Irene Terpstra

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Education

Massachusetts Institute of Technology (MIT)   **Cambridge, MA**
Candidate for Bachelor of Science in Electrical Engineering and Computer Science, June 2023   **GPA: 4.8**
Relevant Coursework
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

MIT Seethapathi Motor Control Group   **Cambridge, MA**
Undergraduate Research Assistant   October 2022 - Present
- Developing 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.

Inspirit AI   **Remote Work**
Instructor   December 2020 - July 2021
- Taught fundamental AI concepts to high school students and guided them to build a socially impactful project in Python using Keras and TensorFlow.

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 feeling in the patient's leg with the electronics I designed.

Skills

- 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

Activities

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