

Homework 11

Video: <https://youtu.be/pl7biQZAuNQ>

Self-Assessment: 100 points out of 100

Notes:

This video shows the path manager generating a path to follow the input waypoints. 4 waypoints are given and three simulations are shown.

In the first simulation, Dubin's paths are generated and followed. In this model the full extended Kalman filter is used to estimate the state of the aircraft.

The EKF is then turned off and the controller uses true states for the next two simulations. This was done because I precompute the simulation prior to displaying it, and, as such, this video would be much longer with the state estimator.

The next two simulations demonstrate the path manager generating though waypoint paths and filleted paths.

Note that after completing the filleted paths, the aircraft performs a through path flight through the last waypoint as there are no more paths to follow.

Note that all demonstrations are performed with a 5 m/s wind and moderate high-altitude turbulence. The simulation is displayed at 2 times normal speed. After completing the waypoints, the aircraft returns to a loiter about the origin.

Finally, note that there is space in the video when nothing happens and it might look like the video is paused. This lasts for about 15 seconds and occurs right before the final (filleted) animation starts. I apologize for this pause in the action, someone asked me to move my stuff right when I needed to "press any key to..." start the animation.