

Ruichen Zhang

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EDUCATION

University of Pennsylvania, Philadelphia, PA 5/2023

- Master of Computer and Information Technology, GPA: 3.91/4.00
- Courses: Internet & Web Systems, Database Systems, Web Programming, Data Structures & Software Design, Algorithms

Beijing University of Chemical Technology, Beijing, China 6/2020

- Bachelor of Science in Chemistry, GPA: 3.89/4.00 (Ranked 2/332)

SKILLS

- **Languages:** Java, JavaScript, Python, C, C++, SQL, HTML, CSS
- **Frameworks/Tools:** Spring Boot, React, Node, Express, Bootstrap, Flask, MySQL, MongoDB, Neo4j, Redis, Spark, Flink, Hadoop, Elasticsearch, Kafka, AWS (EC2, S3, RDS, EMR), GCP, Docker, Maven, Postman, Linux, Git, JUnit, Jest

PROFESSIONAL EXPERIENCE

Amazon, Software Engineer Intern, Seattle, WA 5/2022 – 8/2022

- Rebuilt the sharing reactions feature for Echo Show, to be available to **8.2M+** customers in production
- Developed a **Spring Boot** backend for touch and voice interaction with photos, achieving **99%+** availability and handling **2K+** TPS peak performance
- Created reactions UI and animations using cloud-based **APL** (Alexa Presentation Language), migrating the legacy **Android** codebase to APL frontend
- Implemented accessibility support in **APL** to improve user experience on Alexa-enabled devices
- Achieved **96%+** code coverage through comprehensive unit testing using **Mockito**
- Facilitated cross-functional collaboration among the engineering team, product manager, and UX design team to drive a successful design review and establish a well-defined project scope

CSSLab at Penn, Research Assistant, Philadelphia, PA 10/2021 – 1/2022

- Created a multiplayer game using **React** and **Empirica** to engage participants in collaborative group tasks, simplifying game data collection for group dynamics analysis
- Developed a customizable template to streamline game creation for different research needs

4Paradigm, Software Engineer Intern, Beijing, China 3/2021 – 7/2021

Recommender System

- Developed a **Spring Boot** backend to process user and item profiles data and calculate recommendation scores
- Implemented a near real-time stream pipeline using **Java** and **Flink** to analyze **3M+** user profiles retrieved from **Kafka**, persisting results in a time-series database
- Built a batch pipeline using **Spark SQL** to process **5M+** item profiles from **HDFS**, storing results in **Elasticsearch**

Search Analytics System

- Developed **Flink** jobs to calculate search metrics for specified time windows and real-time streams, enabling the data scientist team to analyze and optimize search models
- Evaluated model performance by segmenting traffic into strategy groups, computing CVR (conversion rate) using **Flink**, and saving computed values to **Elasticsearch** for analysis

SELECTED PROJECTS

Goggle | Java, AWS EC2 1/2023 – 5/2023

- Developed a distributed search engine in **Java** that runs on a custom HTTP/1.1 server implemented from scratch
- Built a distributed web crawler to crawl **200K+** pages, a **Spark**-like analytics engine to index **5.4M+** words, and a distributed key-value store to persist index tables on disk
- Created a responsive frontend with query processing, TF-IDF/PageRank ranking, and HTML result display
- Implemented an LRU cache to optimize performance for frequently searched terms, reducing query latency to **~0.05s**
- Deployed the search engine on **EC2** instances for high availability and scalability

Forx News | React, Node, Express, MySQL, AWS RDS, Heroku 10/2022 – 12/2022

- Developed a dynamic restaurant review website using **React**, leveraging Yelp datasets with **2.8M+** entries
- Created a **RESTful** backend using **Node** and **Express**, enabling users to search and save restaurants
- Integrated Google and Twitter **OAuth** APIs for authentication, and used Google Map APIs to visualize restaurant locations
- Optimized complex **SQL** queries to recommend restaurants, improving query execution speed by **106.57%**