Initial Configuration

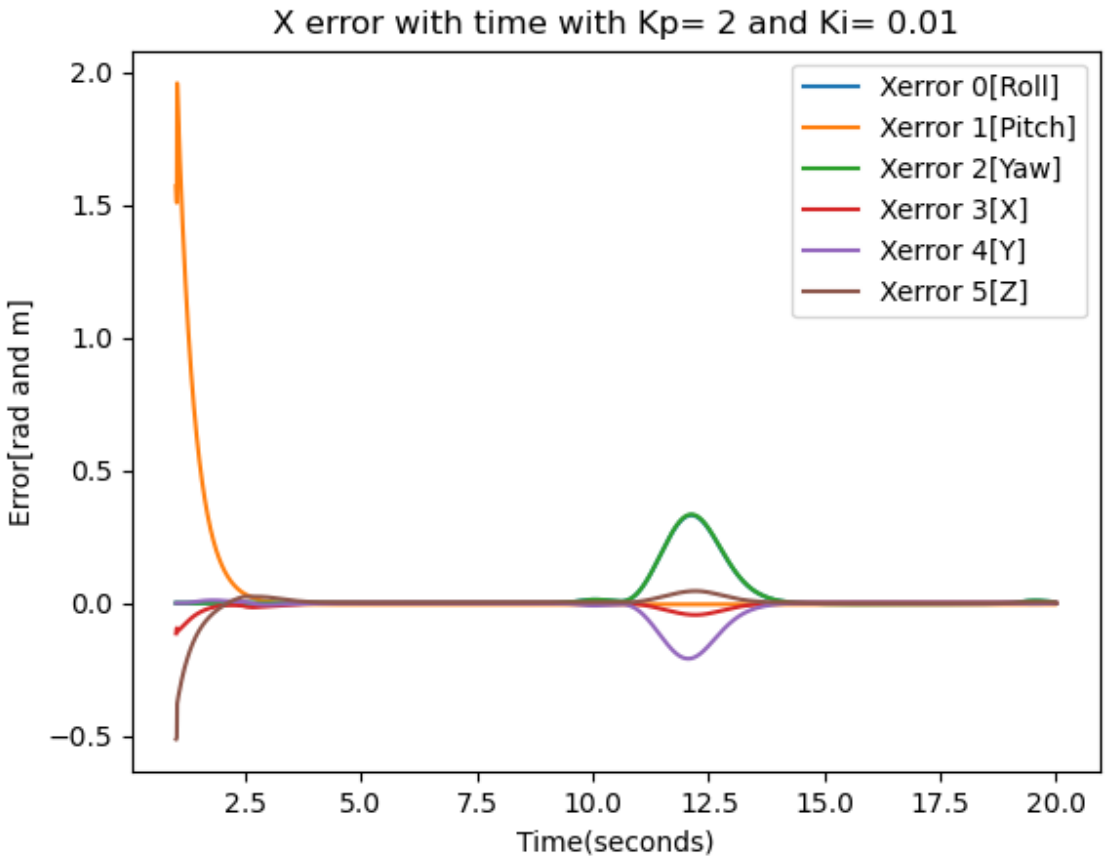
1. The newTask initial cube position in world frame is:
   Tsc_initial = np.array([[1, 0, 0, 0.5], [0, 1, 0, 1.0], [0, 0, 1, 0.025], [0, 0, 0, 1]])
2. The newTask final cube position in world frame is:

   Tsc_goal = np.array([[0, 1, 0, 0.5],[-1, 0, 0, -1.5],[0, 0, 1, 0.025], [0, 0, 0, 1]]

The initial configuration of the robot is: [0.0, 0.2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

Results

The newTask results were obtained by tuning the proportional gain(Kp) to 2.0 and the integral gain(Ki) to 0.01.
As seen from the error plot there is a tiny error in the middle around the 12.5 second mark but converges after that. The video shows the robot smoothly picking and placing the cube from the initial to the final position.
The Xerror plot is shown below:


X error with time with Kp= 2 and Ki= 0.01
Xerror 0[Roll]
Xerror 1[Pitch]
Xerror 2[Yaw]
Xerror 3[X]
Xerror 4[Y]
Xerror 5[Z]
Error[rad and m]
Time(seconds)
2.0
1.5
1.0
0.5
0.0
−0.5
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0