

EDUCATION

Pepperdine University

B.S in Computer Science/Mathematics GPA:4.0/4.0
Minor in Data Science GPA: 4.0/4.0

2021–2025

RESEARCH INTERESTS

Generative AI, Computer Vision, 2D to 3D Reconstruction, Natural Language Processing, Language Models

HONORS AND AWARDS

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| • CRA Outstanding Undergraduate Researcher Award Honorable Mention | 2024 |
| • Barry Goldwater Scholarship Winner | 2023 |
| • Northrop Grumman Endowed Computer Science Scholarship | 2023 |
| • Amazon SURE Research Fellow | 2023 |
| • Blanche E. Seaver Faculty-Staff Scholarship | 2023 |
| • Alteryx Datathon Finalist | 2023 |
| • Pepperdine Natural Science Scholarship | 2022–2023 |
| • Pepperdine Keck Scholars Data Science Research Fellowship | 2022–2023 |
| • Pepperdine Academic Grant | 2021–2023 |
| • Pepperdine Deans List (Top 10% of Class) | 2021–2023 |

RESEARCH EXPERIENCE

Large Language Model and Knowledge Graph Intern

Company: Deloitte Data Science

June 2024-August 2024

W.M Keck Undergraduate Researcher

Research Advisor: Professor Fabien Scalzo

April 2022-Present

- Leveraged generative models such as conditional generative adversarial network (C-GAN) and Fourier Feature networks for 2D to 3D reconstruction tasks in health.

Natural Language Processing Researcher at UCLA

Research Advisor: Professor Ira B. Kurtz

April 2023-Present

- Retrieval-augmented generation (RAG) systems with open-sourced LLMs to improve question answering on downstream tasks.
- Multi-model knowledge graphs for improved question answering in nephrology.

Glaucoma Artificial Intelligence (GAiL) Lab member at UCLA

Research Advisor: Professor Kouros Nouri-Mahdavi

April 2022-Present

- Utilized 3D convolutional neural networks to predict threshold sensitivity values from OCT data.

- Deployed a deep survival analysis algorithm to accurately predict the time to progression of patients with glaucoma.

Research Fellow in Applied Mathematics and Physics at Columbia University

Research Advisor: Professor Simon Billinge

Summer 2023

- Apart of NSF funded research titled Complex Nanofeatures in Crystals: Theory and Experiment Meet in the Cloud

Undergraduate Researcher in Data Structures

Research Advisor: Professor Stanley J. Warford

January 2022-May 2022

- Theoretical research for manipulating general n-way trees, leveraging the Composite State Design Pattern to define child relationships.

PUBLICATIONS

- [1] E. S. Cha, K. Chulajata, **S. Wu**, J. Choe, E. Laukien, D. Hong, and D. Kim, “Pocket racer: An accessible platform for multi-agent autonomous racing”, *Under Review at Nature Communications*, 2024.
- [2] V. Mohammadzadeh, **S. Wu**, S. Besharati, T. Davis, A. Vepa, E. Morales, K. Edalati, M. Rafiee, A. Martinyan, D. Zhang, *et al.*, “Prediction of visual field progression with baseline and longitudinal structural measurements using deep learning”, *American Journal of Ophthalmology*, 2024.
- [3] **S. Wu**, N. Kaneko, D. Liebeskind, and F. Scalzo, “Fourier feature network for 3d vessel reconstruction from biplane angiograms”, 2024.
- [4] **S. Wu**, M. Koo, L. Blum, A. Black, L. Kao, Z. Fei, F. Scalzo, and I. Kurtz, “Benchmarking open-source large language models, gpt-4 and claude 2 on multiple-choice questions in nephrology”, *NEJM AI*, AIdbp2300092, 2024.
- [5] V. Mohammadzadeh, A. Vepa, C. Li, **S. Wu**, L. Chew, G. Mahmoudinezhad, E. Maltz, S. Sahin, A. Mylavaram, K. Edalati, *et al.*, “Prediction of central visual field measures from macular oct volume scans with deep learning”, *Translational Vision Science & Technology*, vol. 12, no. 11, pp. 5–5, 2023.
- [6] V. Mohammadzadeh, **S. Wu**, T. Davis, A. Vepa, E. Morales, S. Besharati, K. Edalati, J. Martinyan, M. Rafiee, A. Martinyan, *et al.*, “Prediction of visual field progression with serial optic disc photographs using deep learning”, *British Journal of Ophthalmology*, 2023.
- [7] Z. Mossing, **S. Wu**, K. Hong, F. Scalzo, and E. S. Cha, “Foil-net: Deep wave classification for hydrofoil surfing”, in *International Symposium on Visual Computing*, Springer, 2023, pp. 109–120.
- [8] **S. Wu**, N. Kaneko, S. Mendoza, D. S. Liebeskind, and F. Scalzo, “3d reconstruction from 2d cerebral angiograms as a volumetric denoising problem”, in *International Symposium on Visual Computing*, Springer, 2023, pp. 382–393.
- [9] **S. Wu**, V. Mohammadzadeh, J. Y. Chen, Z. Fei, T. Davis, K. Nouri-Mahdavi, J. Caprioli, and F. Scalzo, “Denoising visual field data via self-supervised masked autoencoders for enhanced glaucoma progression detection”, *Under Review at Nature Scientific Reports*, 2023.
- [10] **S. Wu**, V. Mohammadzadeh, K. Edalati, J. Martinyan, A. Martinyan, J. Caprioli, K. Nouri-Mahdavi, and F. Scalzo, “Auxiliary-domain learning for a functional prediction of glaucoma progression”, in *International Workshop on Ophthalmic Medical Image Analysis*, Springer, 2023, pp. 21–31.
- [11] **S. Wu**, R. A. Dabagh, A. L. Jacobsen, H. I. Holmlund, and F. Scalzo, “Deep learning-based classification of plant xylem tissue from light micrographs”, in *International Symposium on Visual Computing*, Springer, 2022, pp. 237–248.

*See a full list of publications on [Google Scholar](#)

SELECTED CONFERENCE PRESENTATIONS

- **Prediction of Functional Glaucoma Progression Combining Baseline Clinical and Structural Data with a Deep Learning Model** 2024
Oral presentation at the American Glaucoma Society Annual Meeting
- **Prediction of the Final Visual Fields from Earlier Visual Field Data with Artificial Intelligence** 2023
Poster presentation at American Academy of Ophthalmology Annual Meeting
- **Prediction of Glaucoma Progression from Initial Visual Field Data with Deep Learning Survival Analysis** 2023
Poster presentation at the American Academy of Ophthalmology Annual Meeting
- **A Multimodal Approach for Predicting Glaucoma Progression with Artificial Intelligence** 2023
Poster presentation at the American Academy of Ophthalmology Annual Meeting
- **Using Artificial Intelligence for Evaluating Structural Eyelid Change Following Muller's Muscle Conjunctival Resection** 2023
Poster presentation American Society of Ophthalmic Plastic and Reconstructive Surgery Annual Meeting
- **Interatomic Distance List Database and Deep Learning for Ab Initio Structure Solution From PDF Data** 2023
Poster presentation Amazon-Columbia Summer Research Symposium
- **Deep Learning Classification, Segmentation, and Diameter Measurements of Cell Types in Xylem Tissue** 2023
Poster presentation Ecological Society of America Annual Meeting
- **Constructing an N-Way Tree** 2023
Poster presentation at Southern California Conference for Undergraduate Research (SCCUR)

TEACHING AND SERVICE

- **Teaching Assistant and Grader** Fall 2023-
Applied Machine Learning/Data Science (COSC 220)
Introduction to Machine Learning (COSC 210)
Data Structures (COSC 320)
Programming Paradigms (COSC 450)
- **University Tutor** Fall 2022-
Artificial Intelligence (COSC 200, 210, 220)
Computer Networks (COSC 475)
Data Structures (COSC 320)
Automata Theory (Math 365)
Discrete Math (Math 221)

SKILLS

Packages: Python, C++, Java, Racket, Prolog

Computational Software: PyTorch, TensorFlow, Keras, Scikit-learn, Pandas, OpenCV, Numpy