John Wu

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EDUCATION

University of Illinois Urbana-Champaign — Champaign, IL
Doctorate in Computer Science and Engineering — Aug 2023 - Present
Advisor: Jimeng Sun

The Ohio State University, Honors Program — Columbus, OH
Bachelor of Science in Computer Science and Engineering — May 2023
GPA: 3.947
Thesis: Optimization for Explainable Modeling

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

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RESEARCH EXPERIENCE

Sun Lab, Department of Computer Science, University of Illinois Urbana-Champaign — Champaign, IL
Principal Investigator, Jimeng Sun, PhD — Aug 2023 - Present
Research Assistant
- Improved automated interpretability methods for clinical text classification using large language models.
- Cleaned and processed clinical text data with NLP toolkits.
- Scaled model training on massive clinical text corpus through distributed computing with Dask.

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

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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.

Ke Yang, Jiateng Liu, **John Wu**, Chaoqi Yang, Yi R. Fung, Sha Li, Zixuan Huang, Xu Cao, Xingyao Wang, Yiquan Wang, Heng Ji, & Chengxiang Zhai. (2024). If LLM Is the Wizard, Then Code Is the Wand: A Survey on How Code Empowers Large Language Models to Serve as Intelligent Agents. (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