

Ishika Kanakath

✉ ikanak@uw.edu

EDUCATION

University of Washington <i>PhD in Electrical and Computer Engineering — Neural Control Lab (Prof. Sam Burden)</i>	2025 – Present Seattle, WA
Case Western Reserve University <i>MS in Computer Engineering, 3.9 GPA — Master's Project: NASA-funded WAAM laser scanner</i>	2024 – 2025 Cleveland, OH
Case Western Reserve University <i>BS in Computer Engineering, 3.5 GPA — Senior Project: RADAR velocity measurement device</i>	2021 – 2024 Cleveland, OH

RESEARCH EXPERIENCE

Neural Control Lab, University of Washington <i>Graduate Research Assistant, Advisor: Prof. Sam Burden</i>	Jan. 2025 – Present Seattle, WA
<ul style="list-style-type: none">• Designing an adaptive co-learning protocol for EMG-controlled cursor interfaces that dynamically adjusts decoder learning rate (α) based on real-time task error, gaze distance, and feedforward error; applying game-theoretic frameworks to model the human–decoder interaction as a two-agent dynamical system.• Implementing a 9-condition experimental framework (6 adaptive + 3 fixed baselines) with multi-modal data collection (EMG, eye tracking, cursor kinematics at 60 Hz) to test whether signal-quality-driven adaptation outperforms static parameter selection.• Analyzing equilibrium and convergence properties of the co-adaptive loop to identify conditions under which adaptive α yields stable, improved performance.	

Material Science & Engineering Dept., Case Western Reserve University <i>Research Intern — NASA-Funded WAAM Project</i>	2023 – 2025 Cleveland, OH
<ul style="list-style-type: none">• Integrated laser and temperature sensors for real-time layer scanning in Wire Arc Additive Manufacturing, improving print accuracy through closed-loop feedback control.• Engineered custom G-code generation with post-processing scripts integrated with Ultimaker Cura for Duet 3D controller boards.	

Neural Engineering Center, Case Western Reserve University <i>Research Intern</i>	2022 – 2023 Cleveland, OH
<ul style="list-style-type: none">• Developed MATLAB algorithms to analyze temporal relationships between neural stimulation and cognitive responses in upper-limb amputees for neuroprosthetic sensory feedback.• Fabricated and tested neural interface electronics (PCB assembly, stimulation circuit validation) for a multi-I/O Universal Electronic Control Unit used in proprioceptive touch research.	

INDUSTRY EXPERIENCE

MACOM <i>Digital Circuit & DSP Intern</i>	2025 CA
<ul style="list-style-type: none">• Working on digital circuit design and signal processing leveraging skills in computer architecture, VLSI, Verilog, and DSP.	
Cadence Design Systems <i>Application Engineering Intern</i>	Summer 2023 San Jose, CA
<ul style="list-style-type: none">• Performed RTL-to-post-route implementation of a Sous Vide chip migrated from GPDK45 to SKY130 using Genus (synthesis) and Innovus (place & route, static timing analysis).	
Experian <i>Software Engineering Intern / Technical Contractor</i>	2022, 2025 Costa Mesa, CA

- Designed hardware-software interfaces; built applications using generative AI, AWS (S3, EC2), data analytics, and microservices in an agile environment.

STARTUP

SafeVibes — Co-Founder

2024 – Present

Haptic Safety Wearable Startup

Seattle, WA

- Co-founded a startup developing a wearable haptic device and mobile app that translates ultrasonic proximity data into intuitive vibration patterns, enhancing situational awareness in high-risk work zones and for individuals with hearing impairments.
- Built the Guardian wearable prototype (vibration motors, Bluetooth, embedded electronics); semifinalist in the UW Hollomon Health Innovation Challenge; pursuing patent and pilot partnerships.

TEACHING EXPERIENCE

Co-Instructor / TA — EE 543: Models of Robot Manipulation

Jan. 2026 – Present

University of Washington, ECE Department

Seattle, WA

- Co-instruct an upper-division/graduate robotics course covering spatial transforms, forward/inverse kinematics, the Jacobian, dynamics, and motion planning; prepare exams, lead review sessions, grade assignments, and provide project and lab assistance.

Teaching Assistant — EE 271: Digital Circuits and Systems

Aug. 2024 – Present

University of Washington, ECE Department

Seattle, WA

- Run weekly lab sessions, hold office hours, and grade lab reports and demonstrations for an undergraduate digital logic course.

Teaching Assistant — Digital Logic Lab, ECSE Department

2024

Case Western Reserve University

Cleveland, OH

- Organized lab kits, demoed assignments, held office hours, and graded lab reports and experiment demonstrations.

Peer Tutor

2024

Case Western Reserve University

Cleveland, OH

- Tutored students in Thermodynamics, Multivariable Calculus, Statistics, Strength of Materials, and Chemistry of Materials.

HONORS & AWARDS

SOURCE STEM Scholarship (2024) | Robert L. Shurter Prize (2024) | Jerry P. Lind Prize (2024–2025) | ISAAC Scholarship (2024–2025) | Dean's Honors List, 5 semesters (2021–2024) | University Merit Scholarship (2021–2025)

SKILLS

Languages: Python, MATLAB, Verilog, VHDL, SystemVerilog, Java, C, TCL, MIPS

Tools & Frameworks: ROS, CUDA, Genus, Innovus, ModelSim, KiCad, Xcelium, Git, AWS, Linux/Unix

Domains: Digital VLSI Design, Signal Processing, Neural Interfaces, Embedded Systems, FPGA, Haptics