

Irene Terpstra

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Education

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Master of Engineering in Computer Science, June 2024

GPA: 4.4

Bachelor of Science in Electrical Engineering and Computer Science, June 2023

GPA: 4.8

Concentration: Artificial Intelligence

Master's Thesis: Empowering Analog Integrated Circuit Design through Large Language Models and Reinforcement Learning

Relevant Coursework

Underactuated Robotics, Computational Sensorimotor Learning, Quantitative Methods for Natural Language Processing, Robotics Science and Systems, Artificial Intelligence, Unmanned Marine Vehicle Autonomy, Signals, Systems, & Inference, Signal Processing, Introduction to Machine Learning, Introduction to Algorithms

Experience

Themis AI

Cambridge, MA

Machine Learning Engineer Intern

July 2024 – Present

- Using uncertainty estimation to improve the real time performance of reinforcement learning algorithms for energy grid management and robotic manipulation.

MIT-IBM-AI Watson Lab

Cambridge, MA

Machine Learning Intern and Graduate Student

June 2023 – May 2024

- Developed the infrastructure to evaluate the application LLM's to the circuit design process.
- Built a framework to integrate LLMs as heuristic tools with existing optimization methods.
- Introduced a reinforcement learning model that incorporates the guidance of the LLM to optimize circuit parameters.

MIT Seethapathi Motor Control Group

Cambridge, MA

Undergraduate Research Assistant

October 2022 – January 2023

- Developing simulation for 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 feeling in the patient's leg with the electronics I designed.

Skills and Activities

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