

# Shresht Bhowmick

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## EXPERIENCE

### NORTHEASTERN QUANTUM PHOTONICS | RESEARCHER

October 2024 – Present | Boston, MA

- Building high-performance computing pipeline for >200GB dataset processing.
- Optimizing distributed Fourier transforms and matrix operations.
- Researching general-purpose photonic processors for spectroscopy and optical neural networks.

### SAPIENTIA RESEARCH | RESEARCHER

July 2024 – Present | Boston, MA

- Co-authored research on applying homomorphic encryption (HE) to neural data to enhance security while maintaining usability.
- Tested signal processing operations 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 CKKS encryption to optimize space and time complexity, improving data encryption efficiency while maintaining accuracy for neural signal 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.
- 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.

## PROJECTS/AWARDS

### FIBERFINDER | COMPUTER VISION FOR RECYCLING

December 2022 – Present

- Created an ML model and pipeline which detects non-textile parts on clothes for automated recycling. Now being 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>

## 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](#)