

These are the settings I used to create the overshoot condition. Rather than setting different  $K_p$  and  $K_i$  values for each of the 6 components of the gain matrices, I kept the  $K_p$  and  $K_i$  matrices as identity matrices and then multiplied them by the gains listed below to give each component of the matrix the same feedback gain for simplicity.

Controller Type: Feedforward + PI

Feedback Gains:  $K_p = 1.25$ ,  $K_i = 1.35$

These settings led to an overshoot condition where the robot's chassis overshoots its desired trajectory, and slowly brings itself back in line with the trajectory.