Daniel Yao

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Education

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

Skills

Languages: Python, Java, R, Julia, MATLAB, HTML/CSS, 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

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

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
- Optimize existing preprocessing pipeline of 150 GB of ECG data with binary search for a 1,000x speedup
- Refactor codebase with object-oriented design to improve maintainability and readability
- 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
- Create hidden Markov model with hmmlearn to predict sedation-state transitions
- 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 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 high-level matches with BrawlStarsAPI in Node.js

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
- Parallelized across 10 clustered CPUs to improve runtime by 12,000x compared to laptop performance