

Catherine Rasgaitis

Machine Learning Engineering & Computational Neuroscience

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EDUCATION

University of Washington - Seattle

Bachelor of Science, Computer Science; Minor in Neural Engineering

Expected Graduation: June 2025

GPA: 3.7

EXPERIENCE

Research Fellow

Svoboda Lab @ Allen Institute for Neural Dynamics

Sep 2024 – Present

Seattle, WA

- Perform automated error detection in lightsheet microscopy volumes using computer vision methods.

Research Assistant

Noble Lab @ University of Washington

Oct 2023 – Present

Seattle, WA

- Develop the state-of-the-art TwinC model for predicting Hi-C contact maps for intra and interchromosomal loci.
- Interpret traditionally blackbox models using xAI methods to better understand predictions.

Research Assistant

Orsborn Lab @ University of Washington

Oct 2022 – Present

Seattle, WA

- Code and debug a tablet-based “target tracking task/game” for rhesus macaque subjects (monkeys).
- Supervise and train naive subjects to interact with tablet and learn task.
- Design and optimize machine-learning models to predict subjects’ future task performance from previous performance, task difficulty, enthusiasm, etc. Develop an algorithm for automatic changes to task difficulty.

VISIONS Oceanographer

Regional Cabled Array @ Ocean Observatories Initiative

Aug 2024

300 mi offshore of Newport, OR

- Work and live aboard the R/V Atlantis.
- Assist with underwater photography, logging biology, core sampling, and constructing water flow instruments.

Research Intern

Hou Lab @ Cold Spring Harbor Laboratory

Jun 2024 – Aug 2024

Cold Spring Harbor, NY

- Build Cheephys3D, a novel tool to generate three-dimensional models of facial muscles alongside subcortical neural recordings in mice. Also created a command line tool for synchronizing signals.
- Design a pair of autoregressive models to predict time series of (1) future neural states and (2) future facial muscular states of mice. Compare the models’ hidden state matrices using statistical shape analysis.
- Design a decoder model to directly predict geometric facial features from neural time series data.

Research Assistant

Makeability Lab @ University of Washington

Jan 2024 – Jun 2024

Seattle, WA

- Build EARLL, an embodied AR-based language-learning application to interface with the HoloLens2.
- Design depth estimation heuristics grab detection; run experiments for real-time image segmentation.

AI Intern

Deep Space Network (DSN) @ NASA Jet Propulsion Laboratory

Jun 2023 – Aug 2023

Pasadena, CA

- Leverage behavioral cloning and inverse reinforcement learning methods to automate the scheduling of mission communications on the DSN. Build gym to run tests and evaluate various RL architectures.
- Build a web scraper to extract data from mission wiki pages to interface with Meta’s LLaMA model. Conducted various experiments to query the LLM about mission requirements and ultimately augment inputs to RL model.

PROJECTS

70+ Hackathon Projects (2022 MLH Top 50 Hacker)

An app to predict natural disasters, an organizational app for food banks, a practice productivity app for musicians, a program that finds optimal species/locations to plant trees, a skin cancer classifier app, etc.

Personal Projects

Music generation from neural data, eye-controlled Arduino cars, biometric lie detector that shocks “liars”

Languages: Python, MATLAB, SQL, HTML/CSS/JavaScript, TypeScript, Java, C, C++

Additional: NumPy, SciPy, pandas, scikit-learn, TensorFlow, Keras, PyTorch, Optuna, wandb, RLib, nltk, matplotlib, seaborn, plotly, Flask