

MIA CELENA ONODERA

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EDUCATION

University of Washington, Seattle

Expected Graduation June 2025

B.S. Electrical and Computer Engineering (ECE)

GPA: 3.72

RELEVANT COURSEWORK

Control System Analysis, University of Washington Autumn 2024

- Studied techniques for representing, analyzing, and designing feedback control systems.
- Examined system stability, sensitivity, and noise rejection properties using analytical and simulation methods.

Machine Learning for Signal Processing, University of Washington Spring 2024

- Designed and implemented a human detection algorithm using sequences of images or video frames.
- Developed machine learning models, including CNNs and transformer-based architectures, for visual object detection and tracking.

Digital Signals and Filtering, University of Washington Winter 2024

- Created a noise-canceling digital filter to improve signal clarity in practical applications.
- Explored FIR, IIR, and adaptive filtering techniques for robust digital signal processing.

RESEARCH EXPERIENCE

Ingraham Lab, University of Washington

January 2024 - Present

Advisor: Dr. Kim Ingraham

Project 1: Predictive Modeling of Motor Proficiency in Children Using Sensor Data from Mobility Devices

- Conducting feature engineering to optimize parameter selection using linear correlation and regression analysis through MATLAB and Python.
- Evaluating various machine learning classification models using an 80/20 training validation split, targeting robust performance despite a small dataset, achieving 50% accuracy.
- Collaborating with clinicians to ensure the diagnostic interface aligns with medical workflows.

Software Engineering Research Laboratory (SERL), Clarkson University May - September 2024

Advisor: Dr. Daqing Hou

Mentor: Charles Devlen

Project 1: Characterizing Decision Characteristics from TypeNet Models

- Developed a deep learning model from scratch using Python for keystroke authentication.
- Ran model trials to evaluate the importance of specific input features.
- Performed output embedding analysis to evaluate significance of control vs letter keys.

Nance Lab, University of Washington

January 2020 – December 2023

Advisor: Dr. Elizabeth Nance

Mentors: Dr. Hawley Helmbrecht, Nels Schimek

Project 1: Analyzing Effects of Cerebral Ischemia

- Applied AI-driven tools (VAMPIRE and Skan) to quantify morphological changes in microglia.
- Studied the correlation between morphology and ischemic severity.

- Contributed to the development of large-scale microglia morphology datasets.

Project 2: Cross Species Quantitative Microglia Branching Analysis

- Processed thousands of images through utilizing VAMPIRE and Skan for quantitative shape and branching analysis.
- Visualized and analyzed results using GraphPad to assess statistical significance.
- Awarded the Mary Gates Research Scholarship in Autumn 2022.

Project 3: VAMPIRE Preprocessing Package

- Automated repetitive tasks, accelerating the VAMPIRE pipeline by 80% through Python.
- Ensured seamless integration with VAMPIRE tools while optimizing for large scale data.
- Developed a user-friendly Github package for researchers, designed to simplify the preprocessing workflow for those with limited computational experience.

PRESENTATIONS

Onodera, Mia., Devlen C., Hou, D. (November 2024). Characterizing Decision Characteristics from TypeNet Models Using the Clarkson II Keystroke Dataset. Poster presentation given at the 2024 ECE Gulf Undergraduate Research Symposium at Rice University, Houston, TX.

Onodera, Mia., Devlen C., Hou, D. (July 2024). Characterizing Decision Characteristics from TypeNet Models Using the Clarkson II Keystroke Dataset. Presentation given at the 2024 Research and Project Showcase at Clarkson University, Potsdam, NY.

Onodera, Mia. (November 2024). Cross Species Quantitative Microglia Branching Analysis. Advised by Dr. Elizabeth Nance and Hawley Helmbrecht. Presentation given at the Neuroengineering 2023 Gulf Undergraduate Research Symposium at Rice University, Houston, TX.

Onodera, Mia. (May 2024). Cross Species Quantitative Microglia Branching Analysis. Advised by Dr. Elizabeth Nance and Hawley Helmbrecht. Presentation given at the 2023 Undergraduate Research Symposium at the University of Washington, Seattle, WA.

PUBLICATIONS

Onodera, Mia., Devlen C., Hou, D. (2024). Interpreting Deep-Learning Models: An Exploratory Study with TypeNet for Keystroke Dynamics. In preparation.

EMPLOYMENT & LEADERSHIP EXPERIENCE

Human Powered Submarine, Safety Lead / Mentor January 2021 - Present
Student-run organization within UW Mechanical Engineering that competes annually to design, build, and operate a one-person flooded submersible powered by a bike-driven system.

- Developed a pneumatic and electric fail-safe safety system using Arduinos and pistons.
- Led an 8-person safety team, securing 2nd place in a competition in Washington, D.C.
- Mentored female team members, contributing to a legacy of female leadership with two consecutive female safety leads.

CSE 12X Intro Java Series, Grading Lead / Teaching Assistant January 2023 – Present

- Oversee grading for a high-enrollment course (600+ students per quarter), ensuring consistency and fairness through the development of clear grading criteria and rubrics.
- Design and implement assignments that support diverse learning styles.
- Lead smaller classes (up to 30 students), providing hands-on coding sessions.

EE 342 Signals, Systems, and Data II, Grader October 2024 - Present

- Grade homework, labs, and exams for a class for 30 students, ensuring consistent feedback.

Lawrence Berkeley National Laboratory (LBNL), Facilities Intern May - August 2023

- Automated the mapping of MicroSTARS to building layouts using python, reducing engineers' workload by 90%, and presented the project at LBNL's research symposium.

- Gained hands-on experience with HVAC systems, including reading schematics, defining requirements, and using tools such as AutoCAD.

SERVICE & OUTREACH

IEEE Women in Engineering UW Seattle Branch, Corporate Relations. October 2024 – Present

- Serve as the primary liaison between WIE and industry representatives, including Apple, Stryker, and Microsoft, fostering relationships that lead to valuable partnership opportunities.
- Plan, coordinate, and promote events that connect members with industry professionals, enhancing career development and mentorship opportunities.

Bridge Disability Ministries, Spiritual Connections Volunteer January 2018 – January 2024

- Coordinated a team of volunteers to serve 60-100 people of diverse abilities during events focused on reducing social isolation.
- Organized feeding and transportation services, ensuring accessibility for all attendees.

Promoting Equity in Engineering Relationships (PEERs), PEERs Leader January - June 2022

- Represented the College of Engineering as a student leader, advocating for equity initiatives.
- Facilitated discussions on race, identity, and systematic barriers in engineering.
- Assisted in developing frameworks for reporting and addressing equity and inclusion concerns.

HONORS AND AWARDS

Best Poster in Math, Computer Science, and Cybersecurity, Clarkson University (2024)

Gulf Undergraduate Coast Symposium Travel Award, Rice University (2024)

Lee Prock Endowed Scholarship, UW Electrical and Computer Engineering (2024)

Arthur Burman Winter Endowed Scholarship, UW Electrical and Computer Engineering (2024)

Gulf Undergraduate Coast Symposium Travel Award, Rice University (2023)

Mary Gates Research Scholarship, University of Washington (2023)

Olga and James McEwing Endowed Scholarship, UW College of Engineering (2021-2022)

Blue Ribbon Scholarship, Washington State Fair Foundation (2021)

Husky Promise, UW Financial Aid (2021-2025)

SKILLS

Software: Python, Java, C/C++, HTML, Bash, MATLAB, Pytorch, Solidworks, KiCad, AutoCAD, LTSpice, GraphPad, Git/Github, Microsoft Office, Google Suite

Lab: Arduino, Raspberry Pi, PCBs, FPGA, EMG, EEG, IMUs, Machine Shop Tools, 3D Printing

REFERENCES

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