

# Daniel Yao

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## Education

### 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

## Skills

**Languages:** Python, R, Julia, SQL, Node.js, Bash

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

## Experience

### Johns Hopkins University

Aug 2024 – Present

*Teaching Assistant*

- Lead 30-student weekly recitation sections for upper-level EN.553.420 Probability

### 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
- Analyze scRNA-Seq data with Seurat R package to study transcriptional differences in Parkinson's-positive mice

### 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
- Authored first draft of published abstract: doi.org/10.1152/physiol.2024.39.S1.815

## Projects

### Pediatric Sedation Assessment | github.com/dyao13/PedAccel

Aug 2024 - Present

- 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

### Brawl Stars Draft Engine | github.com/dyao13/BrawlStars

Jul 2024 - Aug 2024

- Search 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
- Optimize weights of individual and pairwise effects in SciPy to estimate win probability with 92% accuracy
- Scrape e-sports games using BeautifulSoup4 in Python and log ranked games with BrawlStarsAPI in Node.js

### Patient Referral Scheduler | github.com/dyao13/RefMe

Jul 2024 - Aug 2024

- Optimize scheduling of patient referrals from a stochastic data stream to prioritize high-urgency patients
- Compute 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
- Parallelize across 10 clustered CPUs to improve runtime by 12000x compared to laptop performance

### ARTIS Over-the-Counter Hearing Aids

Jan 2024 - May 2024

- Develop mobile application to match patients to over-the-counter hearing aids backed by VC firm ARTIS
- Train multiple regression model to map responses to a 25-component questionnaire to hearing aids in Python
- Cluster and visualize 3300 audiometric profiles with UMAP, DBSCAN, and ggplot2 in R