Justin Kong

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Education

Vanderbilt University   May 2027
Majors: B.S. Computer Science & B.A. Medicine, Health, and Society   GPA: 3.79
Honors: Dean's List: 2023, 2024, 2025 and National Merit Finalist
Relevant Coursework: Data Structure & Algorithms, Intermediate Software Design, Computer Architecture

Experience

Proteligence — *Software Development Intern*   May 2025 – Present
• 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 — *Social Media Assistant*   Aug. 2024 - Present
• Oversee Twitter, LinkedIn, and Facebook accounts with 1000+ total followers for Vanderbilt University's computer science department, increasing engagement by over 400% and tailoring content for computer science students to grow the department's online presence.
• Spearheaded the launch of the department's Facebook page, creating and customizing content tailored to computer science students' interests based on analysis of social media trends and data.

Projects

findmyAP | (Python, Selenium, SQL, Flask, JS)
• 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)
• 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 —Tovar Lab**| (Python, Pytorch, TensorFlow, C#, Unity)**
• 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)
• 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 and Involvement

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
Involvement: CS 2201 Teaching Assistant (Data Structures and Algorithms), Ultimate Frisbee (Armada)