Shresht Bhowmick

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Education

Northeastern University   Boston, MA
BS Computer Science and Linguistics, GPA: 4.0   *July 2024 | April 2028*

Work Experience

Samantar Labs   Bangalore, India   *Software Engineering Intern*   *June 2022 | December 2022*

- Researched and implemented low-latency advertising frameworks for virtual corporate exhibitions, enhancing user experience by minimizing ad footprint.
- Reduced cloud infrastructure expenses by $2,500/month through efficient SDK deployment and resource optimization.

RoboCup   Paris, France   *Team Captain*   *December 2022 | July 2023*

- Directed team to 1st place finish at Nationals; represented India at the Bordeaux International Round.
- Scaled team by 100%, recruiting and training 15 new members for robotics competition.
- Engineered, programmed, and optimized four autonomous robots using Arduino and Raspberry Pi platforms.

Sapientia Research   Boston, MA   *Researcher*   *July 2024 | Present*

- Co-authored research on applying homomorphic encryption (HE) to neural data, specifically EEG signals, to enhance security while maintaining usability.
- Tested signal processing operations (filtering and event-related potentials) over encrypted EEG data, proving the feasibility of secure large-scale data computation.
- Achieved cost efficiency by demonstrating that encryption and processing of 10 GB neural datasets can be performed for less than $2 using cloud infrastructure.
- Utilized the CKKS encryption scheme to optimize space and time complexity, improving data encryption efficiency while maintaining accuracy for neural signal processing.
- Proposed future optimizations, including multithreading, GPU support, and lossless compression for neuroscience data sharing platforms.

Skills

Programming Languages Python (proficient), C (proficient), Nim (proficient), Zig (proficient), C++ (intermediate), x86 Assembly (intermediate), Javascript (intermediate), SQL (intermediate)

Cloud AWS (Lambda, EC2, S3), GCP, Azure, Vercel

Databases PostgreSQL, MongoDB, Redis, Supabase

Concepts Object-Oriented Programming (OOP), Data Structures and Algorithms, Linux, Bash Scripting, Multithreading, Low-latency Systems, Memory Management, Concurrency, Network Protocols, Optimization Techniques, Software Design Patterns

Frameworks FastAPI, Flask, React, Node.js, TailwindCSS, PyTorch, TensorFlow, Keras, Scikit-learn, NumPy, Pandas, SQLAlchemy, gRPC, HTMX, TailwindCSS, NodeJS

Awards

Best Paper Award December 2022   *Forum for Information Retrieval Evaluation*
Urdu sentiment analysis. Full paper available at https://ceur-ws.org/Vol-3395/T4-7.pdf.

Finalist (top 25 out of 5209) January 2023   *Blue Ocean Student Entrepreneurship Competition*
Submitted app which detects non-textile parts on clothes for automated recycling. Now being used in Bangalore's recycling program.