

Daniel Yao

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Education

Johns Hopkins University

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

Baltimore, MD

Expected May 2027

Coursework

Unofficial Transcript: github.com/dyao13/CV/blob/main/yao_cv/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, SQL, Bash

Technologies: pandas, NumPy, SciPy, scikit-learn, Tensorflow, PyTorch, Jupyter, Git

Experience

Johns Hopkins University

Aug 2024 - Present

Teaching Assistant

- Lead 20-student weekly recitations for upper-level EN.553.420 Probability
- Write review guides: github.com/dyao13/EN_553_420_SP24, github.com/dyao13/EN_553_431_FA24

Clark Lab, Johns Hopkins University

Jan 2025 - May 2025

Undergraduate Research Assistant

- Designed reinforcement learning agent with deep Q-learning to regulate pressure-control ventilation in ARDS patients using Gymnasium and PyTorch to select optimal parameters with 97.5% accuracy
- Simulated pressure-volume loop with nonlinear circuit model using PSpice and Simulink to generate data for 17,280 combinations of parameters

McCallion Lab, Johns Hopkins Medicine

May 2024 - Dec 2024

Undergraduate Research Assistant

- Edited iPSCs with CRISPR Del/Rei to investigate the role of cis-regulatory elements in Parkinson's Disease
- Designed primers with SnapGene and perform PCRs to genotype mice and iPSCs
- Analyzed 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
- Analyzed fluorescence and brightfield images with ImageJ to quantify tissue identity

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 with ggplot2 in R

Projects

Risk Bot github.com/dyao13/risk_agent	Apr 2025 - June 2025
<ul style="list-style-type: none">Designed reinforcement learning agent to play Risk board game with deep Q-learning using Gymnasium and Keras to achieve 80% win rate against heuristic agent	
Pediatric Sedation Assessment github.com/dyao13/PedAccel	Aug 2024 - Present
<ul style="list-style-type: none">Develop statistical model to calculate sedative dosages for pediatric critical-care patients in PythonExtract heart-rate variability features from 250 Hz ECG data in time and frequency domains and analyze nonlinear features with Poincare maps using SciPy, scikit-learn, and neurokit2Train ordinal regression model with mord and scikit-learn to predict sedation levels with 90% accuracy	
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 matchesScraped e-sports games using beautifulsoup4 and logged ranked games with BrawlStarsAPIEmployed 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">Awarded \$1000 JHU Catalyst Grant for early-stage research and developmentOptimized scheduling of patient referrals from a stochastic data stream to prioritize high-urgency patients in RComputed solutions via Monte Carlo methods and integer linear programming to yield a 25% improvement over a first-come-first-serve model	
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 ImageJTracked cell movement over time by predicting next position with 4th-order finite difference methods	

Activities

Johns Hopkins Math Tournmament	Baltimore, MD
<i>Writer</i>	Dec 2024 - Present
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