Showmick Das

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Education

Georgia Institute of Technology — Atlanta, GA
Bachelor of Science in Computer Science, ***GPA:*** *4.00* — *Expected Graduation, May 2027*

- **Relevant Coursework:** Machine Learning, Data Structures & Algorithms, Discrete Mathematics, Objects & Design, Object-Oriented Programming, Computing in Python, Linear Algebra, Calculus I - II

Experience

The Apache Software Foundation — May 2025 – July 2025
Distributed Systems Researcher - Cybershuttle & Airavata — *Wilmington, Delaware, United States (Remote)*

- Achieved **99% uptime** serving **50+ concurrent researchers** through **FastAPI-based MCP server** with **OAuth2 authentication**, integrating **Qwen3 LLM** with Apache's **$5M NSF-funded** research platform to enable natural language queries across **1000+ scientific resources**.
- Designed **12+ REST endpoints** transforming complex **Apache Airavata API workflows** into automated conversational interfaces, enabling researchers to query datasets, repositories, models, and notebooks across university computing centers.

University of Georgia – Dept. of Epidemiology & Biostatistics — May 2025 – July 2025
Machine Learning Intern — *Athens, Georgia, United States*

- Architected a **XGBoost peak classification model** achieving **98.4% accuracy** for automated PPG signal processing, improving **76.8% of Heart Rate Variability predictions** and reducing training time by **16%** through **T4 GPU acceleration**.
- Trained a **1D CNN classifier for signal quality assessment (0.976 F1 score)** with **Bayesian hyperparameter tuning**, integrating it as a preprocessing head to reduce **BiLSTM model's RMSE by 65%** and eliminate training instabilities.

Georgia Institute of Technology – Artificial Intelligence Lab — Jan 2025 – Apr 2025
Research Assistant — *Atlanta, Georgia, United States*

- Designed **5+ REST endpoints** with reverse proxy support to enable model loading, dataset uploads, fine-tuning, and inference for **Large Pre-Trained Time-Series Models (LPTMs)** on a private **NVIDIA DGX server**.
- Built an inference dashboard with **160ms response times (91st percentile)**, and benchmarked **LPTMs** against **5 Foundational Time-Series Models** including **Chronos** and **TimesFM** using **160K+** datapoint datasets.

Leadership

Stanford University — Apr 2025 – May 2025
Section Leader – CS106A — *Stanford, California, United States (Remote)*

- Led weekly **Python** coding sessions on **control flow**, **data structures**, and **OOP**, achieving **16.7% improved attendance**. Graded assignments and debugged student code through interactive walkthroughs and problem-solving exercises.

Projects

Fine-tuning Code Llama For FastAPI Code Generation | *Python, PyTorch, Hugging Face, GitHub API, OpenAI API*

- Developed an automated GitHub mining pipeline processing **120 FastAPI repositories**, extracting production-grade code patterns via AST parsing, and fine-tuned **Code Llama** using **4-bit quantization** and **LoRA adapters** to reduce GPU memory by approximately **75%** and training time by **50%+**.
- Achieved **most downloaded Code Llama adapter on Hugging Face Hub** and improved FastAPI code generation by **13.7%** using custom evaluation metrics and **GPT-based LLM-as-a-Judge**.

Implementing Attention Is All You Need | *Python, PyTorch, pytest, Hugging Face, Weights & Biases*

- Implemented **Transformer architecture from scratch** in PyTorch, achieving **14.8 BLEU score** (approximately **35% of original paper's performance**) on English-Italian translation using resource-efficient training with **single A100 GPU** versus paper's 8x P100 setup.
- Processed **1.25M English-Italian sentence pairs (19.5M tokens)** from OPUS Books dataset with custom tokenization and efficient data loading, while implementing **checkpoint management** and **Weights & Biases experiment tracking**.

Technical Skills

Languages: Python, Java, C++, TypeScript, JavaScript, HTML/CSS
Frameworks: PyTorch, Scikit-learn, XGBoost, LangChain, Hugging Face, Optuna, Weights & Biases, FastAPI, Flask, Spring Boot, Pandas, NumPy, SciPy, Matplotlib, Streamlit, Next.js, React.js, Tailwind CSS, Node.js
Tools: Git, GitHub Actions, JUnit, pytest, CUDA, Kokkos, Postman, Ngrok, MongoDB