

JACK KONG

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA

Completion: Dec 2023

Master of Information Systems Management

- **GPA:** 3.61 / 4.0
- **Relevant Coursework:** Web Application Development, Data Focused Python, Database Management, Object-Oriented Programming Java, Distributed Systems, Machine Learning, Unstructured Data Analysis

Boston University, Boston, MA

Completion: May 2022

Bachelor of Arts in Computer Science and Mathematics (Double Major)

- **GPA:** 3.53 / 4.0
- **Relevant Coursework:** Software Engineering, Database Systems, Full Stack Development, Foundations of Data Science

SKILLS

Languages: Python, Java, JavaScript, TypeScript, HTML, CSS

Database Engineering: MySQL, MongoDB, DynamoDB, RDS, SQLAlchemy, PySpark, AWS Glue

Frameworks: Spring Boot, Flask, Django, React.js, Angular, Redux, Bootstrap

Tools: Git, Docker, Kafka, RabbitMQ, AWS (EC2, S3, ECS, ECR), Azure, SonarQube, Checkmarx, Invicti, JIRA, Postman

WORK EXPERIENCE

Amtrak, New York, NY

Nov 2024 - Present

Full Stack Engineer

- Spearheaded development of an enterprise workforce management system supporting 8,000+ union employees, digitizing job postings, bid cycles, award decisions, and seniority management to replace legacy manual processes.
- Developed complex bid ranking and award workflows with **Angular Signals**, and **TypeScript**, enabling real-time UI state updates and optimized change detection.
- Designed **RESTful** microservices with **Spring Boot**, **JPA Specifications**, and **PostgreSQL**, implementing bid validation, award state transitions, duplicate prevention, and transactional integrity.
- Containerized services using **Docker**, deployed to **AWS ECS/ECR**, and secured APIs via **API Gateway + Lambda** authorizers with **Azure AD JWT validation**.
- Automated testing and code quality checks with **JUnit**, **Mockito**, **Jasmine**, **SonarQube**, **Checkmarx**, and **Invicti**, ensuring secure enterprise releases.

BeaconFire, East Windsor, NJ

Feb 2024 - Sep 2024

Full Stack Engineer

- Built and deployed **Flask-based microservices** delivering REST APIs for an e-commerce news interface and admin dashboard, with backend data stored in **AWS RDS** and content served via **AWS S3** using **SQLAlchemy** for ORM
- Designed a **RabbitMQ-based messaging pipeline** to support user subscription and marketing communication workflows, integrating **Flask-Mail** for automated email delivery
- Constructed a centralized dashboard with **React** and **React Charts** to visualize operational metrics in real time, enhancing administrative decision-making efficiency
- Integrated a **GPT-3.5-turbo chatbot** using **LangChain** to chunk documents, generate **OpenAI embeddings**, and perform vector-based retrieval via **Pinecone**, enabling semantic search within a retrieval-augmented generation pipeline

VisionX, San Jose, CA

May 2023 - Aug 2023

Software Engineer Intern

- Developed a **Django-based data mining system** to enhance user profiling for a personalized plant recommendation platform, leading to a 15% increase in user engagement through improved content targeting

- Deployed services on **AWS EC2**, with media hosted on **S3** and structured data managed via **RDS**, enabling reliable scaling of the Smart Planting system
- Implemented a **ChatGPT-powered virtual assistant** on the forum interface, providing context-aware responses to user queries and improving support satisfaction by 19%
- Designed an interactive front end using **Django templating** and **HTML/CSS**, along with a custom-built order system for seamless user interaction with the recommendation service

PROJECT HIGHLIGHTS

ADHD Affirmation

Apr 2025 - Present

- Analyzed peer-reviewed clinical studies on ADHD, identifying 70% prevalence of emotional dysregulation and 33% incidence of severe time blindness, and grounded the design of an affirmation-centric system in these psychological markers to address daily executive and emotional challenges
- Launched a public-facing Instagram channel posting three short-form calming videos per day that layered affirmations on natural visual loops with music, growing organically by 100 followers biweekly and achieving 11% engagement, demonstrating demand for lightweight affirmation content
- Architected a mobile-first system with a **React Native** front end and **FastAPI** backend, minimizing interface complexity to two-tap interactions and limiting on-screen elements to reduce cognitive overload in neurodivergent users
- Integrated a **GPT-4o conversational agent** that decomposed user-entered tasks into micro-steps, suggested ADHD-specific time management routines, and conducted simple cognitive reframing exercises to support dynamic, dialog-based behavioral nudging

Movie Piracy (CMU Capstone Project)

Oct 2023 - Dec 2023

- Constructed a data pipeline to identify and monitor ~200 active movie piracy domains, quantifying ~9.15 million English-language streams in one month and producing the first reliable measurement baseline for streaming-era U.S. piracy volume
- Built a scalable domain expansion pipeline using **Selenium** and **BeautifulSoup** to scrape Similarweb “related site” pages, merged results with social media tips and SEO data, removed duplicates, and stored snapshots in **AWS S3** in both CSV and Parquet format for version control
- Automated scraping of traffic metrics including total visits, visit duration, and U.S. share, and deployed nightly ETL workflows using **AWS Lambda** and **Glue** to validate schema and clean anomalies before loading into **Aurora RDS** for downstream analysis
- Modeled English-language content share through runtime-weighted sampling of top-site title listings and extrapolated national stream counts, delivering outputs as an interactive **Excel dashboard** and **Python notebooks** adopted by IDEA Lab for studio and congressional briefings

Business Catering Dashboard

Mar 2023 - May 2023

- Developed a multi-component backend using **Flask microservices** to manage user preferences, order histories, and subsidy tracking, with each service independently containerized and communicating over defined REST APIs
- Built a dynamic front end in **Angular** with employer-side views for monitoring employee food choices and budget allocation, employing **Redux** for cross-component state consistency and **JWT + Google OAuth** for secure, organization-restricted authentication
- Integrated **RabbitMQ** to send verification codes and **Flask-Mail** for secure login flows, and used **Kafka + Zookeeper** for real-time food delivery status streaming to improve user visibility into order progress
- Deployed services using **Docker** and hosted backend components with **AWS RDS (MySQL)** and **Flask-SQLAlchemy**, enabling reliable persistence and scalable production deployment