

# Bachelor's/Master's Thesis

## Estimating robotic kinematics for given tasks with Deep Learning

Serial robotic manipulators enter more and more industrial, medical and consumer applications. However, identifying the optimal robot for a given task is challenging and not yet solved for arbitrary kinematics. New studies showed that deep neural networks are capable of encoding the workspace of arbitrary robots. Based on this work, a mapping between the desired workspace and the optimal kinematic should be developed.

### Tasks

You will develop and implement a deep neural network architecture for estimating the optimal robot kinematic for a given task. Relevant test cases will be identified and evaluated, regarding aspects like prediction accuracy, knowledge transfer or robustness.

### Qualification

- Interest in Robotics and Machine Learning
- Basic knowledge of robot kinematics, supervised learning and unsupervised learning
- Motivation to work independently on a challenging problem
- Experience with Deep Learning/Representation Learning is a plus
- Experience with Python and/or Keras is a plus

Interested? Contact Jannis Hagenah at [hagenah@rob.uni-luebeck.de](mailto:hagenah@rob.uni-luebeck.de)

