Geoffrey Wu

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EDUCATION

Columbia University, New York, NY August 2021 – May 2025
Bachelor of Science, Computer Science and Mathematics; GPA: 4.14/4.00

Relevant CS Coursework: Machine Learning, Artificial Intelligence, Computer Science Theory, Advanced Programming, Fundamentals of Computer Systems, Data Structures, Discrete Math

Relevant Math Coursework: Fourier Analysis, Modern Analysis 1, Modern Algebra 1, Linear Algebra, Ordinary Differential Equations, Multivariable Calculus

HONORS AND AWARDS

Columbia University Dean's List (2021 – Present)
Fermi Research Alliance Scholarship (2021 – Present)
National Merit Scholarship (2021 – Present)
William Lowell Putnam Mathematical Competition – Top 200 (2022)
International Olympiad on Astronomy and Astrophysics Gold Medal (2021)

RESEARCH EXPERIENCE

Columbia University January 2022 – April 2023
Research Assistant
Advisors: Professor Liat Shenhav, Professor Kaveri Thakoor, Professor Andrew Laine
Developed DVT-Net, a hybrid architecture combining deep learning and topological data analysis (TDA) for use in detecting preeclampsia from retinal images. Generated weekly progress reports for the lab on model training progress and performance. Presented findings to the *IEEE International Symposium on Biomedical Imaging* in a 10-minute video and a live presentation format.

Oak Ridge National Laboratory June 2022 – August 2022
Science Undergraduate Laboratory Intern
Advisor: Yongqiang Cheng
Developed convolutional autoencoders to compress neutron spectroscopy images into a latent representation, which was used for direct prediction, allowing researchers to collect data without running expensive neutron spectroscopy experiments. Presented findings to mentor and program as part of the Department of Energy Science Undergraduate Laboratory Internship (SULI) program. Published as second author in the *Machine Learning: Science and Technology* journal.

PUBLICATIONS AND PRESENTATIONS

Tian, Ye, Geoffrey Wu, Srilaxmi Bearelly, Andrew Laine, Kaveri A. Thakoor, and Liat Shenhav. "DVT-Net: A Multimodal Deep Vascular Topology Network for Disease Prediction." In *2023 IEEE 20th International Symposium on Biomedical Imaging (ISBI)*, pp. 1-5. IEEE, 2023. (https://ieeexplore.ieee.org/document/10230374/)

Cheng, Yongqiang, Geoffrey Wu, Daniel M. Pajerowski, Matthew B. Stone, Andrei T. Savici, Mingda Li, and Anibal J. Ramirez-Cuesta. "Direct prediction of inelastic neutron scattering spectra from the crystal structure." *Machine Learning: Science and Technology* 4, no. 1 (2023): 015010. (https://iopscience.iop.org/article/10.1088/2632-2153/acb315)

WORK EXPERIENCE

Susquehanna International Group, Bala Cynwyd, PA June 2023 – August 2023
Quantitative Trading Intern
Used reinforcement learning (Q-learning) and market signals to design and develop an automated trading bot to trade under unusual market conditions. Analyzed differences in Google stock buyback trends between preferred and common shares over the past 8 years. Learned options theory and structure of financial markets and instruments.

TEACHING EXPERIENCE

Columbia University, New York, NY September 2023 – Present
Discrete Mathematics Course Assistant (COMS 3203)
Professor Tony Dear
Graded homework assignments for a class of 200 people. Held weekly office hours to review and answer questions regarding homeworks and topics. Held weekly recitations to review class material and help students prepare for exams.

Columbia University, New York, NY September 2022 – December 2022
Data Structures Course Assistant (COMS W3134)
Professor Brian Borowski
Graded homework assignments for a class of 300 people. Held weekly office hours to review and answer questions regarding homeworks and topics. Wrote questions for the midterm and final.

TECHNICAL SKILLS

Machine Learning: Tensorflow, Keras, PyTorch, Pandas, Matplotlib, Jupyter Notebook
Programming languages: Python, Java, C/C++, HTML/CSS, Javascript, Wolfram, Bash
Other: SQL, Excel, MongoDB, SSH