INSTITUTO TECNOLÓGICO Y DE ESTUDIOS SUPERIORES
CAMPUS QUERÉTARO

Homework 5: PID Controller

Applied Robotics

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Dynamical Equations:

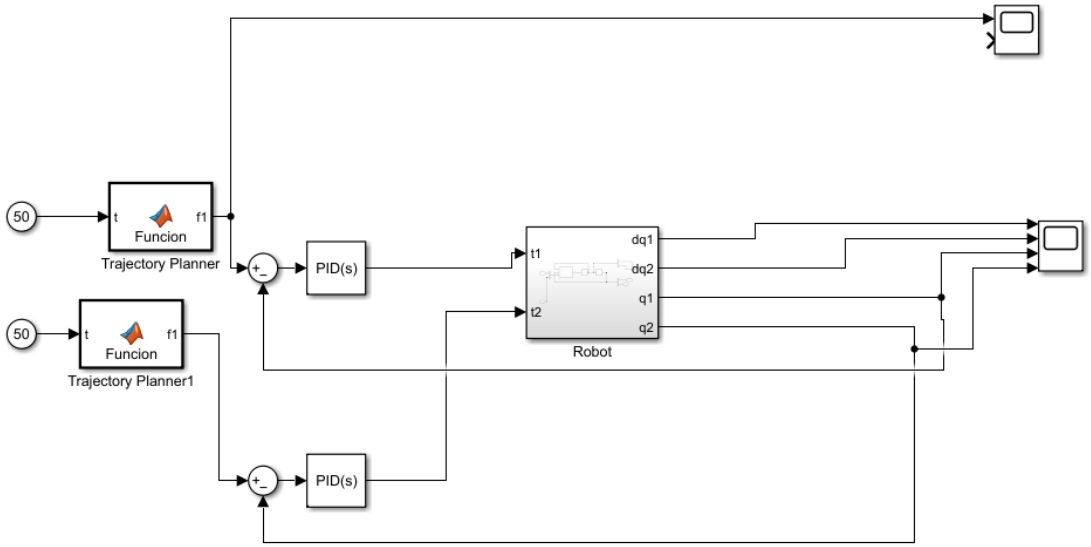
$$x_1^* = x_2$$

$$x_2^* = f_2(x) + g_{21}(x)t_1 + g_{22}(x)t_2$$

$$x_3^* = x_4$$

$$x_4^* = f_4(x) + g_{41}(x)t_1 + g_{42}(x)t_2$$

Simulink Design



Plotting of PID controlled movements.

Both PID controllers are using the same gain in P,I and D.

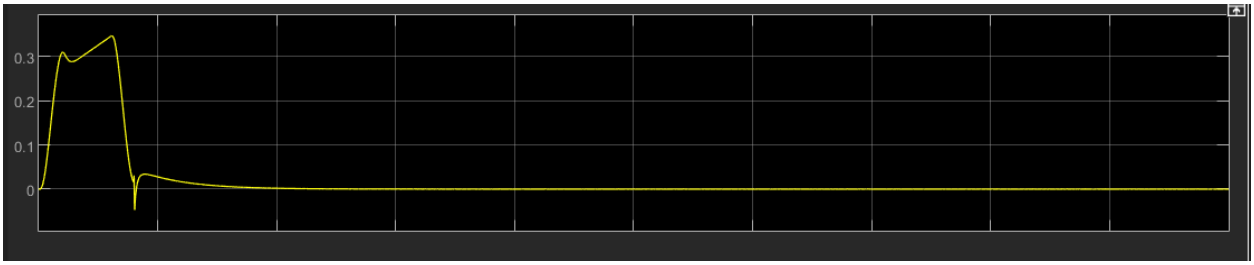
P = 200

I = 100

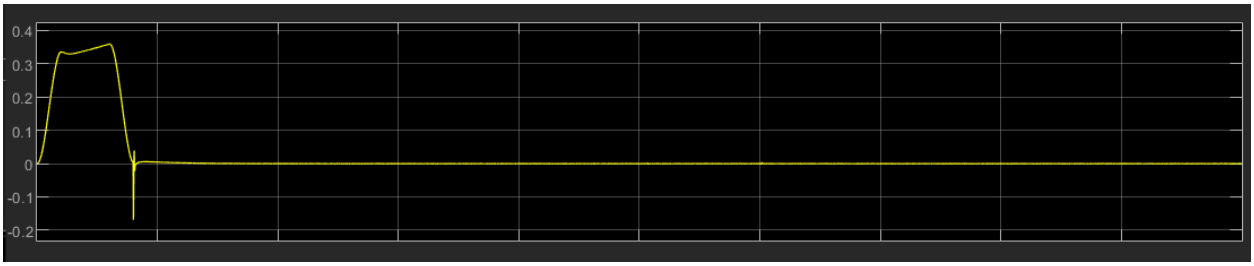
D = 20

This combination seemed to work properly with the robot's characteristics.

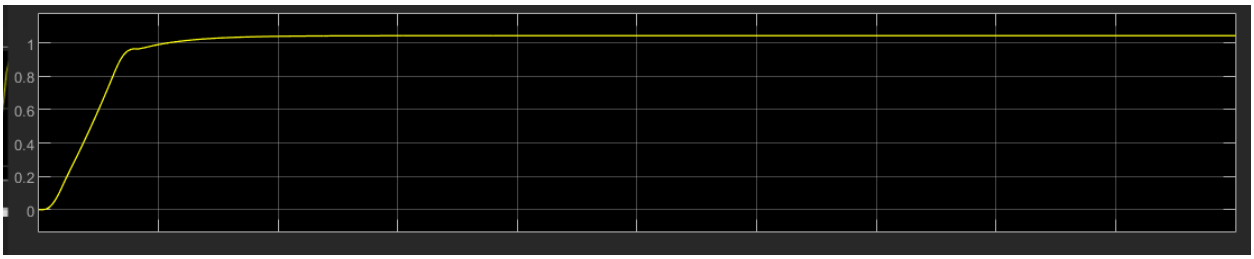
Dq1:



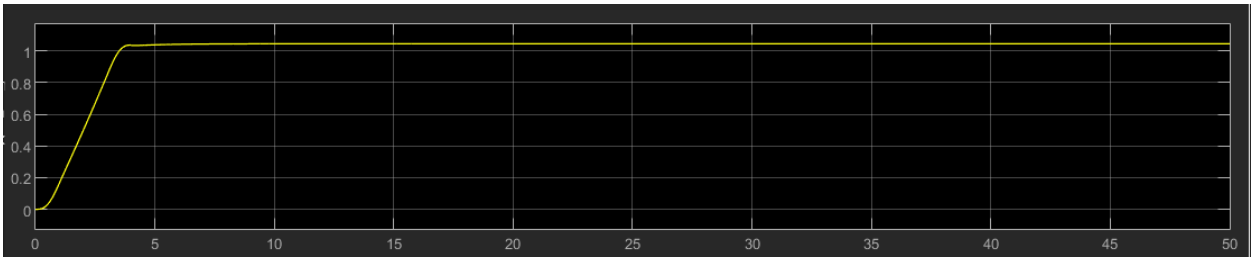
Dq2:



Q1:



Q2:



Conclusions:

Using the elements from the previous homework I created a PID controlled 2 DOF robot. I found this activity very interesting since now the graphs stabilize, meaning that this robot could be theoretically used to perform a function.