

# Catherine Rasgaitis

Biomedical Engineering PhD Student @ Johns Hopkins University  
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## EDUCATION

<b>Johns Hopkins University - Baltimore, MD</b> <i>Doctor of Philosophy (Ph.D.) in Biomedical Engineering</i>	<b>Aug 2025 - TBD</b>
<b>University of Washington - Seattle, WA</b> <i>Bachelor of Science in Computer Science; Minor in Neural Engineering</i> <i>President of Synaptech; Vice President of SPACE</i>	<b>Sep 2022 - Jun 2025</b> <b>GPA: 3.7</b>

## EXPERIENCE

<b>Rotation PhD Student</b> <i>Kanold Laboratory @ Johns Hopkins University</i>	<b>Aug 2025 – Present</b>
<ul style="list-style-type: none"><li>Analyze calcium imaging data to quantify neural response patterns during presentation of Shepard tone sequences (controlled auditory hallucinations) and probe tonotopic map function.</li><li>Perform cranial window surgeries and two photon imaging experiments</li></ul>	<i>Baltimore, MD</i>
<b>Research Fellow (SURFiN)</b> <i>Svoboda Lab @ Allen Institute for Neural Dynamics</i>	<b>Sep 2024 – Jun 2025</b>
<ul style="list-style-type: none"><li>Design and evaluate novel compression methods for light sheet microscopy volumes.</li></ul>	<i>Seattle, WA</i>
<b>Research Assistant</b> <i>Noble Lab @ University of Washington</i>	<b>Oct 2023 – Jun 2025</b>
<ul style="list-style-type: none"><li>Develop the state-of-the-art TwinC model for predicting Hi-C contact maps for intra and interchromosomal loci.</li><li>Interpret traditionally blackbox models using xAI methods to better understand predictions.</li></ul>	<i>Seattle, WA</i>
<b>Research Assistant</b> <i>Orsborn Lab @ University of Washington</i>	<b>Oct 2022 – Jun 2025</b>
<ul style="list-style-type: none"><li>Code and debug a tablet-based “target tracking task/game” for rhesus macaque subjects (monkeys).</li><li>Supervise and train naive subjects to interact with tablet and learn task.</li><li>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.</li></ul>	<i>Seattle, WA</i>
<b>Oceanographer</b> <i>Regional Cabled Array @ Ocean Observatories Initiative</i>	<b>Aug 2024 - Dec 2024</b>
<ul style="list-style-type: none"><li>Work and live aboard the R/V Atlantis during the VISIONS 2024 research expedition.</li><li>Assist with underwater photography, logging biology, core sampling, and constructing water flow instruments.</li><li>Use variational autoencoders to analyze and reconstruct whale calls from hydrophone recordings.</li></ul>	<i>300 mi offshore of Newport, OR</i>
<b>Research Intern</b> <i>Hou Lab @ Cold Spring Harbor Laboratory</i>	<b>Jun 2024 – Aug 2024</b>
<ul style="list-style-type: none"><li>Build Cheephys3D, a novel software tool to generate three-dimensional models of facial muscles alongside subcortical neural recordings in mice. Also created a command line tool for synchronizing signals.</li><li>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.</li><li>Design a decoder model to directly predict geometric facial features from neural time series data.</li></ul>	<i>Cold Spring Harbor, NY</i>
<b>Research Assistant</b> <i>Makeability Lab @ University of Washington</i>	<b>Jan 2024 – Jun 2024</b>
<ul style="list-style-type: none"><li>Build EARLI, an embodied AR-based language-learning app to interface with the HoloLens2. (Published in UIST)</li><li>Design depth estimation heuristics for grab detection; run experiments for real-time image segmentation.</li></ul>	<i>Seattle, WA</i>
<b>AI Intern</b> <i>Deep Space Network (DSN) @ NASA Jet Propulsion Laboratory</i>	<b>Jun 2023 – Aug 2023</b>
<ul style="list-style-type: none"><li>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.</li><li>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.</li></ul>	<i>Pasadena, CA</i>

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

Also familiar with embedded systems/microcontrollers, prototyping, and computer aided design.