

Daniel Yao

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Education

Johns Hopkins University

M.S.E. Applied Mathematics and Statistics
4.00 GPA

Baltimore, MD
Expected May 2027

Johns Hopkins University

B.S. Applied Mathematics and Statistics, B.S. Biomedical Engineering
4.00 GPA, 36 ACT, 1590 SAT

Baltimore, MD
Expected May 2027

Relevant Coursework

Unofficial Transcript: github.com/dyao13/CV/blob/main/transcript/yao_transcript.pdf

Abstracts

Liu, S., Sargent C., Broman L., Yao, D. (2024). Role of CRF1 and CRF2 Receptors in Stress-induced Increase in Intestinal Permeability in the Mouse Colon. *Physiology* 39(S1), 815. doi.org/10.1152/physiol.2024.39.S1.815.

Skills

Languages: Python, R, Julia, SQL, MATLAB, Bash

Technologies: pandas, NumPy, SciPy, scikit-learn, PyTorch, Matplotlib, ggplot2, Jupyter

Experience

Johns Hopkins University

Aug 2024 – Present

Teaching Assistant

- Lead 30-student recitation sections for EN.553.420 Probability
- Write 20-page review for EN.553.431 Honors Mathematical Statistics: github.com/dyao13/EN_553_431_FA24

McCallion Lab, Johns Hopkins Medicine

May 2024 – Present

Undergraduate Research Assistant

- Edit iPS cells with CRISPR Del/Rei to investigate the role of cis-regulatory elements in Parkinson's Disease
- Design primers with SnapGene and perform PCRs to genotype mice and iPSCs
- Analyze scRNA-Seq data with Seurat R package to study transcriptional differences in Parkinson's-positive mice

Garza Lab, Johns Hopkins Medicine

Feb 2024 – May 2024

Undergraduate Research Assistant

- Investigated function of fibroblasts to regulate keratinocytes with goal of modifying skin identity in amputees
- Isolated, cultured, and imaged fibroblasts taken from mouse epidermal tissue and analyze images with ImageJ

Onalaska High School

Sep 2022 – Jan 2023

Teaching Assistant

- Taught 20-student review sessions and tutored individual students for AP Calculus AB and AP Calculus BC
- Lectured on extracurricular topics such as epsilon-delta and trigonometric substitution

University of Wisconsin-La Crosse

Jun 2022 – Aug 2022

Research Intern

- Investigated the specific roles of CRF1 and CRF2 receptors in stress-induced increase in intestinal permeability
- Assayed transcellular and paracellular flux through mucosa/submucosa tissue taken ex vivo from mice
- Performed ANOVA statistical analysis and visualized data in R

Projects

Pediatric Sedation Assessment github.com/dyao13/PedAccel	Aug 2024 - Present
<ul style="list-style-type: none">• Develop machine-learning model to calculate sedative dosages for pediatric critical-care patients• Extract heart-rate variability features from 250 Hz electrocardiogram data in time and frequency domains and analyze nonlinear features with Poincare maps using SciPy, Matplotlib, and neurokit in Python• Recruit clinical study participants and collect State Behavioral Scale, vitals, and accelerometry data	
Brawl Stars Draft Engine github.com/dyao13/BrawlStars	Jul 2024 - Aug 2024
<ul style="list-style-type: none">• Searched for optimal draft of 3 picks out of 82 characters per team via minimax algorithm with alpha-beta pruning to yield a 12% edge over human players in friendly matches• Optimized weights of individual and pairwise effects in SciPy to estimate win probability with 92% accuracy• Computed Nash equilibrium of simultaneous choice of 3 bans per team via linear programming in SciPy• Scraped e-sports games using beautifulsoup4 logged ranked games with BrawlStarsAPI• Employed draft strategies to reach top 1000 global ranking out of 15 million monthly players	
Patient Referral Scheduler github.com/dyao13/RefMe	Jul 2024 - Aug 2024
<ul style="list-style-type: none">• Optimized scheduling of patient referrals from a stochastic data stream to prioritize high-urgency patients• Computed solutions via Monte Carlo methods and integer linear programming with lpSolveAPI in R to yield a 25% improvement over a first-come-first-serve model• Parallelized across 10 clustered CPUs to improve runtime by 12000x compared to laptop performance	
ARTIS Over-the-Counter Hearing Aids	Jan 2024 - May 2024
<ul style="list-style-type: none">• Developed mobile application to match patients to over-the-counter hearing aids backed by VC firm ARTIS• Trained multiple regression model to map responses to a 25-component questionnaire to hearing aids in Python• Clustered and visualized 3300 audiometric profiles with UMAP, DBSCAN, and ggplot2 in R	
Cell Tracker github.com/dyao13/cell_tracker	Jan 2024
<ul style="list-style-type: none">• Isolated centroid and areas of 40 cells with Sobel operator in MATLAB to achieve 98% accuracy compared to manual measurement with ImageJ• Tracked cell movement over time by predicting next position with 4th-order finite difference methods	
Conway's Game of Life github.com/dyao13/conways_game_of_life	Jan 2024
<ul style="list-style-type: none">• Created dynamic GUI application for Conway's Game of Life with GUIDE in MATLAB with features to import .rle patterns and export .mp4 movies	

Activities

Organic Chemistry Initiative	Baltimore, MD
<i>Lecture Team</i>	Mar 2024 - Present
Hippocrates Med Review	Baltimore, MD
<i>Treasurer, Writer</i>	Sep 2023 - Present
Hopkins Symphony Orchestra	Baltimore, MD
<i>Cellist</i>	Sep 2023 - Present
Supporting Hospitals Abroad with Resources and Equipment	Baltimore, MD
<i>Shift Leader</i>	Sep 2023 - Present

Awards

Financial Education Scholarship (\$5000) , Altra Federal Credit Union	Jun 2023
Individual Champion , Wisconsin NAQT Quiz Bowl	Apr 2023
Finalist , National Merit Scholarship Corporation	Feb 2023
US Presidential Scholars Candidate , Department of Education	Jan 2023
Perfect AP US Government and Politics Exam , College Board	Aug 2022