HAO LOU

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Education

University of Southern California	Agu 2024 – May 2028
Major: Applied and Computational Mathematics(BS) **Minor:** Computer Science(BS)	**GPA**: 3.85/4.0

- **Coursework:** Data structure, Discrete Methods, Numerical Methods, Probability Theory, web development
- **Technical Stack:** Java, Python, C++, R, MATLAB, JavaScript, HTML/CSS, Pandas, PyTorch, Forecasting, AIGC
- React.js, Next.js, Ant Design, Mapbox, Spring Boot, Flask, REST APIs, MySQL, Git/GitHub, Cloudflare, Task Scheduler

Honors

- Platinum Division Qualifier (highest level) in USA Computing Olympic(**USACO**) 2-3% qualification rate
- TOP 30% out of 1805 in **Kaggle research competition**: AMP®-Parkinson's Disease Progression Prediction
- States finalist (top 6 out of 56 teams) in First Technology (**Robotics**) Competition Florida Championship

Research and Work Experience

Huntsman Corporation	May 2025 – Aug 2025
product development intern	Shanghai, China

- The methanol synthesis process required maintaining an unknown ideal hydrogen-to-carbon monoxide ratio to suppress side reactions. Adapted a self-built **intelligent BI platform** and build Ratio Optimization and feature importance visualization module with **Spring Boot, MySQL, and React** for process monitoring and analysis.
- reduced analysis and prediction time by **60%**, and identified the optimal gas ratio (**2.12:1**) also extended catalyst lifetime—a breakthrough point.

Hundsun Technologies Inc.	June 2023 – Aug 2023
Java software engineer intern	China

- Migrated financial product UI features with **React.js** and **Spring Boot,** integrating **REST APIs;** aligned **API** contracts (request/response formats, error handling), resolved integration issues, and coordinated testing to ensure smooth rollout.
- Built Java components to parse transaction data, reconcile mismatches, and trigger real-time alerts, automating manual trading&settlement workflows; reduced reconciliation time from 45 minutes to <5 minutes per batch (85% faster) and improved accuracy by 90%.

IN THE PINES INC.	June 2022 - May 2024
Co-Founder & Educational Lead, STEM Outreach Initiative (Grades 7–12)	Delray Beach, FL

- Volunteered a nonprofit teaching many had **limited access** to technology and were in a **rebellious stage**.
- Exercised patience and adaptability, mediated conflicts, tailored communication to one's needs, coordinated with fellow volunteers, and designed lessons to make coding accessible and engaging and collaborative, promote club

Projects and Activities

Intelligent Data Analysis Platform	Sep, 2024 – July, 2025

- Built a **full-stack** intelligent BI platform using **React, Spring Boot, Ant Design, OpenAPI...**, enabling users to upload raw datasets and automatically generate visualizations and insights.
- Implemented **asynchronous processing, message queues..** to improve scalability and system performance.
- Integrated **AI-generated content (AIGC)** for automated chart generation and narrative analysis, reducing repetitive manual work for data scientists and accelerating insight generation.

USC Code The Change	Nov 2024 - Present

- Contributed to Voices Beyond Assault project by implementing a secure, **anonymous online forum** supporting 100+ survivors in sharing experiences and seeking help.
- After the major fire in LA, built **an interactive platform** to showcase Blue Sky LA's climate projects, making them visible, searchable, and engaging for the public. Developed with **NextJS, CloudFlare, and Mapbox**

Automated Chemistry Lab Workflows

- Built a **web interface** for lab staff to upload experiment request PDFs and view monthly report summaries, integrating **JavaScript, HTML/CSS, and Flask (Python)** for front-end and back-end communication.
- Implemented **backend workflows** in **Python (pandas, PyPDF2)** and **VBA macros** to extract and process PDF content, track MSDS expiration dates with automated alerts (**Task Scheduler**), and forecast procurement needs based on historical consumables data.
- Reduced manual effort by 40%, enabling lab staff to focus on core research operations.