Winston Chen

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Research Interests

- Developing reliable ML for high-precision biomedical applications.
- Automating biological hypothesis generation with ML interpretation.

Education

University of Washington *Seattle, WA*

B.S. in Electrical Engineering, with a minor in Entrepreneurship *Sept 2018 - June 2022*

- GPA: 3.8/4.0; *Cum Laude*
- **Courses:** Optimization and Machine Learning, Statistical Learning, Signal Processing, Probability, Computer Architecture, Data Structure and Algorithms, System Programming, Linear Algebra, Data Programming

Research Experience

Noble Research Lab, Genome Science, University of Washington *Seattle, WA*

Confidence Estimation for Network Propagation *July 2019 - Present*

- Developed a framework to estimate statistical confidence (q-value) for network propagation's inference results.
- Implemented the framework on Rankprop, a network propagation-based protein homology detection algorithm.
- Applied Rankprop and confidence estimation on a large-scale protein database (SCOP) to demonstrate its ability of identifying protein homologies with high-precision.
- Presented research work at University of Washington's annual undergraduate research symposium. Talk available here.

Error-controlled Interaction Detection in Neural Network *Dec 2021 - Present*

- Developed a neural network interpretation method that discovers learned feature interactions at desired error rate.
- Designed and implemented a compute module that debiases the raw interaction interpretation results.
- Applied the interpretation method on neural networks trained with fruit flies (Drosophila) genomics data and identified meaningful transcription factor (TF) interactions.

Scholarships

2021 **Mary Gates Research Scholarship**

2020 **Lawrence & Lucille Frey Endowed Electrical & Computer Engineering Scholarship**

2020 **Herschel & Caryl Roman Scholarship**

Teaching Experience

Department of ECE, University of Washington *Seattle, WA*

Teaching Assistant *Dec 2020 - June 2022*

- Programming For Signal and Information Processing Applications (Spring 2022)
- Fundamentals of Electrical Engineering (Winter 2021, Winter 2022)
- Digital Circuit and System (Autumn 2021)

Industry Experience

RealNetworks *Seattle, WA*

Software Engineering Intern *August 2022 - Present*

- Built a FIDO2 roaming authenticator prototype that allows passwordless authentication on web services supporting Webauthn.
- Integrated the authenticator with SAFR facial recognition technology to enable biometric verification.
- Demonstrated the authenticator in collaboration with StrongKey at the flagship FIDO conference, Authenticate 2022.

NVIDIA *Santa Clara, CA*

Python Engineering Intern *Apr 2020 - Sept 2020*

- Built and deployed a testing infrastructure for analyzing and visualizing NVIDIA's genomics computing software logs.
- Drove discussions with core developers regarding testing infrastructure's feature requirements.
- Presented the final project results through a slide deck, confluence page, and detailed README.

Leadership Experience

Housing & Food Services, University of Washington *Seattle, WA*

Assistant Resident Director *September 2021 - June 2022*

- Facilitated moving 500+ residents into Elm Resident Hall in the course of four days.
- Advised Elm Hall council in organizing 20+ building-wide events during the 2022-2023 academic year.
- Assisted the Elm Hall resident director in managing 10 resident advisors through performing administrative tasks such as scheduling on-calls.

IEEE-HKN Honor Society, University of Washington *Seattle, WA*

Corporate Relations Officer *Sep 2020 - June 2022*

- Attended weekly meetings to provide updates on current corporate relationship projects.
- Collaborated with industry recruiters (e.g. TI, Tesla, Wyze) to organize 10+ industry networking events.
- Maintained positive relationship with industry sponsors through emails and check-in meetings.

Housing & Food Services, University of Washington *Seattle, WA*

Resident Advisor *Sep 2019 - June 2022*

- Collaboratively planned and executed 30+ events every year to engage 150+ residents.
- Created and maintained floor decorations to form a welcoming residential environment.
- Regularly on-call 5PM-8AM to provide residents with emergency assistance and secure the safety of the entire residence hall.

Skills

Programming Languages Python, JavaScript, Java, C/C++, System Verilog

Frameworks PyTorch, TensorFlow, Numpy, NetworkX

Tools Git, Latex