

Justin Kong

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EDUCATION

Vanderbilt University

Majors: B.S. Computer Science & B.A. Medicine, Health, and Society

May 2027

GPA: 3.79

Honors: Dean's List: 2023, 2024, 2025 and National Merit Finalist

Relevant Coursework: Data Structure & Algorithms, Intermediate Software Design, Computer Architecture

Involvement: Vanderbilt Computer Science Department Social Media Assistant, Ultimate Frisbee (Armada)

Experience

Protelligence — *Software Development Intern*

May 2025 – Jan. 2026

- Engineered and deployed the company's first UI testing suite using **Playwright** and **Docker**, redesigning the integration test architecture and embedding the new framework—cutting QA cycle time by 40% and enabling regression detection 2x faster in **CI/CD** pipelines
- Optimized **AWS CDK** infrastructure for S3-based data processing by relocating compression tasks to a less utilized bucket, reducing storage overhead, speeding **Redshift** and **Elasticsearch** database population, and lowering cloud costs by \$100/month (~\$1,200 annually)
- Built an event-driven test environment pipeline using AWS Lambdas, Step Functions, and ECS Fargate tasks, enabling a single invocation to provision **cloud** resources, execute business logic and full testing, and teardown—cutting setup time from 45 minutes to 20 minutes

Change++ — *Software Engineer*

Sept. 2024 - Present

- Maintained and enhanced a **full-stack** web application for Miracle Flights, a nonprofit that has coordinated 168,000+ free commercial flights for sick children in need of medical care, providing 500+ users a critical tool for trip coordination and dashboard management
- Created a secure backend service using Microsoft **OneDrive** to automate patient document organization into a hierarchical system, integrated with the company's HIPAA-compliant **AirTable** database, reducing audit prep time and improving compliance scalability
- Managed a 3-member team developing the full-stack service (frontend-backend), optimizing workflows to finish sprints in half the time

Tovar Lab: Brain-Inspired AI — *Research Assistant*

Aug. 2024 – Aug. 2025

- Conducted a comparative research study on **large language models** and human developmental linguistics in immersive 3D virtual environments, processing 1,000+ minutes of audio and employing Bayesian Optimization to create Representational Dissimilarity Matrices
- Conducted data collection for 20+ participants in **VR-based** language experiments by implementing standardized protocols and co-developing an end-to-end experimental control script, automating preprocessing workflows for high-quality multi-modal datasets
- Led the authoring of an academic paper, presented to Meta research scientists, fostering and shaping ongoing research collaborations

Vanderbilt Computer Science Department — *Teaching Assistant*

Aug. 2025 – Jan. 2026

- Facilitated weekly office hours for Vanderbilt's Data Structures course (CS 2201), providing one-on-one support for 200+ students, helping debug implementations and strengthen understanding of data structures, recursion, graph algorithms, and asymptotic analysis
- Evaluated and graded large-scale, Java-based programming assignments and exams, assessing runtime complexity, memory efficiency, and algorithmic correctness, while delivering actionable feedback to reinforce best practices in design and algorithm implementation

Projects

findmyAP | Python, Selenium, SQL, Flask, JS

May 2024 – Sept. 2024

- Developed a full-stack web application that automates the search for College Board AP credit policies at 2000+ institutions using a Python web-scraping script, potentially saving students \$1000+ in tuition costs
- Implemented SQL to organize and access relational data and deployed RESTful API for state management and AP credit data access
- Identified and established an active user population of 100+ high school students, presenting to 50+ high school faculty members

Miracle Flights | Typescript, Express, AirTable, Microsoft Graph

Sept. 2024 – May 2025

- Implemented full backend framework for secure OneDrive integration support, creating modular, scalable RESTful endpoints using Express and Microsoft Graph API that allow for HIPPA-compliant, seamless patient data folder hierarchy creation and management
- Integrated a Redis-based token caching system and authentication flow enabling session persistence and secure token encryption
- Utilized Typescript, Express, and AirTable in writing controller functions for financial document upload and modification

Analyzing Developmental Linguistics | Python, Pytorch, TensorFlow, C#, Unity

Aug. 2024 – Aug. 2025

- Created and optimized an end-to-end, novel analytical pipeline leveraging multi-modal embedding models from Meta, efficiently extracting prosodic and semantic features of audio files and precisely calculating similarity scores between Tensor embeddings
- Processed 45000+ videos from Casual Conversations Dataset and trained linear regression models to predict speaker linguistic behavior

Patty Wagon Voyage | MongoDB, Express, React, Node.js

Aug. 2024 – Sept. 2024

- Created a full-stack MERN geography trivia-based game in which users must complete stages of geography trivia to progress a story
- Built a RESTful API backend using Node.js and Express for handling logic, session data, and leaderboard data stored in MongoDB

SKILLS

Languages: Java, TypeScript, Python, JavaScript, C++, R (ggplot2, tidyverse, haven), HTML/CSS, SQL

Frameworks: Next.js, Tailwind, Node.js, Express.js, React, Flask

Tools: Git, AWS, Docker, Playwright, Selenium, Postgres, MongoDB, Redis

Concepts: Software Development, Cloud, Web Development, Frontend, Backend, Agile