Billy Nguyen

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Education

University of California, Berkeley — Berkeley, CA

Bachelor of Arts in Computer Science - GPA: 3.85/4.0 — Expected May 2027

Relevant Coursework: Algorithms, Computer Architecture, Probability, Data Structures, Discrete Mathematics, Data Science, Linear Algebra, & Multivariable **Ongoing:** Operating Systems, Cybersecurity, & Internet

Experience

University of California Berkeley - Natural Resources — Aug 2025 – Present

Software Developer, Research — Berkeley, CA

- Embedded a **Node.js backend** to simulate human models in various thermal environments
- Created the backend logic to handle CSV and JSON file uploads for batch simulation data and to export results
- Improved web application reliability by implementing persistent user data storage through the browser's local storage

KiDrone — May 2025 – Aug 2025

Software Engineer Intern — Toronto, ON

- Engineered a **Full-Stack** App to optimize the planning of autonomous seed drops with drones for forestry operations
- Increased seeding efficiency and ensured at **least 98% terrain coverage** with a **Python-based backend**
- Enabled low-latency (1 ms) interaction via IPC channels between Electron's UI with a computational backend
- Reduced deployment time by **25%** by implementing a **CI/CD** pipeline that automated build and ran integration tests

University of California Berkeley - Nanotechnology — Jan 2025 – Present

Software Developer, Research — Berkeley, CA

- Built an interactive dashboard to align and visualize theoretical models with experimental impedance data
- Designed a **Python**-based computational modeling framework for nanoscale biosensors, quantifying electrical changes and electrochemical measurements, increasing computation speed by **38%** through vectorized computation.
- Collaborated with cross-functional teams to reduce experimental error **by 27%** through modeling experiments

Projects

Plan-A | Python (FastAPI), TypeScript (React Native), PostgreSQL, Redis, Google Map API

- Reduced average **manual user data entry by 85%** by implementing an image analysis pipeline that transforms unstructured travel photos into structured, optimized itineraries within 10 seconds
- Accomplished **44% reduction in itinerary generation latency** by pipelining a FastAPI background tasks with a Redis-backed caching layer, minimizing redundant third-party API calls to Google Maps and Vision services
- Optimized **travel route efficiency by 30%** by engineering a constrained TSP solver using Google OR-Tools and a Redis-backed distance matrix
- Reduced **image analysis latency by 40%** by architecting a dual-modal parallel pipeline that executes CPU-bound OCR and I/O-bound Vision APIs concurrently using Python asyncio

ParellelGenisis | Python, Cython, OpenMP, Profiling, CPU Architecture, Simulation scaling

- Architected a high-throughput simulation engine capable of processing 500+ Million Cell Updates Per Second
- Optimized runtime by 20x by rewriting critical loops in Cython and releasing the GIL to leverage CPU parallelism

Finalytics | TypeScript, Node.JS, Express.JS, Mongoose, Vite, Recharts, Redux, React

- Deployed a full-stack finance dashboard with **Recharts KPIs** and **Redux Toolkit** for scalable state flows
- Built and optimized modular **RESTful APIs**, leveraging **MongoDB** for financial **CRUD** operations
- Intergrated a **ML regression** model to forecast revenue using past data and transactions through feature engineering

Additional Information:

Languages: Python, Java, C, SQL, HTML/CSS, JavaScript, TypeScript
DevOps, Tools, & Other: Docker, DuckDB, MongoDB, NumPy, Pandas, & Scikit-learn
Interests: Volunteering, Tennis, Health/Fitness, Tetris, & PC Building