Irene Terpstra

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Education

Massachusetts Institute of Technology (MIT) **Cambridge, MA**

Candidate for Master of Engineering in Electrical Engineering and Computer Science, Expected June 2024

Concentration: Artificial Intelligence

Bachelor of Science in Electrical Engineering and Computer Science, June 2023 **GPA: 4.8**

Relevant Coursework

Cognitive Robotics, Quantitative Methods for Natural Language Processing, Computational Photography, Robotics Science and Systems, Artificial Intelligence, Unmanned Marine Vehicle Autonomy, Signal Processing, Introduction to Machine Learning

Experience

IBM-AI Watson Lab **Cambridge, MA**

Machine Learning Master's Student June 2023 – Present

- Developing a framework that uses large language models to guide a reinforcement learning algorithm to design electronic circuits.

MIT Seethapathni Motor Control Group **Cambridge, MA**

Undergraduate Research Assistant October 2022 – January 2023

- Developed simulation for a reinforcement learning algorithm to model locomotor adaption in novel walking environments.

Sea Machines Robotics **Boston, MA**

Autonomy Intern June 2022 - August 2022

- Wrote a collision detection algorithm using C++ in ROS2. The algorithm performed significantly faster than its predecessor and was designed to be modular.
- Implemented an RRT* path planner that could be incorporated into the existing autonomy stack.

Shell **Boston, MA**

Machine Learning Intern June 2021 - August 2021

- Designed a scalable program in Python that allowed the user to define and model energy trading in decentralized energy systems of any size and shape.
- Used Deep Q Reinforcement Learning to develop an optimal energy trading strategy for individual users and global agents using OpenAI Gym and Pytorch.

MIT Sea Grant **Cambridge, MA**

Undergraduate Research Assistant May 2020 - June 2021

- Developed strategies for heterogeneous sensor calibration to align the LIDAR, RADAR, and camera on an autonomous maritime surface vehicle in Python using OpenCV to improve the machine learning-based autonomous vehicle control.
- Designed and fabricated a handheld heavy metal detection device modeled on a shark's olfactory system that uses a microcontroller programmed in C++ to record electrochemical measurements with a biomimetic sensor.

MIT Media Lab Biomechatronics Project Group **Cambridge, MA**

Undergraduate Research Assistant September 2019 - May 2020

- Developed electronics to generate electrical signal patterns that stimulate AMI muscle pairs in a lower leg amputee to induce proprioception for a prosthetic through electrical stimulation of nerves.
- Successfully restored the feeling in the patient's leg with the electronics I designed.

Skills and Activities

- Fluent in Python, C++, R, Java, React, JavaScript, ROS, MOOS-IvP, Linux, Arduino, Git, Tensorflow.js
- Experience in Autonomy, Machine Learning, Computer Vision, Real-Time Sensor Processing, Frontend Development

MIT Driverless: Developing state estimation model for Indy Autonomous Challenge using SLAM, C++, and ROS

Projects: ML CV Explainability website - Robotic Fish - Sign Language Translator - Segway - AI Ballet Teacher