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**
- **Coursework:** Algorithms and Data Structures, Operating Systems, Parallel and Distributed Computing, Programming Languages, Computer Organization, Computer Systems, Networking, Files and Databases, Control Theory, Software Engineering, Machine Learning, Numerical Analysis

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* — Jun 2020 – 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**).

BrainScanGAN | *Python, PyTorch, Docker, Git* — May 2018 – May 2020

- Developed Deep Convolutional Generative Adversarial Network for generating high fidelity and unique T1w & T2w MRI brain scans.
- Architected responsive **Microservice** ML inferencing system with **Load Balancing** for **1K+** medical professionals, providing an **80%** performance increase over legacy client-server system.
- Developed **parallel algorithms** and **data structures** on Apache **Spark** during training to save **400+** hrs of training time

Technical Skills

Interests: High Performance Computing, Distributed Systems, Fullstack Engineering
Languages: Python, C++, Java, Kotlin, SQL (Postgres), Typescript/JavaScript, HTML/CSS, Matlab
Tools and Frameworks: Linux, Cuda, FastAPI, Kubernetes, Spark, Tensorflow, PyTorch, AWS, GCP, Azure