

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, Introduction to Algorithms

Experience

IBM-AI Watson Lab

Cambridge, MA

Machine Learning Intern

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