

Debesh Biswas

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EDUCATION

Boston University | *Masters, Artificial Intelligence (GPA: 3.43)* **2025 - 2027**
Vellore Institute of Technology | *B-Tech, Computer Science (GPA: 8.80)* **2021 - 2025**

INTERNSHIP

LTI Mindtree **Aug 2023 - Nov 2023**
Artificial Intelligence Intern *Mumbai, India*

- Tested and evaluated a Generative Artificial Intelligence platform providing feedback to improve performance and user experience.
- Developed and deployed Python-based chatbots on AWS, optimizing functionality and scalability.

MobiNext Technologies **Jan 2025 - May 2025**
GenAI Developer Intern *Mumbai, India*

- Developed a Microsoft Teams chatbot with Python and the Microsoft Bot Framework that automates corporate form submissions and approval workflows using LLMs, reducing manual processing effort and speeding up approvals
- Integrated an LLM-driven SQL generation module using the Llama API and Python, enabling dynamic database interactions that accelerate query creation and lower development time

PROJECTS

Construction Safety Dashboard

- Built a Python dashboard using Pytorch and OpenCV to integrate deep learning computer vision models for real-time hazard detection and safety monitoring
- Implemented real-time safety gear detection and facial recognition attendance tracking with convolutional neural networks in Pytorch, improving on-site monitoring accuracy

Langchain-Powered Chatbots using Open-Source LLMs

- Developed a RAG-pipelined QnA chatbot in Python using Langchain and Llama2 to enable multi-source retrieval and improve response relevance through NLP techniques
- Implemented a document QnA chatbot with Llama2, Langchain, and the Groq API to handle efficient document queries and demonstrate deep learning application in NLP

Finetuning Vision Large Language Models

- Designed an end-to-end training and benchmarking pipeline for Vision-Language Models using PEFT techniques.
- Built a custom evaluation framework measuring unimodal vs. multimodal accuracy to isolate fusion effectiveness, achieving a 12% accuracy improvement over baseline

PUBLICATIONS

- D. Biswas, S. Saksena, I. Kanade, S. Agrawal, and K. Kumaran. Optimizing DNA Cryptography Using HPC with GPU and Parallel Processing. *Proc. ICSTSDG, 2024*. DOI: <https://doi.org/10.1109/ICSTSDG61998.2024.11026186>
- D. Biswas, S. Singh, A. Murugadass, V. Sellam, S. K. Vankayala, and S. Y. S. Electronics. Securing User Authentication and Data Using Advanced Cryptography and Blockchain in FinTech. *Proc. IEEE CONECCT, 2025*. DOI: <https://doi.org/10.1109/CONECCT65861.2025.11306416>

ACHIEVEMENTS

- **1st Place – MedAI Hackathon (Track 3), Boston University:** Built a regularization-first ML pipeline for high-dimensional, low-sample proteomics data, integrating feature selection, scaling, domain-informed feature engineering, and a soft-voting ensemble (LightGBM, ElasticNet Logistic Regression and Neural Network) to achieve 0.34 log loss on fully unseen test data.

EXTRA CURRICULAR

Students for the Exploration and Development of Space | *SEDS Antariksh Board Member* **Jan 2022 - May 2024**

- Led design and production of engaging visuals for SEDS Antariksh events, workshops, and digital platforms.
- Managed content strategy and directed a team to enhance communication and project delivery.

National Service Scheme | *NSS Office Bearer* **Nov 2022 - Nov 2024**

- Dedicated over 200 hours to NSS, participating in diverse initiatives such as community outreach, environmental conservation, and social service projects.
- Managed and coordinated volunteer activities, optimizing team efforts for effective project execution.

SKILLS

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- **Programming Languages:** Python, Java, SQL, JavaScript, HTML/CSS, C++
 - **Libraries:** pandas, NumPy, Matplotlib, Pytorch, Langchain, OpenCV, TensorFlow
 - **Concepts:** Machine Learning, Data Structures, Natural Language Processing, Large Language Models, FineTuning, Generative AI