Eisuke Hirota

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EDUCATION

State University of New York at Binghamton, Binghamton, NY   *Expected May 2025*
Bachelor of Science in Computer Science   GPA: 3.6 / 4.0

RESEARCH EXPERIENCE

AIR Lab at SUNY Binghamton, Binghamton, NY   *February 2022 - present*
Undergraduate Research Assistant   Advisor: Shiqi Zhang
- Designed force estimator model using supervised learning that estimates external tug vectors on quadruped with up to 80% higher accuracy than the onboard accelerometer to deploy seeing-eye system to guide visually-impaired users [1]
- Applying lightweight YOLO models using Hugging Face for object detection to enable quadruped manipulation of objects in its surrounding environment in rearrangement task setting
- Assisted the addition of adding human knowledge, in the form of First-Order Logic, to Reinforcement Learning algorithms to boost robustness and sample-efficiency of a quadrupedal robot using PyTorch and IsaacGym

AI4CE Lab at New York University, New York, NY   *April 2022 - June 2023*
Undergraduate Research Assistant   Advisor: Chen Feng
- Developed novel RL algorithm with almost double the performance (52% success rate) of 7 state-of-the-art Reinforcement Learning (SOTA RL) baselines (on-average 28% success rate) using PyTorch [2]
- Redesigned an OpenGL-based simulation into a multi-processable PyBullet implementation using stablebaselines3 and h5py, speeding up data collection by 12x and more efficiently storing data
- Selected among 500 applicants to participate in the NYU Undergraduate Summer Research Program and completed virtual poster session [Webpage]

Google CS Research Mentorship Program, Remote   *September 2022 - December 2022*
Research Mentee   Mentor: Vincent Zhuang
- Formed community with other CS undergraduate students committed to research as well as connected with Google Researcher to establish mentor-mentee relationship and gain insight into developing novelty within robotics and learning domains

PUBLICATIONS

[1] David DeFazio, **Eisuke Hirota**, Shiqi Zhang. Seeing-Eye Quadruped Navigation with Force Responsive Locomotion Control. *Conference on Robot Learning, 2023.* [Webpage] [Paper]

[2] Wenyu Han, Haoran Wu, **Eisuke Hirota**, Alexander Gao, Lerrel Pinto, Ludovic Righetti, Chen Feng. Learning Simultaneous Navigation and Construction in Grid Worlds. *International Conference on Learning Representations, 2023.* [Webpage] [Paper]

TEACHING EXPERIENCE

SUNY Binghamton, Binghamton, NY   *August 2022 - May 2023*
Teaching Assistant   Professor: Quincy Loney
- Managed MATH 304: Linear Algebra and MATH 108: Algebra and Trigonometry for more than 100 students

TALKS / PRESENTATIONS

Inaugural SUNY AI Symposium Poster Session   *October 2023*
International Conference of Learning Representations 2023 Poster Session [Webpage]   *June 2023*

TECHNICAL SKILLS

Proficient in Python and its application in deep learning and robotics. I often use packages such as PyTorch, NumPy, PyBullet, IsaacGym, Hugging Face, and OpenCV. Regarding robots, I've mainly worked with the Unitree A1 quadrupedal robot.

AWARDS

State University of New York Research Foundation Award   *June 2023*
New York University Undergraduate Summer Research Program Award   *June 2022*