

Saya R. Dennis

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EDUCATION

- Ph.D. in Biomedical Informatics, Northwestern University *Sep 2019–June 2024 (Expected)*
- B.S. in Environmental Sciences and Ecology, University of Tokyo *Apr 2012–Mar 2017*

RELEVANT SKILLS

- Programming languages: (Proficient) Python, Shell, R, (Intermediate) SQL, (Basic) Java
- Software Engineering: Git, Docker, GCP/AWS, Kubernetes, CI/CD pipelines, OOP, CLI design
- ML implementation: data processing, model design, fine-tuning, evaluation (PyTorch, Tensorflow)
- Bioinformatics tools: Nextflow, WGS, WXS, single-cell RNA-seq, spatial transcriptomics
- Clinical informatics of EHRs: database querying, processing, text-mining, deduplication
- High-performance computing: software management, job schedulers, Linux/Unix systems

PROFESSIONAL EXPERIENCE

Doctorate Researcher, Feinberg School of Medicine, Northwestern University *Sep 2019–present*

- Designed, trained, and fine-tuned multiple ML/DL models on large-scale (30+TB) data to develop disease risk prediction model with as high as 96 % accuracy
- Applied bioinformatics pipelines to process whole-genome, exome, and single-cell RNA seq data
- Analyzed 30+ publicly available spatial transcriptomics datasets (<https://soar.fsm.northwestern.edu/>)
- Developed text-mining pipelines to retrieve information from 3000+ oncology and pathology notes
- Evaluated models via multiple metrics as well as feature importance (e.g. SHAP scores)
- Collaborated closely with 5 physicians to identify and pursue opportunities for ML applications

Machine Learning Engineering Intern, Evozyne, Inc. *June 2023–Aug 2023*

- Scaled out the existing protein-generative ML framework by implementing a distributed, population-based training feature for an optimized and systematic hyperparameter search
- Implemented temporal orchestration among Metaflow runs in a Kubernetes cluster via cloud storage
- Developed deployment-ready features included in the CI/CD pipelines and production release of the company's ML software
- Collaborated closely with other software engineers, using version control (Git) to manage parallel development efforts and resolve conflicts efficiently

HPC Research Computing Consultant, Northwestern University IT *Jan 2022–Dec 2023*

- Consulted researchers from 10+ departments to address their hardware and software needs and facilitate computational workflows on a high-performance compute cluster (HPC)
- Taught 5+ tutorials and workshops to help users set up their workflows on an HPC environment
- Developed scripts to map software module dependencies to assist with the deprecation process

Machine Learning Summer Associate, Tempus Labs, Inc. *June 2022–Sep 2022*

- Developed ML models to predict the onset of 4 different types of cancer using electronic health records (EHRs) and demonstrated the value through statistical evaluations
- Eliminated data leakage by initiating an improved method for diagnosis identification
- Proposed & implemented a novel data sampling method to alleviate data imbalance/availability issues

Teaching Assistant, Statistics and Data Analysis for Life Science, Northwestern University *Sep–Dec 2021*

- Guided 40+ students with varying levels of experience through statistical and coding problems
- Reported the students' needs to the course instructor to improve course material

LEADERSHIP & OUTREACH EXPERIENCE

President, Japanese Graduate Student Society across the United States *Apr 2020–Aug 2023*

- Educated aspiring Japanese students looking to pursue a graduate degree abroad by coordinating semi-annual information sessions each with 40+ presenters and 300+ participants
- Communicated closely with sponsors to ensure and negotiate continued financial support for 4 years
- Adapted a previously in-person information session to a fully virtual format during the pandemic

Founder & President, Japanese Graduate Student Association at Northwestern *Sep 2022–present*

- Founded the first official, fully funded community-centered Japanese graduate student organization
- Oversaw a team of 5 leadership members to organize quarterly events with 30+ participants, handle funds, and maintain an online presence through a website and social media