Anushka Das

Kolkata, India — anushkadas05das@gmail.com — Portfolio — LinkedIn — GitHub

SUMMARY

Software and Machine Learning Engineer specializing in full-stack AI applications, deep learning optimization, and algorithmic research. Skilled in Python, React, and PyTorch, consistently delivering scalable, high-performance solutions for complex data problems.

TECHNICAL SKILLS

- **Languages:** Python, Java, C++, SQL, JavaScript, HTML5, CSS3
- **AI & Machine Learning:** PyTorch, Scikit-learn, Pandas, NumPy, XGBoost, QLoRA, Deep Learning, RAG
- **Frameworks & Tools:** React, FastAPI, Flask, AWS, Docker, Git/GitHub, Jupyter, Streamlit, OpenCV

RESEARCH & PUBLICATIONS

Architectural Paradigms for Sovereign AI (Published on SSRN) — *Independent Research* Link

- Authored research mitigating API fragility by deploying Small Language Models (SLMs) via 4-bit NormalFloat (NF4) quantization, Native 1.58-bit ternary architectures, and Low-Rank Adaptation (LoRA).
- Demonstrated 93% inference OpEx reduction for 7B–14B parameter models with a TCO break-even at 450M tokens vs. proprietary cloud APIs.

EXPERIENCE

Blockchain Risk Developer — *Zetheta Algorithms Private Limited (Remote)* Jan 2026 – Feb 2026

- Engineered an automated vulnerability scanning pipeline for Solidity smart contracts, detecting critical flaws like Reentrancy to reduce pre-deployment security risks.
- Developed an algorithmic market-making engine using the Avellaneda-Stoikov model to optimize bid-ask spreads and manage inventory risk in decentralized exchanges.

Web Development Intern — *CodSoft (Remote)* Aug 2025 – Sep 2025

- Developed and optimized 6+ responsive web interfaces using HTML, CSS, and JavaScript, improving cross-platform accessibility and reducing page load times.

Open-Source Contributor — *GSSoc '25 (Remote)* Jul 2025 – Sep 2025

- Resolved complex bugs and integrated new feature modules across 4 major open-source repositories via GitHub.

PROJECTS

DeepfakeDetector: 2D FFT AI Inference Engine — *Python, PyTorch, React* GitHub Repo

- Architected a frequency-domain AI inference engine utilizing 2D FFT and ResNet-18, isolating synthetic media artifacts to achieve 99.12% detection accuracy.
- Engineered a distributed microservices stack using React and FastAPI across Vercel and Hugging Face, optimizing payload routing for $<$1.8s latency.
- Published research on a custom Gaussian Micro-blur preprocessing pipeline that neutralizes sensor noise, improving model robustness against diffusion generators.

Deweathering Engine — *React, FastAPI, OpenCV, RPCA* GitHub Repo

- Implemented a full-stack document restoration tool using Robust Principal Component Analysis to decompose degraded scans into low-rank text and sparse noise matrices.
- Designed a custom Adaptive Regularization heuristic achieving 95% automated parameter tuning, delivering end-to-end document restoration in $<$2.5 seconds.

Federated Fresh: Hybrid AI Orchestration Terminal — *FastAPI, Gemini, ChromaDB* GitHub Repo

- Designed a scalable AI orchestration terminal dynamically routing between local ChromaDB vector retrieval, live web sweeps, and LLM inference to maximize accuracy.
- Reduced local memory overhead by 75% by offloading high-latency text embeddings to the cloud, enabling stable deployment on constrained hardware.
- Engineered an asynchronous RAG pipeline leveraging FastAPI BackgroundTasks, achieving zero-lag UI performance during parallel chunking and vector injection.

Customer Churn Prediction Model — *Python, XGBoost, Scikit-learn, Streamlit* GitHub Repo

- Developed an end-to-end machine learning pipeline predicting customer churn, engineering custom behavioral features to achieve a 67% recall rate and 0.82 AUC.
- Deployed an interactive Streamlit web app, allowing stakeholders to perform real-time churn risk analysis via dynamic parameters.

EDUCATION

Techno Main Salt Lake — *B.Tech in Information Technology* 2023 – 2027

MEMBERSHIPS

- Member of **Google's Women Techmakers** & the **IEEE Robotics and Automation Technical Committee** on Machine Learning for Automation.

ACHIEVEMENTS & CERTIFICATIONS

- **Hackathons:** SIH '25 Semi-Finalist (Top out of 250+ teams for project "Digi-Pramaan").
- **Competitive Programming:** Gold Level (5 Star) in Python & Silver Level (3 Star) in Java on HackerRank.
- **IndiaFirst Life (Bank of Baroda):** Unexpectedly shortlisted via Foundit and successfully cleared an interview for a Business Administration/Management role as a 6th-semester undergrad. Secured a 2-month training program with a stipend, leading to a full-time offer but respectfully declined it to focus on my 6th-semester studies.
- **Certifications:** Software Engineering (JPMorgan Chase), Data Analytics (Deloitte), Azure ML (Microsoft).