Daniel Yao

(608) 738-6047 | dyao13@jh.edu | github.com/dyao13

Education

Johns Hopkins University Baltimore, MD
B.S. Applied Mathematics and Statistics, B.S. Computer Science Expected May 2027
4.00 GPA, 36 ACT, 1590 SAT

Skills

Languages: Python, R
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 – 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 in R to study transcriptional differences in Parkinson's-positive mice

Projects

Pediatric Sedation Assessment | github.com/dyao13/PedAccel Aug 2024 - Present

- Develop statistical model to calculate sedative dosages for pediatric critical-care patients in Python
- 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 neurokit2
- Model pharmacokinetics with Runge-Kutta methods to quantify effects of sedatives on vitals and accelerometry
- Train 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

- 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
- Scraped e-sports games using beautifulsoup4 and 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

- 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