Mingchao Zhang

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EDUCATION

Brown University   Aug 2022 - May 2024
M.S. in Computer Science, GPA: 4.0

University of Illinois at Urbana-Champaign   Aug 2016 - May 2020
B.S. in Mathematics and Computer Science with Highest Honors, GPA: 3.83

Relevant Coursework: Data Structures, Algorithms, Computer Systems, Database Management Systems, Computer Networks, Privacy-Conscious Systems, Web Programming, Machine Learning

WORK EXPERIENCE

Amazon Web Services, *Software Engineer Intern, Data Ingestion*   Seattle, WA | June 2023 – Aug 2023
- Developed a robust test program in **Python** to ensure the data integrity of a data ingestion service
- Designed a scalable and low-cost architecture with Amazon **S3**, **Athena** and Hydra containers capable of processing terabytes of incoming data while keeping the test cost under 5% of the data ingestion service operational cost.

Bloomberg, *Software Engineer, Derivatives Data Integration*   NYC, NY | July 2020 – Aug. 2022
- Designed and implemented a highly-distributed derivatives data platform using **C++**, comprising **microservices** that provided a standardized interface across all derivatives teams, handling millions of daily market data queries
- Applied optimal graph algorithms within the microservices, enabling quick access to various market data types and reducing the processing loads from $O(n^2)$ to efficient linear complexity $O(n)$
- Onboarded multiple internal teams, integrating our data platform seamlessly into their workflows, significantly amplifying incoming data volume and enhancing cross-team collaboration
- Developed a distributed system for resource prediction and optimization of a customer support service with 1000+ agents, by leveraging **Spark**, **Kafka**, and cloud computing technologies, which achieved a 30% reduction in operational costs

Cohesity, *Software Engineer Intern, Core Infrastructure*   San Jose, CA | June 2019 – Aug. 2019
- Developed a **Python** tool that can accurately measure the performance of different document indices in retrieving relevant text documents stored on the Data Cloud
- Implemented a **Java** plugin for the indexing engine in **Elasticsearch** source code to enable customized document ranking
- Reduced index storage size of indices by 45% by integrating the optimal indexing schema into a production application

PROJECTS

Hourglass | *Chrome Extension, React, IndexedDB*
- Created a Chrome web extension that promotes effective time management and awareness of users' browsing habits. Users receive timely reminders about their social media usage and frequently visited websites
- Utilized IndexedDB, a local browser database, to eliminate connections to remote servers and to ensure 100% data privacy

RFC Compliant TCP & IP Protocols | *Go*
- Constructed a virtual link layer interface using UDP sockets and built network and transport layers on top of the interface
- Implemented essential TCP features, such as the sliding window protocol, slow start mechanism, ordering, and retransmission, to reliably handle data transmission, even in the presence of lossy nodes

Relational Database | *Go*
- Build a concurrent database management system with essential components of a modern DBMS: memory-pool and page management, B+ tree and hash table indexes, transactions with concurrency and log-based recovery

SKILLS

Programming Languages: Python, C/C++, Go, Java, SQL, HTML/CSS/Javascript, Ocaml
Tools & Frameworks: AWS Cloud Development Kit, React, Three.js, Blender, Elasticsearch, NumPy, Git, Docker