Sayan Sarkar

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EDUCATION

Maulana Abul Kalam Azad University of Technology, West Bengal — Kolkata, India
Master of Computer Applications (MCA) — CGPA: 8.15/10 — Oct 2023 – July 2025

University of Calcutta — Kolkata, India
Bachelor of Science (B.Sc) in Physics — CGPA: 7.67/10 — June 2019 – May 2023

EXPERIENCE

TCR Innovation — Kolkata, India
Deep Learning Engineer — Dec 2021 - Feb 2022
- Designed and deployed YOLOv5-based object detection model for agricultural applications, achieving 94% accuracy in wheat head detection
- Enhanced model performance through data augmentation techniques and hyperparameter tuning, reducing false positives by 23%
- Architected end-to-end pipeline for data preprocessing, model training, and deployment, improving inference speed by 35%
- Partnered with cross-functional teams to integrate computer vision solutions into production environments

PROJECTS

toolB — High-Speed Concurrent Middleware Engine | *Python, C, POSIX, Pthreads, mmap* — July 2025 - Sep 2025
- Engineered hybrid C/Python web server from scratch, offloading network I/O and parsing to multi-threaded C layer handling 10,000+ concurrent connections
- Bypassed Python's GIL by architecting multi-process Python application server, achieving 4x performance increase on multi-core systems via POSIX shared memory
- Completed proof of concept; implemented load balancing and connection pooling, reducing latency by 40% and improving throughput by 300%

Ascent Resume Analyzer | *React, TypeScript, CSS, Puter.js* — Sep 2025 - Oct 2025
- Created AI-powered resume parsing system using Puter.js cloud APIs and AI models for document processing and analysis
- Developed complete frontend application with React and TypeScript, creating responsive UI components and efficient state management
- Integrated ATS-friendly formatting analysis and scoring system to optimize resume content for applicant tracking systems

Breast Cancer Detection System | *Python, PyTorch, FastAPI, OpenCV, scikit-learn* — Oct 2024 - May 2025
- Constructed dual-pathway deep learning system combining global mammogram analysis with localized dense region examination, achieving 92% accuracy
- Built data preprocessing pipeline with OpenCV and deployed model via FastAPI with Redis caching, reducing inference time to 2.3 seconds
- Leveraged transfer learning with ResNet50 and custom CNN architectures, improving sensitivity by 18% over baseline models

Gated Multimodal Fusion Network for Music Recommendation | *PyTorch, scikit-learn, NumPy* — May 2024 - Feb 2025
- Designed and trained lightweight multimodal recommendation model leveraging audio features, lyrics embeddings, and metadata
- Attained 38% performance improvement over collaborative filtering baselines with precision@10 of 0.72 and recall@10 of 0.65
- Implemented gated fusion mechanism to dynamically weight modality contributions based on content availability and quality

TECHNICAL SKILLS

Programming Languages: Python, C, JavaScript, VB Script, SQL
Frameworks & Libraries: PyTorch, TensorFlow, Keras, scikit-learn, OpenCV, spaCy, Transformers, NumPy, Pandas, FastAPI, Flask, Starlette, Django
Tools & Platforms: Git, Docker, AWS, Google Colab, Jupyter, VS Code, PyCharm, Linux, Redis, PostgreSQL

ACHIEVEMENTS

UGC NET – Computer Science — Dec 2024
- Qualified for Assistant Professor and Ph.D. admissions with 91%

CERTIFICATIONS

C Bootcamp — Udemy — 2023
- Focused on C++ fundamentals, object-oriented programming (OOP) principles, memory management, and common data structures

Python for Data Science and Machine Learning — Udemy — 2022
- Acquired expertise in Python programming, data analysis, and machine learning algorithms for real-world applications