Hansheng Liu

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EDUCATION

University of Illinois Urbana-Champaign

- Master of **Computer Science**   Aug *2024 – Dec 2025 at Urbana, IL*
    - GPA: 3.74 / 4.00 | Full Scholarship.
- Bachelor of Science in **Computer Science & Mathematics**   Aug *2020 – May 2024 at Urbana, IL*
    - GPA: 3.96 / 4.00 | Graduated with Highest Distinction.
    - Additional Major: Economics. Minor: Statistics, Computational Science & Engineering.

SKILLS

Programming Languages: Java, C++, Python, SQL, JavaScript, TypeScript
Frameworks: Spring Boot, Spring Cloud, Spring Security, Hibernate, Angular, React, Junit, Mockito
Middleware & Database: MySQL, MongoDB, Redis, Kafka, RabbitMQ
DevOps & Cloud: AWS (Lambda, EC2), Docker, Kubernetes, Jenkins, NGINX, Git, Linux

WORK EXPERIENCE

Amazon | *Software Development Engineer Intern*   *May – Aug 2025 at Bellevue, WA*
- Engineered an AI integration for an internal service, streamlining complex query process into a single-sentence input.
- Refactored and deployed local MCP servers as **AWS Lambda** functions, reducing human-hours by 90% for related tasks.
- Insisted on highest coding standards, with codebase following ACBDA and full unit test coverage.

Leyan Technologies | *R&D Engineer*   *Jun – Aug 2024 at Shanghai, China*
- Developed an AI framework validation system, automating correctness verification and performance benchmarking.
- Spearheaded the implementation of the web backend (**Spring Boot**), test-runner (**Python**), and database (**MySQL**).
- Researched integrating the newest TTS model, along with RAG, into the company's service.

Zhejiang Century Huatong Group | *Software Development Engineer*   *Jun – Aug 2023 at Shanghai, China*
- Developed critical modules for the Office Automation (OA) system using **C#**, delivered and deployed all tasks on time.
- Integrated taxi API into corporate APP, streamlining employee reimbursement workflows and enhancing expense oversight.
- Wrote code to read and classify more than 1,000 charts of unorganized data into forms to facilitate inquiries by colleagues.

Illinois Mathematics Lab | *Researcher*   *Jan – Dec 2023 at Urbana, IL*
- Wrote a simulation system in C++, used fast algorithms and multithreading, reduced more than 80% of the original runtime.
- Mined frequent patterns and applied multiple deep-learning algorithms to gain insights of the data.

Siebel School of Computing and Data Science - UIUC | *Teaching Assistant*   *Aug 2023 – May 2025 at Urbana, IL*
- Held office hours, designed course materials, managed graders and CAs. (CS450, CS128)

PROJECT HIGHLIGHTS

Online Shopping Application | *Spring Boot, Hibernate, MySQL, Spring Security, Angular*
- Architected a full-stack RESTful e-commerce platform with a **Spring Boot** backend and **Angular 16** frontend.
- Implemented a strict layered architecture and **Hibernate (Criteria API)** for dynamic database queries.
- Secured the application using **Spring Security** and **JWT** for stateless authentication and role-based authorization.
- Engineered complex business logic using **Spring AOP** and transaction management to ensure data consistency during inventory updates (stock deduction/restoration) and order cancellations.

Chat Master | *NGINX, React, Python*
- Developed an interactive chatbot utilizing the OpenAI API to enhance the conversational abilities of users.
- Engineered a distributed server using **NGINX**, able to handle more than 8,000 concurrent requests.

Chrome extension for text summarization | *Python, JS, HTML, Django*
- Created a Chrome extension that summarizes text on webpages, saving users over 60% of their time on average.

RESEARCH

Packing Low-diameter Spanning Trees | First author. Advised by Rhea Jain.   *2025*
  - Graph Algorithm. Randomized Algorithm. Approximation Algorithm.

Hop-constrained Shortest Path Queries in Planar Graphs | First author. Advised by Prof. Jeff Erickson.   *2025*
  - Data Structure. Graph Algorithm.

Length-constrained Minimum Spanning Tree | First author. Advised by Rhea Jain & Prof. Chandra Chekuri.   *2025*
  - Graph Algorithm. Approximation Algorithm. Derandomization.

Chain of Summary with persistently decaying entropy in RAG | First author. Advised by Prof. Jiawei Han.   *2024*
  - Text Mining. Post-RAG. LLM.

Scale-Free First-Passage Percolation | Student author. Mentored by Prof. Partha S. Dey.   *2023*
  - Stochastic Processes. Approximation Algorithm. Deep Learning.
  - 2024 IML Research Award.

Rumor Propagation on a Spread-out Line Graph | Student author. Mentored by Prof. Partha S. Dey.   *2023*
  - Stochastic Processes.
  - 2023 IGL Research Award.