

# 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

**Relevant Coursework:** Probability, Mathematical Statistics, Optimization, Computational Mathematics, Linear Signals and Systems, Multivariate Calculus, Linear Algebra, Differential Equations

## Skills

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

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

## Experience

### Johns Hopkins University

Aug 2024 – Present

*Teaching Assistant*

- Lead 30-student weekly recitations for EN.553.420 Probability: [github.com/dyao13/EN\\_553\\_420\\_SP24](https://github.com/dyao13/EN_553_420_SP24)

### 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
- Authored first draft of published abstract: [doi.org/10.1152/physiol.2024.39.S1.815](https://doi.org/10.1152/physiol.2024.39.S1.815)

## Projects

### Pediatric Sedation Assessment | [github.com/dyao13/PedAccel](https://github.com/dyao13/PedAccel)

Aug 2024 - Present

- Develop statistical model to calculate sedative dosages for pediatric critical-care patients in Python
- Optimize existing preprocessing pipeline of 150 GB of ECG data with binary search for a 1,000x speedup
- Extract 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 neurokit
- Train ordinal regression model with mord and scikit-learn to predict sedation levels with 90% accuracy

### Brawl Stars Draft Engine | [github.com/dyao13/BrawlStars](https://github.com/dyao13/BrawlStars)

Jul 2024 - Aug 2024

- 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 in Python
- Optimized weights of individual and pairwise effects in SciPy to estimate win probability with 92% accuracy
- Scraped e-sports games using beautifulsoup4 and logged 100,000 ranked games with BrawlStarsAPI

### Patient Referral Scheduler | [github.com/dyao13/RefMe](https://github.com/dyao13/RefMe)

Jul 2024 - Aug 2024

- Awarded \$1000 JHU Catalyst Grant for early-stage research and development
- Optimized scheduling of patient referrals from a stochastic data stream to prioritize high-urgency patients in R
- Computed solutions via Monte Carlo methods and integer linear programming to yield a 25% improvement over a first-come-first-serve model
- Parallelized across 10 clustered CPUs to improve runtime by 12,000x compared to laptop performance