

Web-development for Robotics Benchmark



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Fakultät für Informatik
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Background

Robots have yet to make an entrance into many industries (outside mass-manufacturing) and the service sector. A major hurdle to their widespread adoption is the complexity of their deployment, requiring costly specialists for every new task one wants to automate. We envision simple tools which help to choose the right robot and do the programming given a task and environment specification.

Description

In order to judge the effectiveness of such tools we are implementing a benchmark suite where researchers and practitioners can share and compare different robot designs, as well as motion and task planning algorithms. Here we follow along CommonRoad (commonroad.in.tum.de), another benchmarking suite developed at our chair.

The new suite is called cRoK (composable Robotics benchmarkK) and a preliminary website is already available at crok.cps.in.tum.de. You will help us transform the old webpage and rebase it on the software stack developed by CommonRoad. The work will include front-end design in React and back-end development in Django, which you should be already familiar with. Additional tools used are PostgreSQL as our database, Celery and Flower for task scheduling, Caddy as a reverse proxy, docker and npm for deployment, and Minio as web storage.

You will be able to collaborate and learn from a team of about five developing Commonroad at the moment. We expect you to work about 15 hours per week starting as soon as you are available. This assignment can also be a good starting point for further research at our chair, such as a thesis or lab course.

Supervisor:
Prof. Dr.-Ing. Matthias Althoff

Advisor:
Matthias Mayer, Jonathan Kütz

Research project:
Modular Robotics

Type:
HiWi

Research area:
Websites, Robotics

Programming language:
Python (Django), JavaScript (React), HTML, CSS

Required skills:
Web-development, Linux, git

Language:
English

Date of submission:
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The screenshot shows the cRoK website interface. At the top, there is a navigation bar with links for Home, Documentation, Scenarios, Robots, and About, along with buttons for Submit Solution and Log In. The main heading is "Welcome to cRoK". Below this, a paragraph describes cRoK as a benchmark suite for robot synthesis, selection, and trajectory planning. A 3D visualization of a robot in a simulated environment is shown under the heading "Scenarios". Below the visualization, there is a "News" section with three items: "Beta Notice" (Jan. 1, 2022), "Submission of accompanying Paper" (March 1, 2022), and "Preprint of IROS'22 Paper" (March 18, 2022). Each news item includes a brief description and a "More Information" button.

Current cRoK website.