1 Writing Controller Code

1.1 Level 1

The code equivalent to the Simulink blocks gave similar results which can be seen in Figure 1 and Figure 2. A sampling time of 10 ms was used for the code. Different sampling times were tested and it was noticed that when using a higher sampling time the impact on the trajectory planner increased. When a higher sampling time is used the change of acceleration is missed by a few milliseconds and therefore impact the velocity and position. This gives the difference in the position of the motor which is seen in Figure 2.

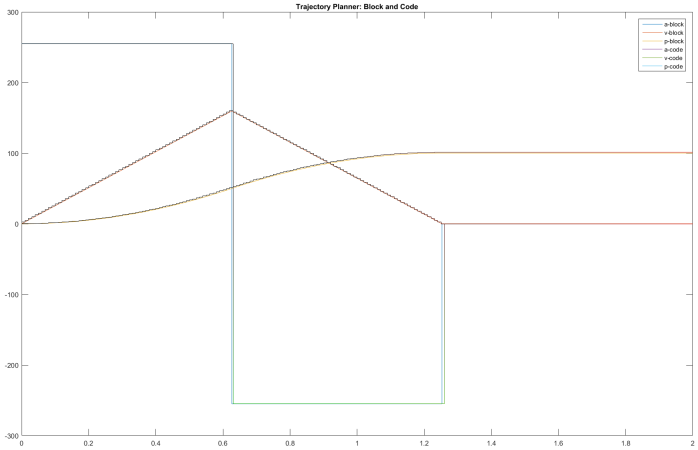

Figure 1: Trajectory planner signal comparison

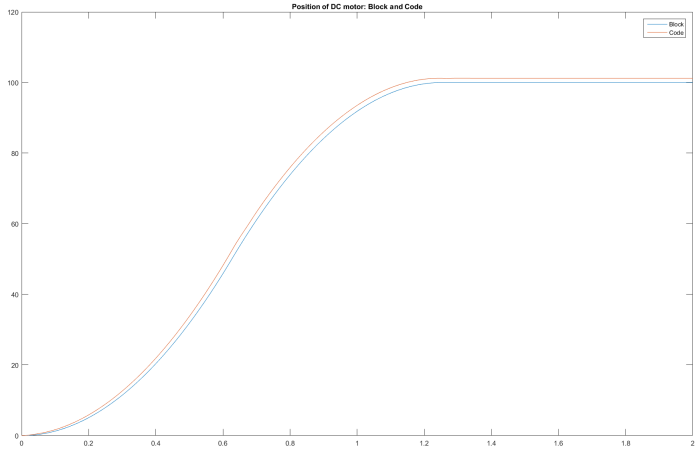

Figure 2: Motor position comparison

A close-up of the sampling time problem is shown in Figure 3. When the velocity increases it the code signal follows the curve perfectly but when the change in acceleration happens the velocity code signal gets "out-of-sync".

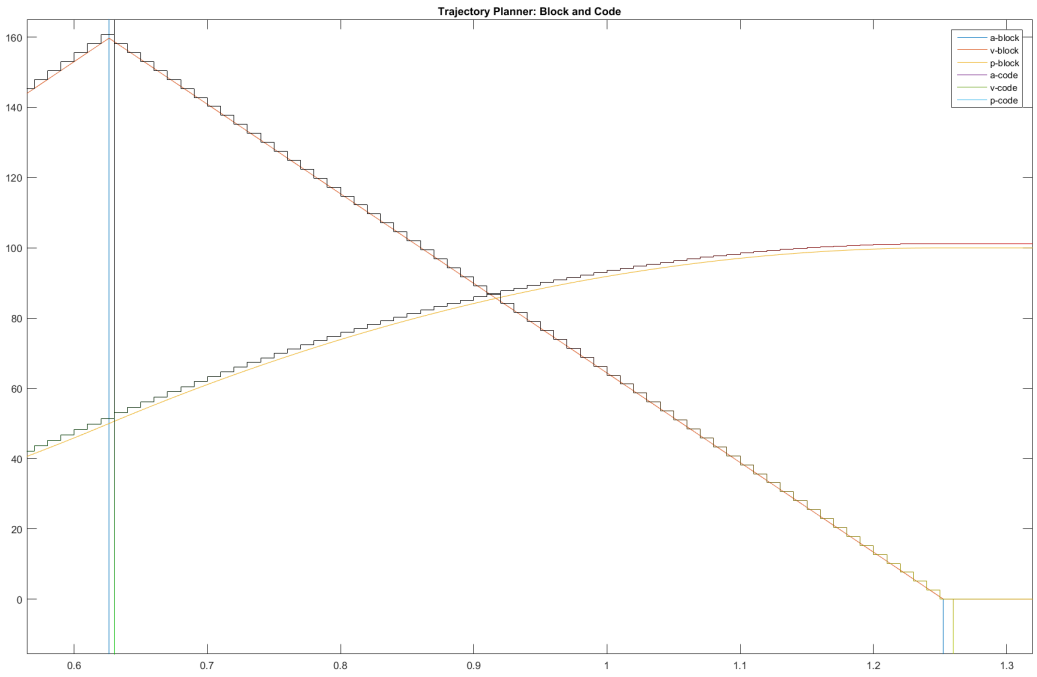

Figure 3: Motor position comparison