

## Homework – Distributed Computing (RS485 to Master NXT to Slave NXT to XL-320 Robot)

1. Modify `serialPc-M-1_0a.sce` so that the PC sends a series of four angular position settings: (-90, -90); (90, -90); (-90, 90) and (45, 45).
  - A. Provide source code for your Scilab program (5-points)
  - B. Provide a URL to a YouTube video demonstrating the XL-320 moves to these angular positions (10-points)
  - C. Provide a photo of the XL-320 2-link planar manipulator at each of these four angular positions. Provide hand calculations confirming that indeed, the robot's joints are at these angular positions (10-points).
  
2. Have the PC send four end-effector location settings:  $(l_1, l_2), (l_1, -l_2), (l_2, l_1), (l_2, -l_1)$  where  $l_1$  and  $l_2$  are the lengths of links 1 and 2 respectively of the XL-320 2-link planar manipulator. These strings are serially transmitted to the Master NXT which are then processed and sent, via Bluetooth, to the Slave NXT. The Slave NXT performs inverse kinematics on these location settings and commands the robot's end-effector to hover over these locations on the 32x32 baseplate.
  - A. Provide source code for your Scilab program, and both Master and Slave NXC programs (10-points)
  - B. Provide a URL to a YouTube video demonstrating the XL-320 moves to these locations (10-points)
  - C. Provide a photo of the XL-320 2-link planar manipulator at each of these four locations. Provide hand calculations confirming that indeed, the end-effector is hovering over these four locations (10-points).