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Nirjhar Deb

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U.S. Citizen

Education

Georgia Institute of Technology **Atlanta, GA**
B.S./M.S. in Computer Science, GPA 3.72 *May 2026 (Expected)*

- **Concentrations:** Systems & Architecture, Information Internetworks
- **Courses:** Systems & Networks, Design and Analysis of Algorithms, Probability & Statistics, Multivariable Calculus, Linear Algebra, Discrete Mathematics, Computer Architecture, Operating Systems

Work Experience

Uber – Knowledge Platform **Sunnyvale, CA**
Software Engineering Intern *May 2024 – August 2024*

- Fine-tuned a large language model with retrieval augmented generation, optimizing hyperparameters and enhancing prompts with a 2,700-acronym dictionary to achieve 97% accuracy in feature name recognition.
- Wrote an Apache Spark job to automatically add LLM-generated descriptions for over 2,100 YAML files, leveraging the Hadoop Distributed File System (HDFS) for scalable, remote data storage.
- Implemented a synchronous gRPC gateway in Java to interface with the LLM and created a Python and PHP code linter to backfill 20,000+ descriptions with 5-second API call latency.

Uber – Earner Delivery Risk **Sunnyvale, CA**
Software Engineering Intern *May 2023 – August 2023*

- Created a distributed data streaming pipeline using Java, Golang, and Apache Cassandra to compute and feed a near real-time feature to machine learning models for delivery fraud detection, saving over $14 million yearly.
- Redesigned Java trip-streaming pipeline to filter non-production data, reducing Kafka message delays by 83%.
- Spearheaded a 7-person hackathon project to integrate the GPT-4 large language model in customer service chats using Python, resulting in a 14.3% reduction in time required for agents to detect negative customer behavior.

AT&T – Chief Security Office **Dallas, TX**
Software Engineering Intern *June 2022 – August 2022*

- Upgraded an internal network access service by using Python and Django to transition from cookie authentication to the SAML open standard, providing over 1,300 employees with a more secure, single sign-on process.
- Pioneered a novel infrastructure to stream video games with 70% lower latency, which was prototyped as a C++ text-based game engine and visualized in Figma. This invention is awaiting patent approval (no. 18/148,428).
- Developed scripts in Python, SQL, and HTML to uncover security vulnerabilities by parsing 500+ event logs and to reveal business insights by automating data exports to Excel. Written and tested using the PuTTY SSH client.

Research

Georgia Tech Habanero Extreme Scale Software Research Laboratory **Atlanta, GA**
Undergraduate Research Assistant *August 2023 – Present*

- Improved performance of topological matrix sorting algorithm over 1.8% by reducing explicit context switch calls in HClib, an actor/selector-based open-source C++ programming system for distributed systems.
- Executed 300+ OpenSHMEM jobs on a supercomputer to evaluate the performance of modified topological sort.
- Programmed a suite of two-sample t-tests using SciPy and Pandas to test the hypothesis that the performance improvement was statistically significant for 5 different node and processing entity combinations.

Projects

- **Multiplayer iOS QuizApp:** Built a high-performance, real-time app (Swift, Game Center) for over 160 students each semester to practice questions. Achieved secure user authentication and low latency for 20-player sessions.
- **Intelligent Tutoring System Chatbot:** Wrote ranking algorithms (vector similarity, textbook index frequency, SQL prefix matching) in Python to autocomplete over 6,000 questions for a tutoring chatbot.
- **Enhanced xv6 Operating System:** Implemented stack trace debugging, copy-on-write forking, lazy zero-page allocation, custom scheduling algorithms, user space threading library, and large file support up to 8 MB in C.

Skills

Languages: Python, C++, Java, C, Golang, Swift, HTML, SQL, PHP, JavaScript
Frameworks: SciPy, Pandas, Django, JUnit, SwiftUI
Developer Tools: Linux, Git, GDB, Docker, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse