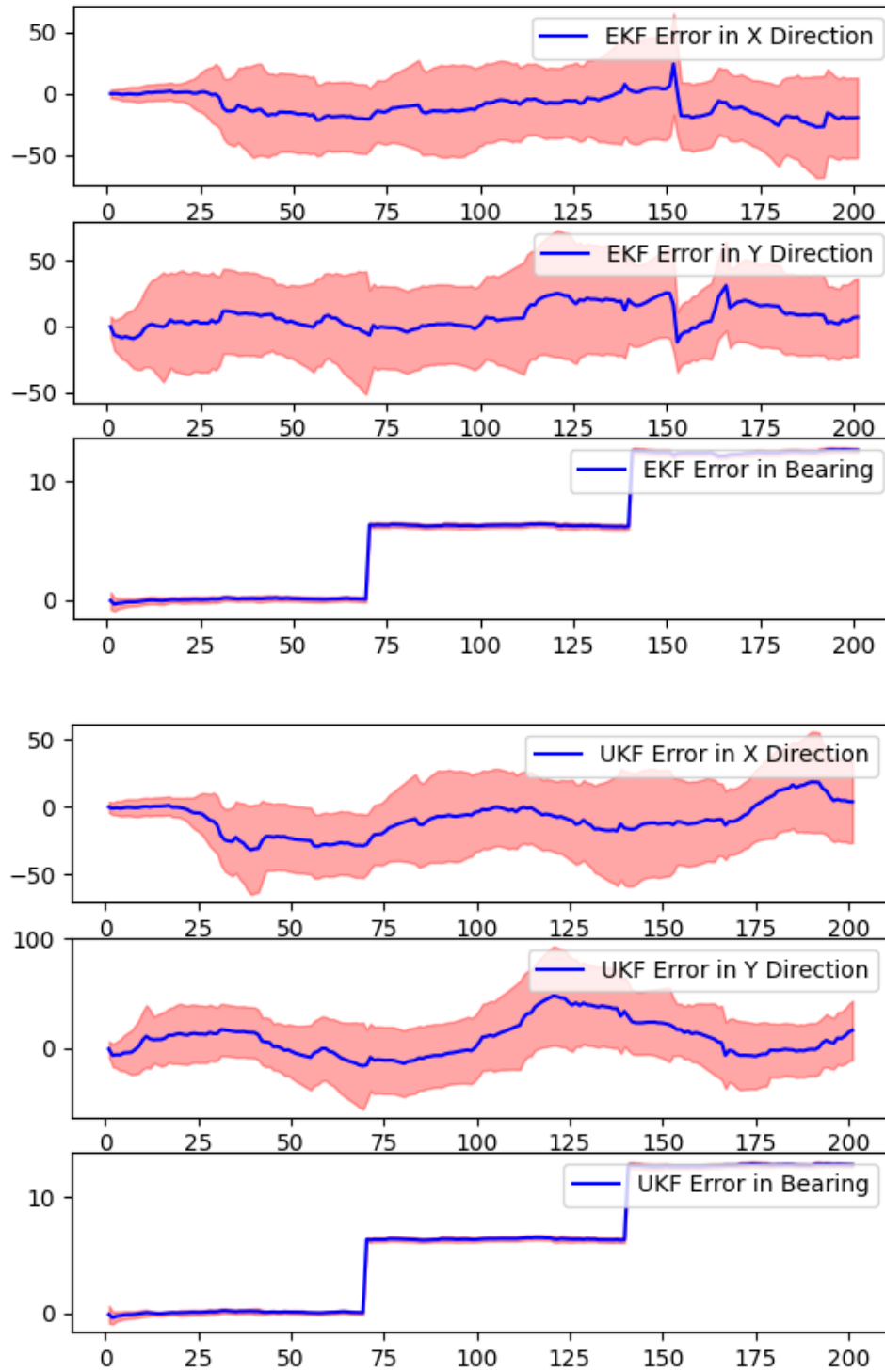Coding Set 4: EKF and UKF Localization

Part 1
See video submission

Part 2
Plots of error in all states for EKF and UKF Filter

Part 3

(a) The behavior as sensor or motion noise goes to zero makes the filters have perfect performance, because there is no noise or error in the given data.

(b) Overestimating the noise parameters was equally bad in the fact that the covariance ellipses were massive and did not cover the actual position of the robot. Not knowing generally where the robot is and being wrong about the guess is just as bad as underestimating the noise parameters.