Robotics
Problem Sheet 4

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Notes

The homework serves as preparation for the exams. It is strongly recommended that you solve them before the given deadline - but you do not need to hand them in. Feel free to work on the problems as a group - this is even recommended.

1 Problem

Given the planar (2D) robot arm from figure 1 with a rotational joint in the origin of the world frame and a prismatic joint linked to it with the respective variables α (rotation) and l (translation), with $l \in [500, 1000]$.

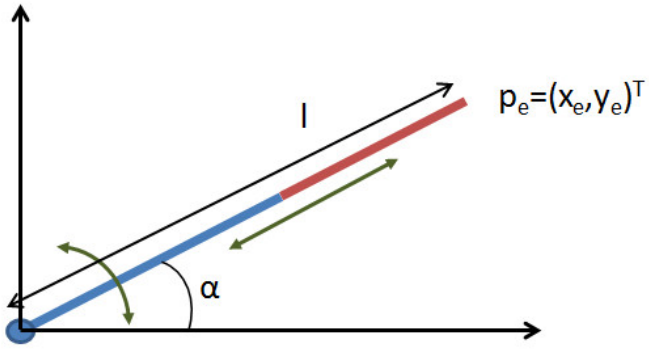

Figure 1: A planar robot arm with a rotational and a prismatic joint.

Provide the forward kinematics for the position $p_e = (x_e, y_e)$ of the end-effector of this robot.

2 Problem

Take the robot from the previous problem and find

- the proper Jacobian matrix
- the numerical approximation of the Jacobian at point (2,3) with $\delta = 0.1$

as basis for inverse kinematics.