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Maanav Singh

EDUCATION

University of North Carolina at Chapel Hill – Chapel Hill, NC Aug 2021-May 2024
*Bachelor of Science, **Computer Science**, Bachelor of Science, **Mathematics***

- Carolina Accelerated Research Scholar
- **3.94** GPA + **4.0** Major GPA w/ Dean's List
- **Coursework:** Algorithms and Analysis, Computer Organization, Computer Systems, Data Structures, Files and Databases, Digital Control Theory, Software Engineering, Discrete Math, Linear Algebra, Differential Eq

SKILLS AND INTERESTS

Interests: Fullstack/ML Engineering, Distributed Systems
Languages: Python, Java, C/C++, Javascript, Typescript, Matlab, SQL, HTML/CSS
Tools/Frameworks: Linux, React, Angular.js, Node, Tensorflow, PyTorch, Kubernetes, Spark, GCP, AWS, Azure

EXPERIENCE

Cash App – San Francisco, CA Sept 2022-Jan 2023
Machine Learning Engineer Intern

- Incoming at Recommendations & Incentives Machine Learning Team (RIML)

Amazon – Seattle, WA May 2022-Aug 2022
Software Development Engineer Intern

- 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

Brain Mapping Lab, UNC School of Medicine – Chapel Hill, NC July 2021-Apr 2022
Undergraduate CS Student Researcher

- Architected responsive **Microservice** ML inferencing system with **Load Balancing** for **1K+** medical professionals, providing an **80%** performance increase over legacy client-server system.
- Implemented Generative Adversarial Networks with **PyTorch** scoring **<.1 FID** score
- Developed **parallel algorithms** and **data structures** with **Apache Spark** during ML training to save **400+ hrs** of training time

Critical Error Robotics – Morrisville, NC Jan 2018-Jan 2021
Team Lead Programmer

- Utilized **Object-Oriented** and **concurrent** design in **C++**
- Met strict efficiency requirements for accurate **real time control (< 15 ms)** achieving **+/-5cm** precision
- Discretized non-linear state-space models for digital **microprocessors** with **<1%** control loss

PROJECTS

WeatherOrNot: WeatherOrNot is a health assistant that analyzes risks based on local climate and assessing factors like UV index, pollen concentration, and more.

- Built a **Bootstrap + Django** Web Application with **asynchronous** design
- Integrated an indexed **relational SQL** Database for quickly storing and querying user medical data
- Engineered **REST APIs** for querying local weather, mail updates, and other processes in **parallel**.

BrainScanGAN: Deep Convolutional Generative Adversarial Network for generating high fidelity and unique T1w & T2w MRI brain scans.

- **Optimized** with Wasserstein Loss + Gradient Penalty for training stability
- Built with **Pytorch** 3D Transpose Convolutions for multi-scan generation
- Data **visualization**, **wrangling**, and **preprocessing** done in parallel with Python **containers**