

Maanav Singh

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EDUCATION

University of North Carolina at Chapel Hill

Chapel Hill, NC

Bachelor of Science in Computer Science, Bachelor of Science in Mathematics

Aug 2021 – May 2024

- **3.95** GPA + **4.0** Major GPA w/ Dean's List
- Teaching Assistant for **Files and Databases**
- Accelerated Research Scholarship
- **Coursework:** Algorithms and Analysis, Data Structures, Operating Systems, Parallel and Distributed Computing, Programming Languages, Computer Organization, Computer Systems, Internet Services and Protocols, Files and Databases, Control Theory, Software Engineering, Machine Learning, Numerical Analysis

TECHNICAL SKILLS

Interests: High Performance Computing, Distributed Systems, Fullstack Engineering

Languages: Python, C++, Rust, Java, Kotlin, SQL (Postgres), Typescript/JavaScript, HTML/CSS, Matlab

Tools and Frameworks: Linux, Cuda, FastAPI, Kubernetes, Spark, Tensorflow, PyTorch, AWS, GCP, Azure

EXPERIENCE

Susquehanna International Group

May 2023 – Aug 2023

Software Engineer Intern

Bala Cynwyd, PA

- Incoming @ Options Quoting Team
- Improving low latency trading systems in **C++** and **front-office** trader tools in **C#** and **.NET**

Cash App

Sep 2022 – Jan 2023

Machine Learning Engineer Intern

San Francisco, CA

- Worked on Recommendations & Incentives Machine Learning Team (RIML) to provide a recommendation micro-service serving **75M+** customers and **1K+ gRPC** requests per second.
- Architected in-house low-latency distributed Recommendation Store for serving offline recommendations with **AWS SQS, Lambda, ElastiCache, and DynamoDB** saving **\$200K** annually over legacy store.
- Improved logging performance and quality for service ranking engine by storing and querying metrics concurrently with **Snowflake, Datadog, and Kotlin**.

Amazon Web Services

May 2022 – Aug 2022

Software Development Engineer Intern

Seattle, WA

- Developed in-production customer-impacting features for **AWS Elastic Beanstalk** and **App Runner**
- Automated console localization workflow with **Python** by automatically merging updates and anticipating parsing failures resulting in **90%** reduced engineer intervention.
- Integrated ML recommendation services with **React** and **Angular.js** to simplify customer experience and reduce avg. search arrival times by **14%**
- Engineered persistent preference caching **Node.js** service with **JavaScript** for **250M+** AWS console users.

PROJECTS

LightningPrice | *C++, Python, Linux, Networking*

Dec 2022 – Present

- Developed a **low latency** pricing API to serve the latest prices for shoes and other retail items
- Built using **Python** for web-scraping and other IO bound tasks
- Interoperated with **multi-threaded C++** service to aggregate and query from efficient data structures
- Tuned **Linux** Kernel to disable unnecessary OS interrupts and **benchmarked C++** code to ensure excellent CPU **cache** utilization resulting in minimized access latency (**<1ms**) and variance (**<50µs**).

Rocket | *Rust, CPython Interpreter, Networking*

April 2023 – May 2023

- Flexible and performant reliable data transport library for **Python** over **UDP**
- Implemented congestion control, flow control, and re-transmission to control packet loss with **Rust**
- Provides **15%** reduced latency over Ubuntu's TCP Cubic Algorithm after tuning
- Transmits medium-sized objects at an average **23%** higher throughput than TCP Reno