Winston Chen

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EDUCATION

University of Washington (UW), Seattle, WA 2018 - Present
B.S. in Electrical Engineering, Minor in Entrepreneurship

RESEARCH EXPERIENCE

Research Assistant, University of Washington, Noble Research lab July 2019 - Present
Advised by Professor William Stafford Noble and Dr. Yang Lu
Projects:

Confidence Estimation for Network Propagation-based Methods July 2019 - Present

- Implemented and trained Rankprop (a network propagation-based protein homology detection algorithm) in Python.
- Applied a novel knockoff generation algorithm and knockoff filter on network data.
- Implemented various confidence estimation algorithms (permutation-based, knockoff filter, and target-decoy competition).
- Conducted thorough comparisons on different confidence estimation methods.
- Presented research work at the UW's 24th Undergraduate Research Symposium.
- Research talk available: https://www.youtube.com/watch?v=dZ4pvAE1OHg.

Error-controlled Interaction Detection in Artificial Neural Network. May 2021 - Present

- Formulated research project aiming to improve interpretability of artificial neural network through an error-controlled interaction prediction method using the knockoff filter, in collaboration with one postdoctoral researcher.
- Experimented with different knockoff variable generation methods (model-X, DeepKnockoff, KnockoffGAN, and DDLK).
- Designed, built, and evaluated different multilayer perceptron designs that enables error-controlled interaction detections.
- Researched and processed real-world biomedical data for experiments.
- Investigated unexpected experiment results and proposed potential solutions.

TEACHING EXPERIENCE

TA, Digital Circuit and System September 2021 – Present
University of Washington, Seattle, Washington

- Guided 60+ ECE students interested in learning boolean algebra, combinational and sequential logic circuits design, and FPGA programming using System Verilog.
- Hosted weekly lab/office hours.
- Graded students' lab assignments and exams.

TA/Grader, Fundamentals of Electrical Engineering December 2020 – March 2021
University of Washington, Seattle, Washington

- Guided 50+ students in an introductory electrical engineering course covering topics such as basic circuit components, mathematical modeling of systems, and fundamental circuit laws.
- Hosted weekly review session.
- Graded weekly homework assignments.
- Designed exam questions and assisted exam grading.

Virtual Tech Camp Instructor June 2020 – August 2020
iD Tech Camp, Seattle, Washington

- As an instructor, I guided small groups of highly motivated middle high school students through fast-paced online introductory Python programming classes.
- Covered topics including object-oriented programming, machine learning algorithm, and Python game development in a project-based learning setting.

STEM ASB Facilitator December 2019 – April 2020
UW Pipeline Project, Yakima, Washington

- Designed and taught a week-long engineering design course for 30+ alternative high school students in Wapato, Washington.
- Lead daily lecture and facilitated group discussion and group design project.
- Facilitated small groups of discussions and collaboration on water rocket building.

INDUSTRY EXPERIENCE

Python Engineering Intern June 2021 – September 2021
NVIDIA, Santa Clara, California

- Helped Clara Parabricks team build their testing infrastructure from scratch.
- Drove discussions with developers across different teams regarding the feature requirements for testing infrastructure.
- Designed, built, and deployed a full stack web app that interactively visualizes software log files for hundreds of genomics computing tools.
- Presented the final project results through a slide deck, confluence page, and detailed README.

Co-Founder/Software Engineering Lead June 2020– Present
KiwiLink, Seattle, Washington

- Cofounded KiwiLink, an iOS/Android mobile app for study buddy finding in college setting.
- KiwiLink is currently used by 1,300+ users and have fostered 15,000+ connections.
- Assisted the design of app functionality based on user research.
- Lead a team of 10 engineers on the implementation of app's front-end and back-end software using Node.js and React Native.

Computer Vision Engineer June 2020– Present
Advanced Robotics, Seattle, Washington

- Updated team's deep learning training infrastructure from PyTorch to PyTorch-Lightning.
- Implemented new neural network's architecture to enable more complex detection behavior.

LEADERSHIP EXPERIENCE

Assistant Resident Director September 2021 – Present
UW HFS, Seattle, Washington

- Facilitated moving 500+ residents into Elm Hall over the course of four days.
- Managed 10 staff members in directing vehicles and safely controlling the unload zone during move-in.
- Provided effective customer service to parents and students.
- Managed a $1,600 annual programming budget.
- Conducted interviews for various leadership positions within Elm Hall Council.
- Advised the Elm Hall Council in organizing various community building and outreach events.

Corporate Relations Officer September 2020 – Present
UW IEEE/HKN, Seattle, Washington

- Collaborated with industry recruiters and ECE faculties to organize industry network events.
- Maintained active relationships with industry sponsors.

Resident Advisor September 2019 – June 2021
UW HFS, Seattle, Washington

- Collaborated with co-Resident Advisors to plan and execute 30+ floor meetings and events to engage 150+ residents on the floor.
- Managed over 600+ programming budgets in total.
- Creating floor/door decorations to form a welcoming residential environment.
- Being on-call between 5PM to 8PM to assist residents who need help and secure the safety of residential community.

AWARDS

UW Mary Gates Research Scholarship	March 2021
Lawrence & Lucille Frey Endowed Electrical & Computer Engineering Scholarship	July 2020
Herschel & Caryl Roman Scholarship	July 2020
UW Dean's List	2018, 2019, 2020

COURSE WORK

Digital Signal Processing, Machine Learning, Computer Vision, Artificial Intelligence, Data Structure and Algorithm, Programming Language, Digital Circuit and System Design, Circuit Theory, Digital Circuits and Systems.

E E 442/443 Series Spring 2021

Learning outcomes:

- Gained fundamental knowledge in digital filter property and design.
- Developed practical skill in digital filter implementation using Python.
- Explored the mathematical details of various machine learning models (supervised/unsupervised models, neural networks, generative adversarial network).
- Acquired essential skills in building machine learning models using industry standard tools such as Scikit-learn and PyTorch.

Course Project:

- Designed and implemented deep neural network models tailored for long-tail dataset learning tasks, in collaboration with one other teammate.
- Drove discussions about long-tail learning strategies such as, data resampling, loss reweighting, and representation-classification split.
- Contributed to model implementation, data preprocessing, and training & evaluation utilities. (~1000 lines of code)
- Presented project details and results in slide deck and final report
- Code available: https://github.com/WinstonChenn/dl_utils