

Cover Letter

Inhee Park

Simulation Engineer — Engineering — San Francisco, Bay Area, CA — Full Time

Job Description vs. My Qualification

- Bachelor's degree (or equivalent experience), preferably in computer science, electrical engineering, robotics, or similar (Master's degree a plus) 3+ years of industry experience
 - Master in Computer Science with a thesis topic on Multi-Agent Deep Reinforcement Learning (Environment: Minimal Robot Multi-Walkers)
- Experience working with python, C++, and ROS
 - Python and C (not much C++)
 - Though I don't have direct experience working with ROS, I can quickly adapt ROS2Learn (ROS 2 + Reinforcement Learning):
<https://github.com/AcutronicRobotics/ros2learn>
- Experience working with 3D simulation and/or rendering environments (e.g., PyBullet, Gazebo, Unity, Blender, Mujoco, etc.)
 - For my reinforcement learning project, I used PyBullet and Mujoco for 2d-walker environment and other environments in conjunction to OpenAI Gym and Ray RLlib.
 - Although it was about non-robotics domain, my previous research experience including industry experience was all about computational simulation/modeling using parallel GPUs.
- Experience with industrial robot kinematics in simulation environments
 - I'm indirectly familiar with robot kinematics. One of my postdoctoral projects was how to translate the robot kinematic algorithm used for Mission Mars in JPL/NASA to other field.
 - Applied to high-dimensional sampling space in bio-molecular simulation by freezing some degrees-of-freedom and mimicking robot's joint movement.
 - Pertinent publication (<https://pubs.acs.org/doi/abs/10.1021/ct3002046>)
- Experience with simulation environments for reinforcement learning (e.g., OpenAI Gym, Deepmind Lab, etc.)
 - My master thesis is "Multi-Agent Deep Reinforcement Learning for Walker Systems" using the state-of-art Proximal Policy Optimization (PPO), the most well performed reinforcement learning algorithm for robotics (continuous, high-dimensional observation/action space).
 - Summary: <https://ipark-cs.github.io/projects/drl/>
 - Full paper: <https://gitlab.com/ipark/cs298-thesis2/-/blob/master/ICANN-2021/ICANN2021.pdf>
 - I used OpenAI Gym as well as Ray's RLlib for RL research.