Robotic systems
Practice: Inverse kinematics

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Practice 1 I

Assuming a 3-link planar robot it is required to implement to inverse kinematics algorithms:

- Jacobian inverse
- Jacobian transpose

Desired position/orientation assigned as set-point ($\dot{\boldsymbol{x}} = \boldsymbol{0}$ and $r = 3$ thus) and sampling time $T = 1\,\text{ms}$

Use $\psi_d - \psi$ as orientation feedback (compute ψ simply as the sum of the 3 joints)

A possible implementation is given in the file `practice04.zip`
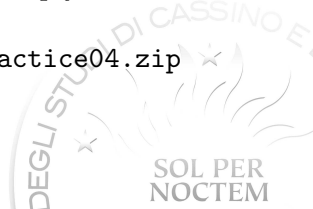
Practice 2 I

By considering the previous practice implement the orientation feedback via quaternion

Suggestion: first write and test the individual functions to transform among the orientation representations (Euler angles, quaternion, rotation matrix)

A possible implementation is given in the file `practice05.zip`

Practice 3 I

Extend the previous results to a 3D structure such as, e.g., an anthropomorphous

A possible implementation is given in the file `practice006.zip`