

YIZHI (ETHAN) HAO

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EDUCATION

Cornell University, New York, NY

May 2025

Master of Science in Information Systems | GPA: 4.065 | Merit Scholarship

Coursework: Algorithms and Data Structures, Web Development, Networked and Distributed Systems, Natural Language Processing, Applied Machine Learning, Computer Vision, Virtual and Augmented Reality, Cloud Computing and Big Data, Applied Data Science.

Beijing Foreign Studies University, Beijing, China

Jun 2023

Bachelor of Management in Information Systems and Information Management | GPA: 3.93 | summa cum laude

Honors/Awards: Beijing Municipal Outstanding Graduate (Top 5%), Beijing Municipal Outstanding Thesis (Top 0.5%)

TECHNICAL SKILLS

Language/Software: Python, Java, SQL, JavaScript, Go, HTML, CSS, C#, C, R, Shell, SPSS, Mplus, Stata, Git, Jira, Postman, Unity.

Framework/Platform: Next.js, React, Django, Django REST, SpringBoot, Spring Data JPA, Express, Vercel, AWS, GCP, Firebase.

Database/Others: MySQL, PostgreSQL, Docker, Kubernetes, Redis, Spark, Kafka, NoSQL, PyTorch, Cloudflare, Linux, Terraform.

EXPERIENCE

Rakuten, Rakuten Advertising, Software Engineer Intern, New York City, United States

Jun 2024 - Present

- Developed **RAG** POC for automatic error analysis using **GPT-4o**, managed by **LangChain**, triggered by Cloud Monitoring alert via **Pub/Sub**, retrieving logs and indexed codebase with **OpenAI embeddings** and **BigQuery**, deployed with **Cloud Run functions**.
- Built **Go** plugin for **Kong** to log timestamped API usage, caching in **Redis** Sorted Set, aggregating 1M+ entries/day in **BigQuery**.
- Containerized **microservices** with **Docker**. Deployed to **Kubernetes (GKE)** using **Helm**, 50%+ cost saving from VM architecture.
- Automated **CI/CD** pipeline with **CircleCI**, managing image with **JFrog Artifactory** and secret with **Vault**, aiding agile development.

Beijing Daxing International Airport Terminal, Administration Dept., Data Analyst Intern, Beijing, China

Oct 2022 - Jun 2023

- Developed a **queueing theory**-based system using **Python/MySQL** to forecast passenger check-in wait times, providing real-time estimates every 10 minutes and overnight backlog forecasts, covering 12,000+ flights, and 165,000+ passengers monthly.
- Optimized **KDE** curve integration for queue length estimation by implementing a **process pool**, boosting performance by 4x.

Lenovo, Solution & Service Group, Data Analyst Intern, Beijing, China

Jul 2022 - Oct 2022

- Reviewed code, maintained Confluence document, and conducted testing of MARS (chipset inventory forecasting using **GLPK**), fixing bugs in linear programming constraints, and streamlining constraint matrix to reduce solution time by 40%.
- Developed optimization system demos for PCBA assembly planning and production scheduling using **Python/GLPK** and **Python/Geatpy**, solving multi-objective mixed integer programming problems with **genetic algorithm**.

PROJECTS

Zoning GPT (Cornell × National Zoning Atlas), Research Assistant

Fall 2024

Retrieval-Augmented Generation (**RAG**) pipeline to extract regulations from U.S. Zoning Codes, applying **LLMs** and **NLP** techniques.

- Used **AWS Textract** for OCR, **Elasticsearch** for indexing and keyword searching, **OpenAI GPT-4 API** for contextual extraction.

MiniTorch, Back-End Developer

Fall 2024

PyTorch from scratch, with core features like computational graph, autograd, backpropagation, and **CUDA** support, **PyTorch** compatible.

Trip Rover, Technical Lead

Spring 2024

Interactive trip planning application utilizing **Google Map Javascript API** with **vis.gl**, integrating **Places/Autocomplete/Routes APIs**.

- React** Front end with **Chakra UI** and **react-beautiful-dnd** for interactive components. Manage state via **Redux/Context API**.
- Built **Spring Boot** backend offering **REST** and **WebSocket (STOMP)** services for **CRUD** operations, real-time plan updates, and **Optimistic Locking** for concurrency control. Integrated **PostgreSQL** as the database and **Spring Data JPA** for ORM.
- Used **JWT** authentication with **Redis** for server-side cache, HTTP-only cookie for client-side storage, enabling **OAuth2** and **RBAC**.
- Managed avatar with **AWS S3** and infrastructure via **IaC (Terraform – remote backend, DynamoDB)**, configured **IAM** roles.

Issue Tracker, Full-Stack Developer

Spring 2024

Issue tracking system allowing users to post and update issues in markdown format, built with **Next.js**, and deployed using **Vercel**.

- Used **Radix UI** and **tailwind** for front-end component, **React-Hook-Form** for form handling, **Zod** for schema validation, and **Prisma** as **ORM** framework for **CRUD** operations. Built **RESTful API** and used **Axios** and **TanStack Query** for data fetching.
- Configured **AWS EC2** to deploy **MySQL** database using **Docker**. Used **Sentry** for performance monitoring and error-tracking.
- Integrated **OAuth2** with **JSON Web Token**, delivering third-party login and optimizing user-login experience.

StudyBud, Full-Stack Developer

Fall 2023

Social Learning Platform developed with **Django** and productionized via multi-container **Docker compose** on **AWS EC2**.

- Implemented **Django** view and template mechanics for user interface. Integrated **PostgreSQL** for database operations
- Utilized **Django REST Framework** for API communication. Configure **Nginx** to serve static files efficiently.

Identifying Supply Chain Risk Based on Agent-Based Modeling and Simulation (BFSU), Research Assistant

Fall 2023

Research implementing **ABMS** method to identify high-risk nodes in SCs, using **Taguchi** method to study factors affecting SC resilience.

PUBLICATIONS

Ma, Xiaoyu; Hao, Yizhi; Li, Xiao; Liu, Jun; Qi, Jiasen (2023): Evaluating global intelligence innovation: An index based on machine learning methods. In *Technological Forecasting and Social Change* 194, p. 122736. DOI: [10.1016/j.techfore.2023.122736](https://doi.org/10.1016/j.techfore.2023.122736).