Shresht Bhowmick

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EXPERIENCE

NORTHEASTERN QUANTUM PHOTONICS | Researcher

October 2024 – Present | Boston, MA

- Built high-performance computing pipeline for >200GB dataset processing, 80x-ed the speed of the previous pipeline.
- Researching general-purpose photonic processors for spectroscopy and optical neural networks.

SAPIENTIA RESEARCH | Researcher

July 2024 – Present | Boston, MA

- Co-authored research applying homomorphic encryption (HE) to neural data, enhancing security with maintained usability.
- Achieved cost efficiency, encrypting and processing 10 GB datasets for under $2 using cloud resources.
- Optimized CKKS encryption for neural data, improving space and time complexity without sacrificing accuracy.
- Currently developing a general-purpose biocomputing architecture to support versatile and secure neural data processing.

SAMANTAR LABS | Software Engineering Intern

June 2022 – Dec 2022 | Bangalore, India

- 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 | Team Captain

Dec 2022 – July 2023 | Paris, France

- Directed team to 1st place finish at Nationals; represented India at the Bordeaux International Round.
- Engineered, programmed, and optimized four autonomous robots using Arduino and Raspberry Pi platforms.

PROJECTS/AWARDS

FIBERFINDER | Computer Vision for Recycling

December 2022 – Present

- Created an ML model which detects non-textile parts on clothes for automated recycling. Now used in Bangalore's recycling program.
- Finalist at the Blue Ocean Entrepreneurship Competition.

TF-IDF SENTIMENT ANALYSIS | On an Urdu Dataset

July 2022 - Jan 2023

- Worked on sentiment analysis research which won the 2022 Forum for Information Retrieval Evaluation conference's Best Paper award. Paper available here: https://ceur-ws.org/Vol-3395/T4-7.pdf

SHFLA | Turing-Complete Music-To-Fractal Language

October 2024

- Created SHFLA, a Turing-complete system mapping musical input to real-time fractal visuals, winning the MIT Media Lab hackathon. https://github.com/Tetraslam/SHFLA

EDUCATION

NORTHEASTERN UNIVERSITY

Bachelor of Science in Computer Science and Linguistics with a minor in Math
Expected April 2028 | Boston, MA
Cum. GPA: 4.0 / 4.0

SKILLS

PROGRAMMING

5+ years:
Python • C • Nim
3+ years:
Go • JavaScript
1+ years:
Rust • Fortran • Zig

TECHNOLOGY

Git • AWS/GCP/Azure • Linux
PostgreSQL • MongoDB • Redis
Bash • Pytorch • HPC • DSA
Network protocols • Concurrency
Object-Oriented Programming
FastAPI • NodeJS • NumPy
CUDA • Triton • Tinygrad

COURSEWORK

UNDERGRADUATE

Data Structures and Algorithms
Accelerated Discrete Math
Object-Oriented Design
Calculus III
Advanced Linear Algebra
Graduate Algorithms
Matrix Methods and Machine Learning
Compilers
Real Analysis
Fundamentals of Artificial Intelligence
Networks and Distributed Systems

SOCIETIES

AeroNU Satellite Avionics
Rev Startup School Cohort 2
MIT Augmentation Lab
Northeastern Quantum Photonics Lab

LINKS

Github:// **Tetraslam**
LinkedIn:// **shreshtbhowmick**
About Me (fun):// **blog.tetraslam.world**