Winson Chen

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Education

Irvine Valley College — Irvine, CA
Computer Science, Associate in Science, Cum laude — *Aug. 2020*
- GPA: 3.58
- Honors Program

University of California, Santa Cruz — Santa Cruz, CA
Computer Science, Bachelor of Science, Cum laude — *June 2022*
- GPA: 3.86

University of California, Santa Cruz — Santa Cruz, CA
Scientific Computing and Applied Mathematics, Master of Science — *Expected June 2023*
- GPA: 3.86

Experience

Research Assistant, Amazon Alexa Prize Award, SocialBot — Aug. 2022 – Sept. 2023
University of California, Santa Cruz — *Santa Cruz, CA*
- Received $50,000 for **Second Place** on Science and Innovation Award
- Optimized project efficiencies by 25% by **collaborating** with team members to comprehend the codebase and provided regular updates on **independent** work
- Increased efficiencies by 10% with **deploying** pre-trained language models on AWS EC2 servers for **inference** through **CI/CD pipeline**, enabling the generation of accurate and contextually relevant responses
- Achieved 10% increase in rating by creating APL(Alexa Presentation Language) detail template where the text auto-scroll as the voice-over speaks
- Conducted **A/B testing** by creating multiple variations of dialog manager and APL templates to discover the best user experience possible

Data Science Summer Institute Intern — June 2022 – Sept. 2022
Lawrence Livermore National Laboratory — *Remote*
- Conducted in-depth research on machine learning models with cohorts, presenting a range of innovative approaches for analyzing the SARS-CoV-2 Inhibitors dataset
- Accelerated 25% on **data mining** by utilized Scrapy to efficiently extract data from diverse web sources
- Applied **fine-tuning** and **downstream tasks** techniques to enhance the CodeBERT model for experimental purposes, specifically in the detection of clone instances in the DataRaceBench environment

ERIC Lab Assistant — Aug. 2021 – Sept. 2023
University of California, Santa Cruz — *Santa Cruz, CA*
- Received Amazon Alexa Prize Award to work on Alexa Prize SocialBot, TaskBot Challenge
- Collecting data with by simulating drone controller to create visual language navigation dataset
- Developed toolbox to help users to find published papers from Association for Computational Linguistics

Research Assistant — Aug. 2021 - Dec. 2021
University of California, Santa Cruz — *Santa Cruz, CA*
- Utilizing PySINDY package to fit the spatial-temporal data of drosophila genes using machine learing
- Experimenting various models to find the behavior of drosophila gap genes

CIDER Pilots In Training Program member — Jan. 2022 - Mar. 2022
University of California, Santa Cruz — *Santa Cruz, CA*
- Received FAA Remote Pilot License
- Pilot training in DroneDeploy, hands-on flight
- Trained skilled for flight planning

Group Tutor — Jan. 2021 – May 2022
University of California, Santa Cruz — *Santa Cruz, CA*
- Helping students with programming, debugging, and data structure
- Providing computer science help include Java, C, C++, and Python

Code Release

SamBasketballTW Mar. 2023 – Jul. 2023

- Designed the **scalable** static website which presents the various basketball leagues in Taiwan
- Reduced time cost by 50% to streamline **data collection** from various websites
- Leveraged Bootstrap 5 and incorporated custom functions to elevate the user experience and **optimize performance**

ACLTool | *Python, Flask, Pandas, HTML, Javascript, BeautifulSoup* Nov. 2021 – Jan. 2022

- Users can find all the papers that published from ACL Rolling Review for easy access.
- Uses natural language processing to find recent trending topics in Machine Learning.
- **Github Repository**

Publications

Early Experience with Transformer-Based Similarity Analysis for DataRaceBench Jul. 2022 – Sept. 2022

- Discovered the strengths and limitations of the Transformer-based approach and pointed out future research direction
- Performed **data analysis** on new source codes with CodeBERT to understand the clone detection
- Experimented on CodeBERT by **fine-tuning** with multiple datasets to adapt different programming style
- Accepted and Presented in Correctness Workshop @ SC'22 as **first-author**

Aerial Vision-and-Dialog Navigation Nov. 2021 – Mar. 2022

- Performed **data collection** which collected over 1,000 recorded navigation trajectories with asynchronous human-human dialogues with simulator we built
- Increased 20% efficiencies in **data visualization** by generated graphs and charts using wordcloud, matplotlib
- Accepted in ACL'23

Making Machine Learning Datasets and Models FAIR for HPC: A Methodology and Case Study
Pei-Hung Lin, Chunhua Liao, Winson Chen, Tristan Vanderbruggen, Murali Emani
Published Conference Proceeding for TEML'22 (2022 Fourth International Conference on Transdisciplinary AI (TransAI))

Talks

Early Experience with Transformer-Based Similarity Analysis for DataRaceBench
Dallas, Texas 11/18/2022
In-person talk at Correctness workshop at SC22

Teaching

Graduate Teaching Assistant Sept. 2022 - June 2023
University of California, Santa Cruz *Santa Cruz, CA*

- MATH 19A (Calculus for Science, Engineering, and Mathematics)
- AM 10 (Mathematical Methods for Engineers I)
- AM 20 (Mathematical Methods for Engineers II)
- AM 214 (Applied Dynamical System)
- AM 250 (Intro to High-Performance Computing)

Honors and Awards

- Dean's Honor: Fall 2020, Spring 2021, Fall 2021, Winter 2022, Spring 2022
- Next Gen. SAM Scholar (Funded by National Science Foundation)

Technical Skills

Languages: Python, C, C++, CUDA/HIP(C++), Matlab, Fortran, SQL, JavaScript, HTML, CSS, Java, Swift, Latex
Frameworks: Flask, Django, PostgreSQL, React Native, jQuery, Bootstrap
Developer Tools: Visual Studio Code, Docker, Jupyter Notebook, Vim, Xcode, Postman, Git, Jira
Libraries: PyTorch, TensorFlow, Pandas, NumPy, Matplotlib, Seaborn, Lightning, Gradio, Keras, BeautifulSoup, Scrapy, Selenium, OpenMP, MPI, OpenCV
Services : RESTful API, SLURM, AWS: SageMaker, S3, EC2
Mathematical fundamentals : Geometry, Linear Algebra, Vector Calculus, Probability, Statistics
Computer Science fundamentals : Data Structure, Algorithms Analysis, Computer Vision, Natural Language Processing, Computer System Design, Computational Models, Data Retrieval, Data Engineering, Data Mining, Machine Learning, Object-Orient Programming