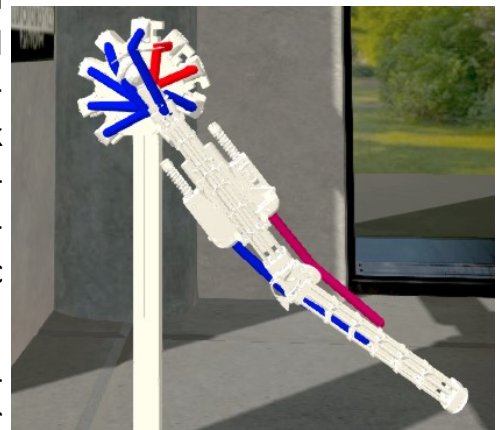


Robot Reinforcement Learning with Shared Experience in the NRP

BACKGROUND

Reinforcement Learning is a very popular however very data expensive methodology to achieve control of complex and dynamic robot goal oriented motions. Therefore a lot of experience needs to be gained to optimize the neural network which takes a lot of time in embodied simulations. Several implementations exist to parallelize experience collection contributing with several physics simulations of the same robotic setup to the same final optimized neural network.

The Neurorobotics Platform is an embodied simulation framework that can run highly distributed on a Docker based HPC cluster setup.



YOUR TASK

In this task you will research and evaluate several shared experience methodologies for reinforcement learning. You will select the most promising one to implement and connect it to robotic and musculoskeletal simulations in the Neurorobotics Platform. You will set up the architecture to incorporate experience from several physics simulation, set up a common data storage as well as the learning procedure. The performance of the implemented setup shall be evaluated on an exemplary non-distributed setup compared to the novel distributed implementation

REQUIRED SKILLS

- Python
- Experience with Robot Reinforcement Learning
- First experiences with shared experience RL frameworks is a plus

FURTHER READING

www.neurorobotics.net

<https://arxiv.org/abs/1802.01561>

CONTACT

Benedikt Feldotto

✉ feldotto@in.tum.de

Technical University of Munich

Faculty of Informatics

Chair of Robotics, AI and Real-Time Systems

www6.in.tum.de

