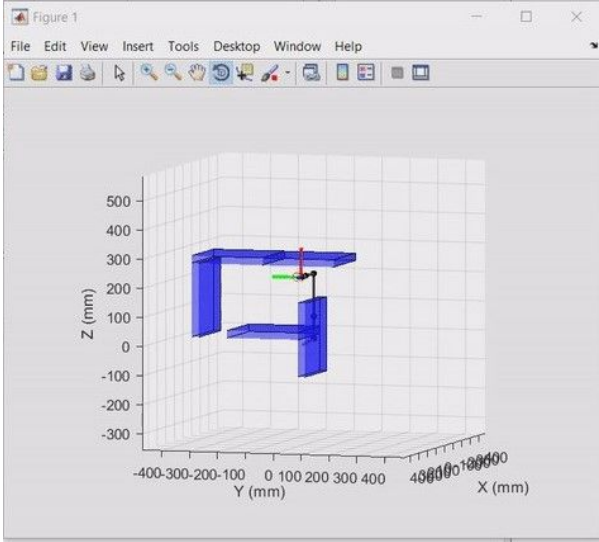



Lynx Arm Pathfinding App:

Note: In order to run this application (*the Robot_arm_pathfinding_app.exe file*) please install [MATLAB Runtime Environment R2018a \(9.4\)](#)

This software application is a gui (graphical user interface) which consists of 2 windows.

	<p>Which depicts a virtual representation of the links and joints which make up the lynx robot arm specified here.</p> <p>The user uses this window to see where the positions of the different joints as well as the end effector's position (ending point of the robot) are in 3 dimensional space.</p>
	<p>The user uses this window to specify the desired position of the end effector (i.e where it should ultimately go to) as well as the current obstacle environment.</p>

****Comments about pathfinding approach:**

- The pathfinding algorithm this application implements is known as **A***; it has a constant cost of 1 and uses euclidean distance as a heuristic.

- The end effector of the robot arm does not necessarily go to the position the user specifies. At a certain point in the pathfinding algorithm the distance between the arm's end effector position and the goal position becomes negligible. In other words, if it gets close enough the pathfinding stops. In my case if the current end effector position is less than 40mm (4cm) the pathfinding will stop.

Instructions:

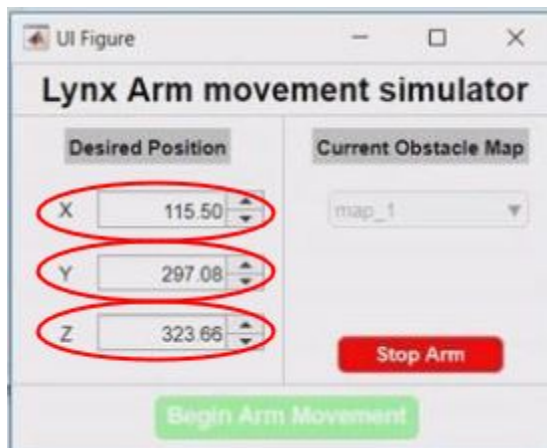
- *To change the obstacle environment:*



Click the Current Obstacle Map dropdown menu and select the desired obstacle map.

Note: this cannot be changed while the arm is moving

- *To set the desired position:*



Enter the destination coordinates using the X,Y, Z textfields. Then click the "begin arm movement" button. The robot in the other window will begin to move, ultimately resulting in the robot's end effector going to the user's specified position.

Note: to stop the robot arm early click the "Stop Arm" button