

[HiWi] Developer for Modular Robot Simulator



Technical University of Munich



Department of Informatics
Chair of Robotics, Artificial
Intelligence and Real-time
Systems

Background

Simulators play a crucial role in the development and prototyping in robotics. Without them, the development of controllers, novel robot kinematics and learning-based application of robotics would not be possible to the extent it is today. At the same time, Reconfigurable Modular Robots pose an exciting innovation in industrial robotics, promising greater flexibility, improved maintainability and cost-efficiency compared to traditional manipulators. However, at the time, there is no tool or standardized way to simulate and model assemblies of modules in the same way it has been done for robotic manipulators for decades.

Description

We are working on a python-based, open-source library that will be available as a conda package, coming with various examples and an easy integration with existing simulation tools. The tool should be easy-to-use for students, early stage researchers, and professionals and must be properly tested and documented. We are offering a HiWi position in the development of the simulation suite. The software is written in python and currently in a beta state, with publication planned at the end of the year. Follow up work after publication will be available. You will join the existing team and contribute to the development process by writing code, test cases, and scripts for the continuous integration pipeline.

Tasks

- Implement features in the area of robotic dynamics and kinematics simulation
- Develop unittests
- Manage and maintain the continuous integration pipeline
- Package the tool for conda
- Perform code reviews

Benefits

- Flexible working times (between 12h - 20h a week)
- Work from home or at the university
- Specialization based on your interest within the tool
- Learn about software development in teams
- Get feedback on your code by PhD students working in the same project

Requirements

- Proficiency in Python and Git are hard requirements
- Experience working on larger code bases
- Clean coding style that comes with proper documentation
- Proactive working style

Supervisor:

Prof. Dr.-Ing. Matthias Althoff

Advisor:

Jonathan Külz

Research project:

CONCERT Project (EU)

Type:

Hiwi Position

Research area:

Modular Robots, Nonlinear
Optimization

Programming language:

Python, optional: bash, C++

Required skills:

Proficiency in Python, Git,
unittest, Conda

Language:

English

Date of submission:

27. Juli 2022

**For more information please
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