Robot Modelling (RMB600)

Assignment Two: 3D Forward Kinematics

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Abstract

The objective of this exercise is to get versed in the concepts of coordinate transformations

and modeling using 3D frames. To this end, you will need to create some code

Hand In

Students should hand in Matlab files or pictures which contain your solution.

Grading

This assignment shall have an aggregate of 15 points max.

Basic

  a) Write MATLAB functions that take angle/translation input and return transform matrix 2p
     Name example: RotX, RotY, RotZ, Trans3D
  b) Write a MATLAB function that can plot 3D frames. 2p
  c) Write a MATLAB script/function that can plot a 3D robot (at least three links). 2p

Advanced

  a) Write a script that moves the robot around joins on Z axis direction. 3p
  b) Write a MATLAB function/script that is similar to 1.c however make it possible so that one
     can add any number of links on any joint. 3p
  c) Write a function that I can choose three rotations in order and output transformation matrix.
     3p
     Example: XYX, XZY, XYZ, ZYX,…