

282762 Robotics and Automation Test 1

Forward and inverse kinematic methods for a Puma 560 robot have been introduced during the course. You are tasked with developing a short snippet of code that uses these principles, along with an appropriate trajectory generation technique, to draw your initials on an imaginary planar surface (You can choose to write on an imaginary wall, table, or floor, so long as it is planar). Remember that the pen should be removed from the paper between characters. You can write in a font of your choosing; a basic exemplar of a font is shown in Figure 1.

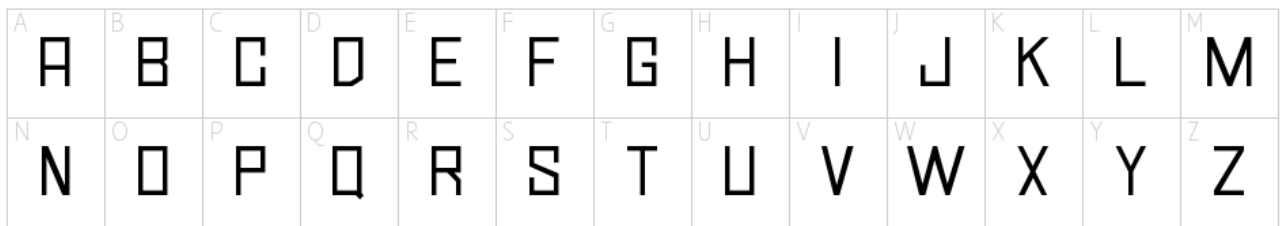


Figure 1: A basic font / typeface

It is recommended to use the Peter Corke Robotics Toolbox to complete this task. The Puma560 robot has already been implemented (mdl_p560) so you can use it directly.

The requirements for submission of this assessment are:

- A 2-Page PDF document that contains:
 - Part A:** A well commented snippet of code (Recommended to be a MATLAB m-file) that runs the simulation (This can be simulated in < 20 lines of code.....)
 - Part B:** A plot of the end effector trajectory in 3 Dimensions (X,Y,Z)
 - Part C:** A plot showing each of the joint angles with respect to time.
 - Part D:** A plot showing XYZRPY magnitudes with respect to time.
 - Part E:** A brief description (eg. 100 words) of (or justification for) the choice of trajectory generation technique used, its advantages, and limitations.
 - Part F:** A brief explanation (eg. 100 words) as to whether or not the trajectory is a good one or not (and why). Also briefly mention what would need to be considered before running the trajectory on a real robot.
- A video file that shows the robot simulation.

The Peter Corke Robotics Toolbox can be downloaded from:

http://petercorke.com/Robotics_Toolbox.html

They may ask which institution that you are from – follow the prompts – its FREE.

Any syntax of interest (for coding in MATLAB) can be found in Lecture B on Stream.

This assessment is Due on Stream by Friday 10 June