

Yujia (Nancy) Liu | Curriculum Vitae

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I am a PhD student in Electrical and Computer Engineering at University of California, San Diego. My research lies at the intersection of embedded system and machine learning, with an emphasis in wearable sensing, health, and on-device Machine learning. I am specifically interested in developing intelligent end-to-end systems to provide ubiquitous assistants to human beings.

EDUCATION

University of California, San Diego

September 2023 - Present

PhD in *Electrical and Computer Engineering*

Advisor: Prof. Edward Wang

September 2020 - June 2023

University of Washington, Seattle

M.S. Thesis Degree in *Electrical and Computer Engineering*

Advisor: Prof. Shwetak Patel

University of California, Davis

September 2019 - March 2020

Global Study Program in *Electrical and Electronics Engineering*

Shandong University of Technology, China

September 2016 - June 2020

B.S. Degree in *Electrical Engineering and Automation*

PUBLICATIONS

Conference

- 2023 [C1] **BigSmall: Efficient Multi-Task Learning for Disparate Spatial and Temporal Physiological Measurements**
Girish Narayanswamy, [Yujia Liu](#), Yuzhe Yang, Chengqian Ma, Xin Liu, Daniel McDuff, and Shwetak Patel
WACV 2024

Journal

- 2023 [J1] **Thermal Earring: Low-power Wireless Earring for Longitudinal Earlobe Temperature Sensing**
Qiuyue (Shirley) Xue*, [Yujia Liu](#)*, Joseph Breda, Mastafa Springston, Vikram Iyer, and Shwetak Patel
* Equal contribution
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT/UbiComp) 2023

RESEARCH EXPERIENCE

DigiHealth Lab, UC San Diego

September 2023 - Present

Graduate Research Assistant

Also affiliate with UC San Diego Design Lab

- Exploring foundation models for medical images

Ubicomp Lab, University of Washington

April 2022 - June 2023

Graduate Student Researcher

Project: Smart Earring for Longitudinal Temperature Sensing

- Designed a low-power small-scale lightweight smart earring for longitudinal earlobe temperature sensing

Project: Large-scale Multimodal Physiological Sensing

- Contributed to an open-source toolbox to make remote photoplethysmogram (rPPG) research more accessible and standardized
- Researched multi-task training for highly diverse physiological modalities

Capstone Project, University of Washington and Microchip

January 2021 - June 2021

Digital Signal Processing and Machine Learning Engineer

Project: Anomaly Detection in an Industrial Environment for Disaster Prevention

- Pre-processed the audio files of industrial equipment using noise cancellation algorithms or digital signal processing filters
- Researched and improved the performance of the final Convolutional Neural Network Model to ensure accuracy $\geq 95\%$
- Documented and presented project progress to industry and faculty mentors weekly

INTERSHIPS

Microsoft

August 2021 - December 2021

Technical Program Manager Intern

- Performed electrical analyses and executed designs-of-experiments to solve product functional problems
- Worked with cross function teams to manage and support product changes
- Drove the product yield continuous improvement (improved 10%) and scrap cost reduction (reduced 7%)
- Explored machine learning models for scrap cost prediction

Intel Corporation

June 2021 - August 2021

Technical Enablement Engineer Intern

- Set up remote debug system on the server for issue reproduction and system debugging
- Supported customer RAS feature enablement and debugging by testing features on the servers using CScript
- Documented useful platform changes that could help update the Integration and Validation Guide (IVG) and improve customer support effectiveness

Hezheng Technology Development Co.,Ltd, China

April 2020 - October 2020

Electrical Engineer Intern

Project: Smart Voltage Loss Detector for Electricity Meters

- Developed and documented schematics capture and PCB layout for the project using Altium Designer
- Tested and troubleshooted 30 final products using electrical test equipment
- Partnered with colleagues to program microcontroller using Keil

TEACHING

University of Washington, Seattle

September 2022 - March 2023

Graduate Teaching Assistant - Course: EE 331 Devices and Circuits

- Led two lab sections weekly and graded lab reports
- Documented and updated lab related materials including lab instructions, solutions, grading rubric and tutorials
- Held office hours and proctored midterms and final exam

University of Washington, Seattle

March 2022 - June 2022

Graduate Teaching Assistant - Course: EE 331 Devices and Circuits

- Prepared review materials and led discussion sessions for the class size of 96 students
- Held office hours twice a week
- Proctored and graded exams

ADDITIONAL LEADERSHIP EXPERIENCE

UW ECE Graduate Student Association

September 2021 - December 2022

President

- Handled the internal operations, including holding weekly meeting and coordinating with ECE advising staff
- Documented and maintained the operation materials
- Helped organize biweekly social events: meetups, game nights, workshops, etc.

University of Washington, Seattle

March 2022 - June 2022

Grader - Graduate Level Course: EEP 560 Advanced Electric Machines and Drives

- Graded 23 reports biweekly and maintained records on students' assignment completion

SKILLS

Programming: Python; Java; C/C++; SQL; System Verilog; Assembly

Professional skill: Machine Learning; Embedded System; PCB Design; MATLAB; Linux; Simulation; FPGA Design;

Languages: Mandarin Chinese (Native); English (Fluent); Korean (Oral)

VOLUNTEERING

Student Volunteer for UIST 2022

Student Volunteer for UW ECE 2022 Graduate Student Orientation

AWARDS AND HONORS

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| 2023 | UCSD Jacobs Fellowship |
| | UCSD Design Lab Norman Design Fund |
| 2021 | Microsoft Hack4GCR Winner |
| 2019 | Shandong University of Technology First-class Scholarship |
| 2018 | National College Students Mathematical Contest in Modeling - Third Award |