Aaditya Bhoota

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3137 Teddington Drive
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USA

Education

Purdue University – MS in Computer Science
Expected Graduation: Dec 2024

- GPA 3.8
- Graduate TA for CS252 Systems Programming, TA for The Data Mine 301/302 (Data Mining)

Experience

IBM — Back-End Software Developer Intern — May 2024 - Dec 2024

- Created proof of concept AI intrusion detection program for use in the network layer of z/OS using C and PL/X to locate harmful TCP connections
- Designed two novel ideas to improve LLM code translation abilities (Ex. COBOL to Java) to be filed as patents

Bank of New York Mellon — Software Developer Intern — June 2023 - Aug 2023

- Wrote and deployed an ETL program that continuously monitors for arrival of new CSV files, splits, and loads them to Snowflake database concurrently using multi-threading
- Increased data loading spread by **5 times** compared to existing solution through ETL program

Bank of New York Mellon — Software Developer Intern — June 2022 - Aug 2022

- Created a neural network machine learning model used for multi-label text classification in Python
- Obtained **80%+ accuracy** for all 13 labels
- Built API for software to allow users to process **~30 emails per second**

Purdue University — Lead Researcher — Aug 2021 - May 2022

- Directed a research team to help USAA analyze customer data in Python, giving insights to enhance their mobile app and website

Purdue University — Backend Developer — Aug 2020 - May 2021

- Designed and implemented Python-based REST APIs for Merck to query and update a PostgreSQL inventory-tracking database using Swagger, allowing for precise equipment location

Pensando (acquired by AMD) — Software Developer Intern — June 2019 - Aug 2019

- Wrote a CLI program in GoLang to view and manage company's inventory through a PostgreSQL database
- Implemented REST APIs for program to allow for future updates through GoLang and JSON
- Fixed bugs and made improvements to server monitoring systems to make a cleaner and more useful UI using React-JS

Projects

AB-Tree

- Implemented Adaptive Batched Tree (B-Tree variant) data structure for databases in C++ based on original research paper by Zhiwen Jiang and others with ability for INSERT, DELETE, UPDATE, and SELECT (point and range search) SQL operations
- Compared I/O performance on SSD against other data structures used in databases such as UB+ Tree and ASB Tree

Self-Correct

- Created a novel framework (Self-Correct) that improves LLM code generation by **5%** through a granular iterative process

HTTP Web Server

- Implemented a web server in C where each client request can be handled by a different process (forked from main server process), or a different thread (pthread), or a threadpool

Linux Shell

- Constructed a fully functional UNIX shell in C, Used lex and yacc for parsing input commands.
- Implemented input/output redirection, pipe, subshell, wildcard, background processing, command line history and much more

Malloc and Free Implementation

- Wrote malloc() and free() in C with sbrk() system call using data structures such as doubly linked list to manage memory chunks

Stock Prediction

- Created convolutional neural network model with help of PyTorch to predict stock prices

Skills

Languages: C++, C, Java, Python, (some) GoLang, HTML, SAS, JavaScript, React Native
Databases: SQL, PostgreSql, MySQL, (some) Neo4J, MongoDB, Snowflake, Azure, GCP, AWS
Courses: Data Structures and Algorithms, Computer Architecture, Systems Programming, Compilers, Data Communication and Networking, Database Systems (query processing, optimization, etc), Analysis of Algorithms, Machine Learning, Object-Oriented Programming, Information Systems, Calculus, Discrete Mathematics, Linear Algebra, Large Scale Data Analytics, Artificial Intelligence