Lab Report for Exercise 1 in IIA3120

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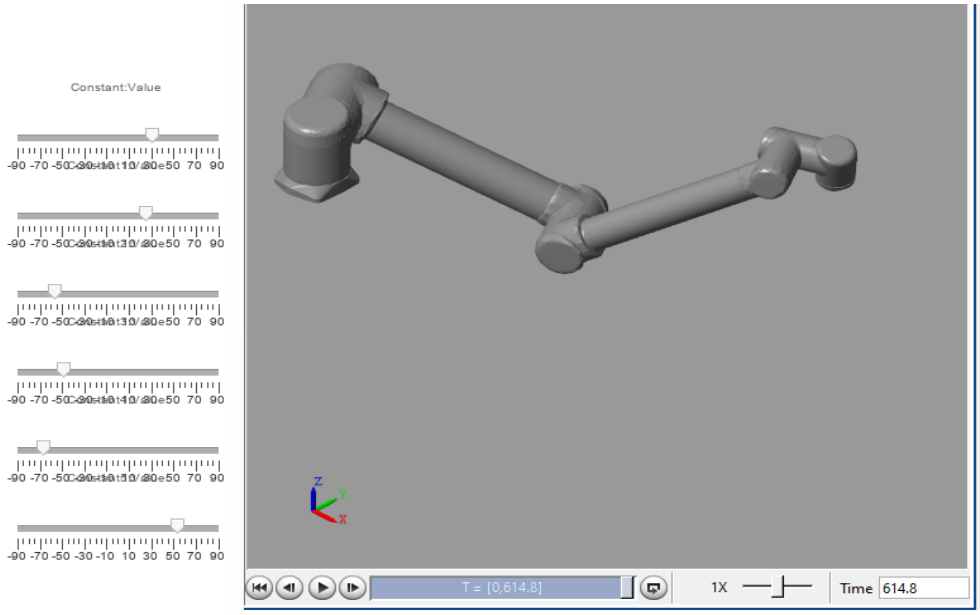
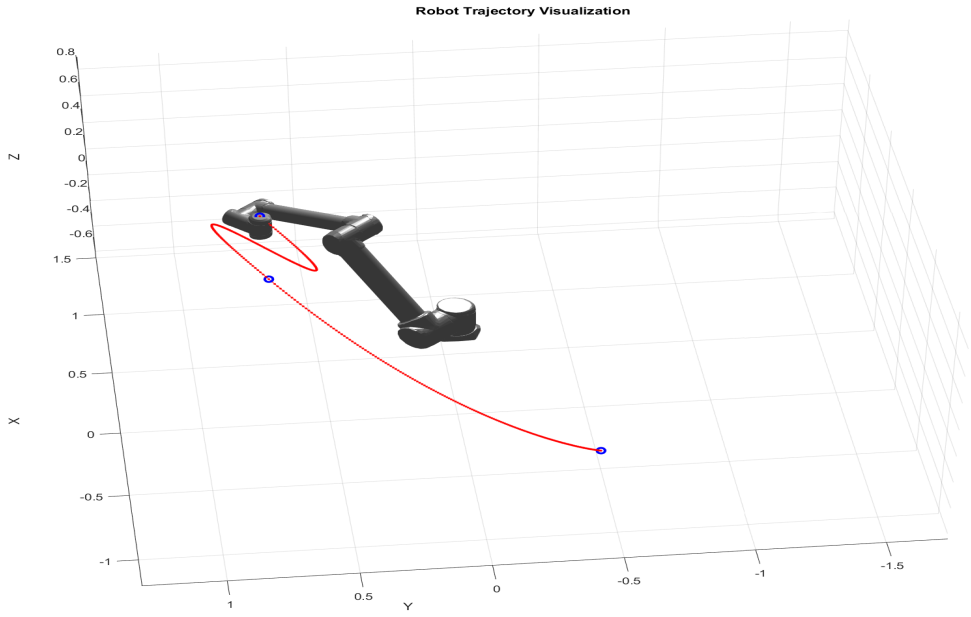
I have set up a virtual simulation of a UR10 [1] 6 axis robot using MatLab with Simulink and Simscape and the urdf and geomitry files found at [2]. The simulation can be seen in figure 1 where the controlling sliders for each joint is on the left, and the image of the robot is after each joint has been changed a little away from zero. To test the model I have chosen to make it



Figur 1: Simulation of the UR10 robot arm after it was moved a little in each joint. The sliders on the left control the joints, starting from one at the top, to six at the bottom.

move in a trajectory starting at (-0.5, -0.5, -0.5), moving through the point (0.15, 0.7, 0.34) and ending at (0.5, 0.7, 0.5), moving in a polynomial line

generated by the MatLab function cubicpolytraj. The resulting trajectory can seen alongside a rendering of the robot, and the two points the robot must pass through, can be seen in figure 2. The right most point in the plot



Figur 2: Rendering of the UR10 robot with a trajectory to follow marked as a red line and two points the robot must move through as blue circles. The circle furthest to the right is the starting point.

is the start point. Along with this rapport, a video of the robot following the path has been submitted.

Referanser

[1] Universal Robots. "UR10e"(2024), [Online]. Avaliable: https://www.universal-robots.com/products/ur10-robot/. (accessed: 12.09.2024)

[2] K. Hawkins. [Online]. Avaliable: https://web01.usn.no/~roshans/cfr/downloads/UR10-urdf-geometry.zip. (accessed: 12.09.2024)