Nathan Dai

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EDUCATION

University of California, Berkeley May 2027
Bachelor of Science in Electrical Engineering and Computer Science (EECS) *GPA: 3.8*
Relevant Coursework: Data Structures, Computer Architecture, Linear Algebra, Multivariable Calculus, Discrete Math, Probability Theory, Statistics, Circuits and Devices

SKILLS

- **Programming:** Python, C/C++, Java, Typescript, React, Flask, Spring Boot, Postgres, WebSockets, Firebase
- **Data Analysis:** Pandas, Matplotlib, Excel, Sci-kit Learn, PyTorch

RELEVANT EXPERIENCES

DL Software (https://app.godelterminal.com/) December 2024 – Present
Software Developer *Part-time remote (school year); full-time NYC (summer)*

- Built **data-intensive UI** to deliver low-latency, streaming financial data for production application
- Optimized **application performance** and reliability using memoization, virtualization, and efficient state management
- Reduced content download time by **50%** and first contentful paint time by **16%** through **parallel API optimization**
- Developed and integrated **statistical analysis REST APIs** for large-scale data processing
- Analyzed customer behavior data from Stripe and PostHog using Python to **improve conversion rates**
- Automated QA workflows by writing **end-to-end and integration tests** with Cypress to ensure system reliability

Berkeleytime (https://www.berkeleytime.com/) September 2024 – Present
Semantic Search, Internal Lead

- Implemented **embedding models** in Python to power semantic search and improve course discoverability
- Built an Elo-based platform for beta testers to compare and **rank model quality** using Flask
- Created an **internal dashboard** to batch update staff info and streamline onboarding using Express.js and React

Machine Learning and Data Science Club August 2021 – May 2024
Co-founder and Vice President

- Developed an AI-powerd climate change education platform, *EcoGuide*, to empower greener lifestyles
  2nd Place (KatyYouthHacks, 2/68 global teams)
- Engineered an LLM-based epitope classifier to accelerate the identification process for vaccine candidates
  (Bio ML Hackathon, 20/500+ accepted project proposals)

Wharton Global High School Investment Competition September – December 2023
Team Leader and Semifinalist (50/1,600 global teams)

- Led a 6-person team in managing a $100,000 stock portfolio for a hypothetical client
- Developed and executed investment strategies that aligned with the client's financial goals and personal values

PROJECTS

Rev Match Calculator for ND Miata
A real-time automotive tool that reads vehicle data to calculate optimal RPM targets for smooth gear shifts

- Built a C application with ELM327 OBD-II adapter integration for live engine RPM and vehicle speed monitoring
- Implemented automatic gear detection algorithms and rev-matching calculations with real-time updates

Keyboard Layout Optimizer
A program to create custom keyboard layouts optimized for coding efficiency and ergonomics

- Engineered a genetic algorithm to evolve personalized keyboard layouts from a corpus of all code I have ever written
- Created a custom fitness function penalizing long travel distances and repeated finger use
- Devised a crossover and mutation strategy for combining layouts

PUBLICATIONS

- Nathan Dai and Suleyman Uludag, "Performance Tradeoff in ML-based Intrusion Detection Systems: Efficacy vs. Resource Usage", *2024 IEEE Consumer Communications & Networking Conference (CCNC)*, Las Vegas, NV, January 2024, pp. 1030-1031. https://ieeexplore.ieee.org/document/10454871

ADDITIONAL EXPERIENCES

- 2022 and 2023 AMC 12, AIME Qualifier
- Greater San Diego Science and Engineering Fair, 1st Award (2021), 2nd Award (2022, 2023)
- 2021 USA Computing Olympiad, Silver Award
- Culture Ebikes, *Sales Associate*