

MIA ONODERA

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EDUCATION

University of Illinois Urbana–Champaign

August 2025 – PRESENT

Ph.D. in Electrical and Computer Engineering – Focus in Haptics and Human-Computer Interaction

Relevant Coursework: Computer Vision, Advanced Digital Signal Processing, Virtual Reality

University of Washington

September 2021 – June 2025

B.S. in Electrical and Computer Engineering – Focus in Machine Learning and Signal Processing

Technical GPA: 3.86; Dean's List 2022–2025; ECE 342 Grader; CS 122 TA; IEEE WIE Board Member

Relevant Coursework: Statistical Signal Processing, Machine Learning for Signal Processing

EXPERIENCE

Graduate Research Assistant | Advisor: Prof. Craig Shultz

August 2025 – PRESENT

Interactive Display Lab, University of Illinois Urbana–Champaign

- Prototyped a spinning-ring haptic interface for tactile interaction using **CAD (Fusion 360)**.
- Modeled and validated electroadhesive friction behavior to control interaction modes in a haptic interface.
- Improved adhesion strength and actuation stability by **45%** through oscilloscope-based characterization and optimization of high-voltage driving circuitry.
- Submitted a first-author manuscript to the **IEEE Haptics Symposium (2026)**.

Undergraduate Research Assistant | Advisor: Prof. Kim Ingraham

January 2023 – June 2025

Ingraham Lab, University of Washington

- Designed a feature extraction pipeline yielding **20-dimensional** interaction representations from noisy joystick-based control time-series data for power mobility systems.
- Trained and deployed a CNN-based inference system using **PyTorch** under class-imbalanced conditions to support developmental assessment and decision-making, achieving **86%** accuracy.
- Integrated the inference system into a web-based interactive visualization interface with a **React** frontend and **Node.js** backend, synchronized via **AWS S3** for data storage and logging.
- Met biweekly with pediatric clinicians to iteratively refine the interface design, and presented and demoed the mobility interface at **two** research symposiums.

NSF Funded Research Assistant | Advisor: Prof. Daqing Hou

May 2024 – September 2024

Hou Lab, Clarkson University

- Implemented, trained, and evaluated an RNN/LSTM-based keystroke authentication model using **TensorFlow** from prior literature, achieving **87%** accuracy on high-frequency temporal data.
- Analyzed learned temporal embeddings to identify interpretable and discriminative features, improving model transparency and reliability.
- Completed **high-performance computing** training in parallel programming and performance analysis.
- Awarded **Best Poster in Math, Computer Science, and Cybersecurity** at Clarkson University.

TECHNICAL SKILLS

Domains: Human-centered machine learning, computer vision, multimodal systems and interaction

Machine Learning: Deep learning (CNNs, RNNs/LSTMs), model interpretability, vision–language models

Tools & Frameworks: PyTorch, NumPy, Pandas, Git/GitHub, React, Node.js, CUDA, MPI, OpenMP

Programming Languages: Python, C/C++, MATLAB, Bash, HTML, CSS

PROJECTS

Geoguessr Pro: Urban Scene Recognition from Street-Level Imagery

2025

Graduate Computer Vision Project

- Curated a **6,000+** image dataset from the **Google Street View API**, designing automated quality filters using Laplacian variance, edge density, and horizon estimation.
- Built and benchmarked custom vision models in **PyTorch** against Hugging Face ResNet and CLIP baselines for scene classification, achieving up to **98%** accuracy and analyzing robustness across model variants.