Alexander Ching

PhD Graduate Student Researcher and Engineer

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Education

University of Washington *Seattle, WA*

PhD (Post-Quals) in Computer Science and Engineering *Expected 2026*

- My research is a mix of personal sensing, wearable hardware, and applied machine learning with a focus on health
- Advised by Dr. Shwetak Patel, Ubiquitious Computing Lab

University of Washington *Seattle, WA*

MS in Computer Science and Engineering *2023*

- Pre-Hypertension Detection via Finger Photoplethysmography
- Advisied by Dr. Shwetak Patel and Dr. Luis Ceze

University of Washington *Seattle, WA*

BS in Electrical Engineering, BS in Mechanical Engineering *2014*

- NASA Microgravity University 2012, 2014
- Human Powered Submarine Team

Professional Experience

Meta Reality Labs Research *Redmond, WA*

Senior Electrical Engineer - Displays Systems Research Group *Jan 2022 - Oct 2023*

- EE design for prototype VR headsets, perception systems, and mixed reality passthrough applications.
- Worked with MIPI CPHY displays, DPHY cameras, FPGA based camera aggregation, systems architecture design.
- Lead EE on Flamera, SIGGRAPH 2023 Emerging Technologies Best in Show Award Winner.

Microsoft *Redmond, WA*

Electrical Engineer II - Mixed Reality *Dec. 2019 - Jan 2022*

- EE lead for Augmented/Virtual reality controllers to be used with future Mixed Reality devices.
- AR/VR hardware concept prototyping for both production and in collaborations with research teams.
- Worked with overseas contract vendors for larger design programs.

Magic Leap *Seattle, WA*

Lead Research Engineer - Advanced Technologies *Oct. 2016 - May 2019*

- Led electrical and systems architecture design for next generation augmented reality prototypes.
- Worked directly on full cycle EE develop from schematics to final systems integration of varoius camera and display systems.
- Managed internal collaborations external engineering contractors, and third-party vendors/suppliers.

Microsoft Research *Redmond, WA*

Electrical Engineer - Hardware Lab *Jan. 2015 - Oct. 2016*

- Lead hardware engineer for Project Premonition, a robotic insect trap for tracking infectious diseases. US Patent 10966420.
- Electrical and Mechanical design and prototyping in partnership with MSR researchers working on VR/AR, Robotics, HCI, Cyber-physical Systems, Audio, Healthcare, Sensing, Embedded Systems, etc.
- Developed programs from concept to prototype ranging from single day rush to multi-year projects.

Valve *Bellevue, WA*

Hardware Engineer Contractor - VR Team *Mar. 2014 - Jan. 2015*

- Hardware prototyping of electrical and mechanical systems for development of VR tracking systems.
- Designed electro-mechanical device for longevity testing of the Steam controller.
- Helped build the original batch of lighthouse base stations.

NASA Ames Research Center, Intellectual Ventures Lab, Cisco Systems, Ball Aerospace *Various*

Engineering Undergraduate Internships/Co-Ops

Research Experience

University of Washington - CSE *Seattle, WA*

Advisor: Shwetak Patel *Oct 2023 - present*

- **Tuberculosis Classification via Wearable Audio** (Ongoing): Tuberculosis is the most deadly infectious disease in the world and being able to diagnose TB is a useful tool for healthcare professionals. We are working on a pipeline to classify TB based on coughs obtained from a wearable audio recorder to allow for real time classification in noisy environments.
- **Ventriculoperitoneal Shunt failure detection** (Ongoing): VP shunts are used for hydrocephalus treatment, but often fail at some point due to blockages. We are looking at ways to non-invasively detect these failures.
- **Hardware Designs Interaction Projects**(Ongoing): I am working on various wearable form factor hardware for other projects in the lab including flex pcb and mechanical design.

Teaching Experience

AUT 2022	**CSE 475 - Embedded Systems Capstone**, Graduate Teaching Assistant
AUT 2023	**CSE 475 - Embedded Systems Capstone**, Graduate Teaching Assistant
WIN 2024	**CSE 461 - Computer Networking**, Graduate Teaching Assistant
SPR 2024	**CSE 474 - Introduction to Embedded Systems**, Graduate Teaching Assistant
AUT 2024	**CSE 475 - Embedded Systems Capstone**, Graduate Teaching Assistant

Publications

Grace Kuo, Eric Penner, Seth Moczydlowski, **Alexander Ching**, Douglas Lanman, and Nathan Matsuda. 2023. Perspective-Correct VR Passthrough Without Reprojection. In ACM SIGGRAPH 2023 Conference Proceedings (SIGGRAPH '23). Association for Computing Machinery, New York, NY, USA, Article 15, 1–9. `https://doi.org/10.1145/3588432.3591534`.

Patents

Microsoft Research *Redmond, WA*

Electrical Engineer

- Insect Trap, US 10966420 - Issued Apr 6, 2021 US

Meta Reality Labs Research *Redmond, WA*

Electrical Engineer

- Perspective-Correct Passthrough Architectures for Head-Mounted Displays, Application 18/420,349 - Applied Jan 23, 2024 US