

Fangzhou Yu

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EDUCATION

OREGON STATE UNIVERSITY

M.S Robotics | Sep 2021 - August 2023 | Thesis Title: Learning From Optimization For Bipedal Robots

STONY BROOK UNIVERSITY

B.Eng Mechanical Engineering | Aug 2016 - May 2020

WORK EXPERIENCE

DYNAMIC ROBOTICS AND AI LAB | M.S RESEARCH STUDENT

SEPT 2021 - SEPT 2023

- Used offline nonlinear trajectory optimization to plan gaits and whole body box-pickup manipulation behaviors for Digit from Agility Robotics in Drake.
- Trained RL control policies for Digit in MuJoCo to imitate motions from template behavior libraries.
- Created inverse dynamics and impedance controllers for humanoid robots with C++/Eigen and wrote Ctypes bindings to interface with Python to improve RL sampling rates over pure Python by 50%.
- Trained and deployed RL control policies on hardware to execute dynamic turning behaviors on the Cassie bipedal robot.
- Developed a inverse kinematics re-targeting algorithm to map animated character motion data to Digit.

VICARIOUS SURGICAL | ROBOTICS SOFTWARE INTERN

JUNE 2022 - DEC 2022

- Developed simulation stack foundation for the Vicarious Surgical robot in Drake with C++ and ROS2 integration.
- Designed QP-based IK controllers to enable virtual teleoperation with new simulation stack.
- Implemented a ROS2 node for recording robot simulation data in Gazebo to rosbags.
- Refactored C++ codebase, improved test coverage, and debugged faulty tests breaking the CTCI pipeline.
- Led paper presentations on literature in robotics, simulation, and machine learning.

UPENN GRASP MODLAB | REU INTERN

JUNE 2019 - AUG 2019

- Modeled and simulated system dynamics of an underactuated, single motor micro aerial vehicle in Matlab.
- Created a Python 3D rendering pipeline with VPython for simulation visualization.

GUARDIAN AGRICULTURE | MECHANICAL ENGINEERING INTERN

MAY 2018 - AUG 2018

- Designed, assembled, and instrumented a custom propeller dynamometer for 250lb payload drones.
- Wrote dynamometer test software in Python to poll sensor data and enable real-time propeller RPM, thrust, current measurements and data-logging features.

PUBLICATIONS

“Dynamic Bipedal Maneuvers through Sim-to-Real Reinforcement Learning”, in 2022 IEEE-RAS International Conference on Humanoid Robots (Humanoids). **Fangzhou Yu**, Ryan Batke, Jeremy Dao, Kevin Green, Jonathan Hurst, Alan Fern

“Optimizing Bipedal Maneuvers of Single Rigid-Body Models for Reinforcement Learning”, in 2022 IEEE-RAS International Conference on Humanoid Robots (Humanoids).

Ryan Batke, **Fangzhou Yu**, Jeremy Dao, Jonathan Hurst, Ross L. Hatton, Alan Fern, and Kevin Green

SKILLS

Python, C++, Docker, ROS2, JAX, PyTorch, Drake, MuJoCo, Git

SERVICE AND TEACHING

2023 IROS Paper Reviewer, Community Contributor to Drake, TA for ME317 Intermediate Dynamics.