John Wu

GitHub | jhnwu3@gmail.com | (614) 638-7981 | Linkedin

EDUCATION

The Ohio State University, Honors Program Columbus, OH
Bachelor of Science in Computer Science and Engineering May 2023
GPA: 3.939
Thesis: Optimization for Explainable Modeling (Ongoing)

SPECIALIZED COURSEWORK:

- Quantitative Biology, Deep Learning, Algorithms, Honors Engineering Robotics Course, Computer Vision, Natural Language Processing, Machine Learning Statistics

RESEARCH EXPERIENCE

Das Lab, Steve and Cindy Rasmussen Institute for Genomic Medicine Columbus, OH
Principal Investigator, Jayajit Das, PhD February 2021-Present
Research Assistant

- Develop parameter estimation software BioNetGMMFit in C/C++ for rule based and mechanistic modeling.
- Utilize parallel programming to improve particle swarm optimization performance up to a factor of 10x.
- Analyze mass cytometry datasets, generating parameter estimates through generalized method of moments.
- Train a convolutional neural network to attempt to analyze an image mass cytometry dataset of breast cancer.
- Use deep learning library, deepXDE, for parameter estimation of PDE models.

Rerout Lab, Department of Computer Science, The Ohio State University Columbus, OH
Principal Investigator, Christopher Stewart, PhD May 2022-Present
Research Assistant

- Build prototype docker containerization infrastructure for model commons project, allowing for ease of Python code shareability.
- Benchmark different particle swarm optimization configurations, contributing to a model benchmarking paper for model commons.
- Collaborate and communicate plans and necessary data to write benchmarking paper.

TECHNICAL SKILLS

Languages: C/C++, Python, Java, MATLAB, R, Javascript, CSS, HTML, Ruby
Tools and Frameworks: Flask, Ruby on Rails, Excel, Microcontrollers, Docker, Elastic, SQL, OpenMP, PyTorch

PUBLICATIONS

John Wu, William CL Stewart, Ciriyam Jayaprakash, and Jayajit Das, "Generalized Method of Moments Improves Parameter Estimation in Biochemical Signaling Models of Time-Stamped Single-Cell Snapshot Data." BioRxiv, Preprint, 1 Jan. 2022, https://www.biorxiv.org/content/10.1101/2022.03.17.484491v1. (Under review in PLOS Computational Biology)

John Wu, William CL Stewart, Ciriyam Jayaprakash, and Jayajit Das, 'BioNetGMMFit: A Parameter Estimation Tool for BioNetGen Using Single-Cell Snapshot Data from Cell Populations Evolving over Time'. *BioRxiv*, Cold Spring Harbor Laboratory, 2022, https://doi.org10.1101/2022.12.08.519526. (Submitted to BMC Bioinformatics)

Seth Ockerman, **John Wu**, Zitchen Zhang, et al. (2023). "A Reflection on AI Model Selection for Digital Agriculture Image Datasets". (To appear in the 37th Association for the Advancement of Artificial Intelligence Conference (AAAI-23))

Seth Ockerman, **John Wu**, Christopher Stewart, "A Case for Datast Specific Profiling." aRxiv, Preprint, 1 Aug. 2022, https://arxiv.org/abs/2208.03315. (In Progress)

CONFERENCE PRESENTATIONS

John Wu, Abigail Wexner Research Institute Research Retreat, Columbus, Ohio, United States, November 2022
Generalized Method of Moments improves parameter estimation in biochemical signaling models of time-stamped single-cell snapshot data
John Wu, qBio Conference, Fort Collins, Colorado, United States, June 2022
Generalized Method of Moments improves parameter estimation in biochemical signaling models of time-stamped single-cell snapshot data

---

TEACHING EXPERIENCE

College of Engineering, The Ohio State University — Columbus, OH
Teaching Assistant, Department of Computer Science — Autumn 2021

- Assisted with instruction of Introduction to C++ course to class size of 40 students.
- Tutored freshman engineering students in office hours.
- Graded labs and coding assignments, giving constructive feedback.

Summer Experience Columbus Academy — Gahanna, OH
Counselor — Summer 2019

- Facilitated group activities for students, ranging from kindergarten to 9th grade.
- Taught children to regulate and manage their emotions through breathing exercises.

INDUSTRY EXPERIENCE

Converge Technologies — Hilliard, OH
Software Intern — Summer 2020

- Developed Selective Harmonic Elimination Pulse Width Modulation firmware for lab-grade industrial coolers, improving power efficiency.
- Programmed microcontrollers' interrupt vectors to setup failsafes in case of power failures.
- Assisted in pre-prototyping research, devising early plans for prototype design and bills of materials.
- Tested analog-digital camera sensors, ensuring functionality and quality standards.

UNIVERSITY SERVICE

Hometown Ambassadors, The Ohio State University — Columbus, OH
Participant — Autumn 2021

- Presented OSU's engineering program during STEM Outreach activities for high school students.
- Shared personal experiences in engineering with students and answered specific questions about the program.

HONORS & AWARDS

Abstract of Distinction, Abigail Wexner Research Institute Research Retreat 2022

Best of Student Startups Finalist, Keenan Center for Entrepreneurship 2022

Maximus Scholarship, The Ohio State University 2019-2022

Dean's List, The Ohio State University 2019-2022