WILLIAM YIK

+1(208) 705-2229 ◇ Claremont, CA
wyik@hmc.edu ◇ yikwill.github.io

EDUCATION

Harvey Mudd College *Claremont, CA*
B.S. Computer Science and Mathematics, Emphasis in Environmental Analysis Expected 2024
Major GPA: 4.00, Overall GPA: 3.95

Select Coursework: Neural Networks, Algorithms, Programming Languages, Data Structures • Scientific Computing, Mathematical Modeling, Stochastic Processes, Probability and Statistics, Discrete Mathematics, Differential Equations, Linear Algebra • Climate Dynamics, Oceanography, Global Climate Change, Climate Change in Context

PUBLICATIONS

2023

[4] Hom, C., **Yik, W.**, Montañez, G. D. (Accepted, 2023). Finite-Sample Bounds for Two-Distribution Hypothesis Tests. *IEEE International Conference on Data Science and Advance Analytics (DSAA)*.

[3] **Yik, W.**, Silva, S. J., Geiss, A., Watson-Parris, D. (Accepted, 2023). Exploring Randomly Wired Neural Networks for Climate Model Emulation. *Artificial Intelligence for the Earth Systems (AIES)*. https://doi.org/10.1175/AIES-D-22-0088.1

2022

[2] **Yik, W.**, Silva, S. J., Geiss, A., Watson-Parris, D. (2022). Exploring Randomly Wired Neural Networks for Climate Model Emulation. *NeurIPS Workshop: Tackling Climate Change with Machine Learning*. https://www.climatechange.ai/papers/neurips2022/36/paper.pdf

[1] **Yik, W.**, Serafini, L., Lindsey, T., Montañez, G. D. (2022). Identifying Bias in Data Using Two-Distribution Hypothesis Tests. *AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES)*. https://doi.org/10.1145/3514094.3534169

RESEARCH EXPERIENCE

NOAA Geophysical Fluid Dynamics Laboratory *Princeton, NJ*
Research Intern, Ocean and Cryosphere Division May 2023 - Present

- Advisor: Maike Sonnewald
- Investigating deep ensemble learning methods for inferring subsurface ocean dynamics
- Improving interpretability of models using explainable AI techniques such as layer-wise relevance propagation and Shapley additive explanations

University of Southern California *Los Angeles, CA*
Undergraduate Researcher, Atmospheric Composition and Earth Data Science Group May 2022 - Present

- Advisor: Sam Silva
- Exploring the utility of randomly wired neural networks for climate model emulation
- Investigating methods for enforcing fairness and equity in neural climate emulators

Harvey Mudd College *Claremont, CA*
Undergraduate Researcher, AMISTAD Machine Learning Lab May 2021 - May 2023

- Advisor: George Montañez
- Implemented novel hypothesis tests to systematically identify bias in machine learning training data
- Derived mathematical finite-sample bounds for two-distribution hypothesis tests

Idaho National Laboratory *Idaho Falls, ID*
Research Intern, Energy Innovation Laboratory Aug 2020 - Sept 2020

- Advisor: Christopher Zarzana
- Tested separation and content analysis methods for ligands and biomass using gas chromatography and pyrolysis
- Utilized liquid chromatography and mass spectrometry to accelerate ligand sample production

CONTRIBUTED TALKS AND POSTERS

NOAA Science and Education Symposium, *Talk: Explainable Machine Learning for Inferring Subsurface Ocean Dynamics*, Aug 2023.
NeurIPS Workshop: Tackling Climate Change with Machine Learning, *Poster: Exploring Randomly Wired Neural Networks for Climate Model Emulation*, Dec 2022.

Harvey Mudd College Student Symposium, *Poster: Exploring Randomly Wired Neural Networks for Climate Model Emulation*, Sept 2022.

AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society, *Talk and Poster: Identifying Bias in Data Using Two-Distribution Hypothesis Tests*, Aug 2022.

AWARDS AND HONORS

Ernest F. Hollings Undergraduate Scholarship ($19K) *National Oceanic and Atmospheric Administration*
Awarded to 127 undergraduate students in North America Awarded 2022

National Merit Scholarship ($6K) *National Merit Scholarship Corporation*
College-sponsored, renewable award to support undergraduate study Awarded 2020

TEACHING EXPERIENCE

Harvey Mudd College *Claremont, CA*
Mathematics Academic Excellence Facilitator Aug 2022 - Present

- Courses: Differential Equations, Discrete Mathematics, Linear Algebra, Probability and Statistics, Calculus
- Nominated by faculty to hold weekly tutoring sessions for groups of 10-50 students

Harvey Mudd College *Claremont, CA*
Teaching Assistant Aug 2021 - May 2022

- Courses: Computability and Logic, Discrete Mathematics, Introduction to Computer Science
- Held weekly tutoring sessions for groups of 5-30 students and graded homework assignments

SKILLS

Programming Languages	Python, R, C++, Java, MATLAB, Haskell
Machine Learning/Data Science	Tensorflow, PyTorch, Scikit-learn, SciPy, NumPy, Xarray, Pandas
Software/Web Development	Git, Docker, Visual Studio Code, Eclipse, Flask, HTML, CSS