Amber Hsiao-Yang Chou

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Education

University of Washington, Seattle — Seattle, WA
Ph.D. in Electrical and Computer Engineering | Advisor: Samuel A. Burden — *Sep. 2020 – Expected Jun. 2026*
Concentration: Human-Machine Interaction, Neuroengineering
Thesis: Modeling human-machine interaction to enhance adaptive multimodal neuromotor interfaces

University of California, Davis — Davis, CA
M.S. in Biological Systems Engineering | Advisor: Farzaneh Khorsandi — *Sep. 2018 – Sep. 2020*
Thesis: Develop an Autonomous All-Terrain Vehicle for Rollover Simulation

University of California, Davis — Davis, CA
B.S. with honors in Biological Systems Engineering — *Aug. 2014 – Sep. 2018*

Highlighted Publications

3 **Chou A. H.Y.**, Li S.J., Madduri M., Christensen A., Hutchison F., Burden S. A., Orsborn A. L. Using Eye Gaze to Train an Adaptive Myoelectric Interface. *Under review*. | bioRxiv | video demo

2 **Chou A. H.Y.**, Yamagami M., Burden S. A. Evaluating a Human/Machine Interface with Redundant Motor Modalities for Trajectory-Tracking. *IFAC-PapersOnLine*, 55(41), pp.125-130. 2022. | Link

1 **Chou, H. Y.**, Khorsandi, F., Vougioukas, S. G., Fathallah, F. A. Developing and evaluating an autonomous agricultural all-terrain vehicle for field experimental rollover simulations. *Computers and Electronics in Agriculture*. 2022. | Link

Highlighted Teaching & Leadership

3 **Lead Teaching Assistant** | *Spring 2025 - Present*
Mentor and train 70+ ECE department's teaching assistants (TAs) each quarter on effective teaching methods.

2 **Co-instructor of "Evolution in Action – Biotech and Human-AI Interaction"** | *Spring 2025*
Designed and developed a new interdisciplinary topics course at UW Biology for senior undergraduate students.

1 **Co-Chair of WomXn at the Forefront of ECE Research (WAFER) Conference** | *Fall 2023*, *Spring 2025*
Initiated and organized 2 conferences with 100+ attendees, highlighting ECE research by underrepresented groups.

Honors & Awards

Asian Dean's Forum The Rising Stars Women in Engineering Workshop (shortlisted fellow)	*Nov. 2025*
ECE Department Heads Association (ECEDHA) iRedefine Fellow	*Mar. 2025*
UW ECE Chair's Award for Outstanding Collaboration and Teamwork	*May 2024*
UW The Weill Neurohub & CoNECT Student Travel Award	*Feb. 2024*
UW Graduate & Professional Student Senate (GPSS) Travel Award	*Feb. 2024*
Amazon Elevate Fellowship Funds ($10,000 award, 3 awardees)	*Dec. 2023*
UW NeuroTechnology, Engineering & Computing International Travel Award	*Apr. 2023*
UW ECE DEI Travel Award	*Apr. 2023*
NSF Disability and Rehabilitation Engineering (DARE) Fellow [P2]	*Mar. 2023*
UC Davis Peter J. Shields and Henry A. Jastro Research Award	*2019-2020*
UC Davis Bio and Ag Engineering Graduate Student Researcher Fellowship	*2018-2020*
UC Davis Jastro-Shields Travel Award	*Apr. 2018*
Robert Roy Owen Scholarship & Howard R. Murphy Scholarship	*2017-2018*
UC Davis Dean's Honor List in College of Engineering	*2015*, *16*, *18*

Journal Publications

P6. **Chou A. H.Y.**, Yamagami M., Burden S. A. Modeling Sensorimotor Coordination in Multimodal Human-Machine Interaction. *In preparation*.

P5. Li S.J., Madduri M., **Chou A. H.Y.**, Burden S. A., Orsborn A. L. Influencing Task Performance in Novel Hybrid Myoelectric Interfaces Through Decoder Adaptation. *In preparation*.

P4. **Chou A. H.Y.**, Li S.J., Madduri M., Christensen A., Hutchison F., Burden S. A., Orsborn A. L. Using Eye Gaze to Train an Adaptive Myoelectric Interface. *Under review*. | bioRxiv | video demo

P3. Yamagami M., Madduri M., Chasnov B., **Chou A. H.Y.**, Peterson L. N., Burden S. A. Co-adaptation improves performance in a dynamic human-machine interface. *Under review*. | bioRxiv

P2. Cashaback J. G.A., Allen J. L., **Chou A. H.Y.**, Lin D. J., Mangalam M., Price M. A., Secerovic N. K., Song S., Zhang H., Miller H. L. NSF DARE—transforming modeling in neurorehabilitation: a patient-in-the-loop framework. *Journal of Neuroengineering and Rehabilitation*. 2024. | Link

P1. **Chou, H. Y.**, Khorsandi, F., Vougioukas, S. G., Fathallah, F. A. Developing and evaluating an autonomous agricultural all-terrain vehicle for field experimental rollover simulations. *Computers and Electronics in Agriculture*. 2022. (Vol.194, p. 106735). | Link

Conference Proceedings & Abstracts

C8. **Chou A. H.Y.**, Burden S. A., Orsborn A. L. Using Gaze to Train a Closed-loop Adaptive Neuromotor Interface for Diverse Tasks. *IEEE-EMBS International Conference on Body Sensor Networks (BSN). November 2025*.

C7. Hutchison L., **Chou A. H.Y.**, Burden S. A. Modeling Human Control in Multimodal Human-Machine Interaction. *IEEE Engineering in Medicine and Biology Society (EMBC). July 2025*.

C6. **Chou A. H.Y.**, Madduri M., Li S.J., Burckhardt S., Christensen A., Hutchison F., Orsborn A. L., Burden S. A. Design principles for co-adaptive, multimodal interfaces. *ACM SIGCHI '24: Human-Factors in Computer Systems, PhysioCHI Workshop: Towards Best Practices for Integrating Physiological Signals in HCI*. May 2024.

C5. Pfister A., Madduri M., **Chou A. H.Y.**, Burden S. A. Matching User and Machine Learning Rates in Co-Adaptive Closed-Loop Myoelectric Interfaces. *IEEE Conference on Neural Engineering and Rehabilitation (NER). April 2023*.

C4. Peterson L. N., **Chou A. H.Y.**, Burden S. A., Yamagami M. Assessing Human Feedback Parameters for Disturbance-Rejection. *IFAC-PapersOnLine*, 55(41), pp.1-6. 2022. | Link

C3. **Chou A. H.Y.**, Yamagami M., Burden S. A. Evaluating a Human/Machine Interface with Redundant Motor Modalities for Trajectory-Tracking. *IFAC-PapersOnLine*, 55(41), pp.125-130. 2022. | Link

C2. **Chou H. Y.**, Khorsandi F. Developing and Testing a GPS-Based Steering Control System for an Autonomous All-Terrain Vehicle. *ASABE Annual Conference 2020*. | Link

C1. **Chou H. Y.**, Khorsandi F. Developing and Testing an Autonomous All-Terrain Vehicle to Experimentally Test Rollover Incidents. *ASABE Annual Conference 2019*. | Link

Research Experiences

Graduate Student Researcher | **BioRobotics Lab** Seattle, WA | *Sep. 2020 - Present*

- Designed and programmed interfaces integrating multi-channel surface EMG and eye-tracking signals in real-time, capable of adapting to individuals across diverse computer tasks such as tracking, pointing, and drawing [P4, C6].
- Designed and conducted three human-subject experiments for modeling users in multimodal interfaces [P6, P4, P3].
- Enhanced closed-loop human-machine interactions using game theory and machine learning algorithms [P4, P3, C5].
- Mentored undergraduates to conduct independent research and assisted in conference publications [C7, C5, C4].
- Served as a scrum master in collaborative projects, designing interfaces that integrate haptic devices, gesture recognition technology, and a motion capture system with agile processes and rapid sprints.
- Assited in designing and synthesizing a multibehavioral legged robot using theory from multi-objective optimization.

Graduate Student Researcher | **Machine Systems Lab** Davis, CA | *May 2018 – Sep. 2020*

- Developed and tested a navigation and steering system for the autonomous All-terrain Vehicle (ATV) based on GPS and image processing using Robotic Operation System (ROS) and OpenCV [P1, C1, C2].
- Conducted outdoor field tests to evaluate the autonomous ATV and its safety systems.
- Collaborated on 3 projects including the development of the first ATV safety test station in the US, evaluating ATV safety for kids, and designing a chemical spraying system for orchards to improve safety for farmers.

Teaching

Lead Teaching Assistant Seattle, WA | *Spring 2025 - Present*

- Mentor and provide training for 70+ ECE department's teaching assistants (TAs) each quarter.
- Lead workshops and advise TAs on teaching methods and course delivery.

Evolution in Action - Biotech and Human-AI Interaction | **Co-instructor** Seattle, WA | *Spring 2025*

- Received training on pedagogical approaches and active learning strategies for effective teaching.
- Designed and developed a new undergraduate seminar course at UW Biology with 2 other PhD students.

Neuroengineering Tech Studio | **Teaching Assistant** Seattle, WA | *Spring 2025*

- Assisted students' capstone projects on various wearables (eye tracking, EMG, and EEG) and hardware designs.

Sex, Gender, and Engineering | **Teaching Assistant** Seattle, WA | *Fall 2024*

- Provided feedback to students' research papers and homework for 30+ undergraduate students.

Teaching Engineering | **Teaching Assistant** Seattle, WA | *Spring 2024*

- Graded homework and class project for 45+ undergraduate students.
- Taught a short teaching demo about presentation skills.

Engineering Design and Communication | **Teaching Assistant** Davis, CA | *Fall 2019*

- Led undergraduate engineering design and communication labs and studios.
- Assisted in organizing undergraduate research showcase for 100+ undergraduate students.

Engineering Economics | **Teaching Assistant** Davis, CA | *Winter 2019, 2020*

- Assisted in teaching undergraduate engineering economics class with 80+ students.
- Led office hours and guided students' class projects.

Classical Physics | **Lab Teaching Assistant** Davis, CA | *Spring 2019*

- Taught 4 undergraduate physics labs with a total of 80+ students.

Leadership & Services

Co-Chair, WomXn at the Forefront of ECE Research (WAFER) Conference | **Link** *Fall 2023, Spring 2025*

- Initiated, organized, and moderated full-day conference with 100+ attendees – including faculty, students, and industry partners – highlighting research conducted by underrepresented groups.
- Invited speakers including faculty and industry leaders from Amazon, Boeing, Impinj, Meta, Microsoft, and Stryker.

Reviewer, Springer Book Proposal *Dec 2024*

- Reviewed a book proposal, *Bridging the Gap Between Mind and Machine*, and provided expert opinions and evaluations for *Springer Cellular and Molecular Bioengineering (CMBE)*.

K12 Outreach, UW Engineering Discovery Days *May 2024*

- Presented EMG-controlled devices and organized hands-on activities for 4th through 8th-grade students.
- Mentored three undergraduate students in making a poster and facilitating interactive activities.

Student Representative, ECE Faculty Search Committee *Winter - Spring 2024*

- Organized and facilitated student meetings with 10 faculty candidates.
- Attended search committee meetings and provided collected feedback from attendees.

Organizing Member, UW ECE Graduate Student Coffee Chat *Fall 2023 - Spring 2024*

- Organizing monthly graduate student coffee chats for networking and community building.

Seminar Host, DUB (Design, Use, Build) | **Link** *Spring 2023 - Winter 2024*

- Hosted and moderated the bi-weekly DUB seminars with 100+ attendees from the HCI community.

Conference Moderator, NSF Disability and Rehabilitation Engineering (DARE) | **Link** *Mar. 2023*

- Moderated conference presentations and took notes as an NSF DARE fellow.

Mentor, UW ECE Graduate Application Support Program *Fall 2021, Fall 2022*

- Mentored six undergraduate students and provided feedback on their graduate school applications.

Internship

Sensor Engineering Intern | **TacSense Inc.** Woodland, CA | *Feb. 2016 – June 2018*

- Integrated and tested pressure sensors into wearable products and assisted in prototyping for medical applications.
- Troubleshooted production issues in two research projects including fluid pressure and material strength analysis.
- Developed CAD designs for demonstration, documentation, and rapid prototyping.
- Skilled interpersonal communicator in both one-on-one and group settings.

Mentorship

Ishika Krishnan Kanakath, *UW ECE PhD*	*Fall 2025 - Present*
Emmy Chow, *UW ECE PhD*	*Fall 2023 - Present*
Liya Hutchison, *UW informatics undergraduate*	*Winter 2023 - Summer 2025*
Victoria Pierce, *UW ECE PhD*	*Fall 2023 - Spring 2024*
Andrew Christensen, *UW HCDE undergraduate*	*Spring 2023 - Spring 2024*
Annika Pfister, *Wellesley Neuroscience, now PhD student at UW ECE*	*Summer 2022*
Lauren Peterson, *UW ECE undergraduate, now PhD student at Rice*	*Winter - Spring 2021*
Alexis Blakes, *UW Center for Neurotechnology Research REU student*	*Summer 2021*

Oral Presentations

- Invited talk, Teaching@UW: Strategies for TAs panel *Sep. 2025*
- Lightning talks, UW ECE Research Showcase *Mar. 2023 & 2024*
- UW Elevate program partnership with Amazon Robotics *Feb. 2024*
  Personalized Multimodal Human-Machine Interfaces
- IFAC Workshop on Cyber-Physical Human System (CPHS) *Dec. 2022*
  Evaluating a Human/Machine Interface with Redundant Motor Modalities for Trajectory-Tracking
- American Society of Agricultural and Biological Engineers (ASABE) *July 2019 & 2020*
  Developing and Testing an Autonomous All-Terrain Vehicle to Experimentally Test Rollover Incidents

Poster Presentations

- UW ECE Research Showcase *Mar. 2023, 2024, & 2025*
- Neural Control of Movement (NCM) *Apr. 2024*
  Enhancing Co-Adaptive Myoelectric Interfaces with Eye Tracking
- UW Center for Neurotechnology, Women in NeuroAI *Feb. 2024*
  Using Eye Tracking to Train Adaptive Myoelectric Interfaces
- Neural Control of Movement (NCM) *Apr. 2023*
  Uncontrolled manifold emerges from coordinated feedback in human-machine interaction
- NSF Disability and Rehabilitation Engineering (DARE) *Mar. 2023*
  Uncontrolled manifold emerges from coordinated feedback in human-machine interaction
- UW WomXn at the Forefront of ECE Research (WAFER) *Dec. 2021*
  Optimally Combine Sensorimotor Pathways in Human-Machine Task with Multiple Sensory Modalities
- American Society of Agricultural and Biological Engineers (ASABE) *July 2020*
  Developing and Testing a GPS-Based Steering Control System for an Autonomous All-Terrain Vehicle
- American Society of Agricultural and Biological Engineers (ASABE) CA-NV Section meeting *Feb. 2020*
- International Society for Agricultural Safety and Health (ISASH) *June 2019*
  Developing an Autonomous All-Terrain Vehicle to Evaluate Performance of Crush Protection Devices
- UC Davis Engineering Senior Design Showcase *June 2018*
  Semi-autonomous temperature monitoring system of large-scale poultry compost windrows

Skills & Coursework

Technical Skills: Experimental Design, Problem Identification and Formulation, Data Analysis, Scientific Writing
Soft Skills: Project Management, Problem-solving, Collaboration, Mentoring
Programming languages: Python, Matlab
Software & Tools: ROS, OpenCV, PyTorch, Arduino, Raspberry Pi, Labgraph (Meta), SolidWorks, LaTeX, jupyter, matplotlib
Operating Systems: Microsoft Windows, macOS, Linux
Relevant Coursework: Control Theory, Game Theory, Machine Learning, Computer Vision, Robotics, Statistics, Probability, Signal Processing, Data Analysis, Neural Engineering, Deep Learning for Neuroscience

References

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