






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

Deep Learning Engineer

Dec 2021 – Feb 2022

- Developed and deployed a high-accuracy (**94%**) deep learning model based on YOLOv5 for wheat head detection, demonstrating experience in building and operationalizing production AI/ML systems.

PROJECTS

toolB — High-Speed Concurrent Middleware Engine | *Python, C, POSIX, Pthreads, mmap*

July 2025 - ongoing

- Engineered a hybrid C/Python web server from scratch, offloading network I/O and parsing to a multi-threaded C layer designed to handle over 10,000 concurrent connections.
- Bypassed Python's GIL by architecting a multi-process Python application server, achieving an estimated 4x performance increase on multi-core systems via a low-latency POSIX shared memory bus.

Breast Cancer Detection System | *Python, PyTorch, FastAPI, OpenCV*

October 2024 - May 2025

- Built a dual-pathway deep learning system combining global mammogram analysis with localized dense region examination, achieving **92%** accuracy in cancer detection and deployed via FastAPI.

Real-Time Sudoku Solver with Computer Vision | *Python, OpenCV, CNN, Keras*

2023

- Developed an augmented reality Sudoku solver using OpenCV for grid detection, CNN for digit recognition, and backtracking algorithm for solving with live camera feed overlay.

Gated Multimodal Fusion Network for Music Recommendation | *PyTorch, scikit-learn, Pandas*

May 2024 - Feb 2025

- Built and trained lightweight multimodal recommendation model leveraging audio, lyrics, and metadata, achieving a **38%** performance improvement over collaborative filtering baselines.

Spoti-Tube — Full-Stack API Integration | *Python, Flask, React, Spotify API*

2022

- Created a web platform to stream and download music from Spotify and YouTube for free.

TOOLS

assignease, autogit, envtool, tubefetch

SKILLS

Languages: Python, C, SQL, JavaScript, VB Script, HTML, CSS

Frameworks: Starlette, FastAPI, Flask, React, Pandas, NumPy, OpenCV, PyTorch, Tensorflow, jgraph

Tools: Docker, Git, Ngrok, PyCharm, CLion, VScode, Cursor, Zed, Redis

NET QUALIFICATION

UGC NET – Computer Science

Dec 2024

- Qualified with **91%** percentile for Assistant Professor and Ph.D.
- Scored **156** out of **300**

CERTIFICATIONS

Complete MERN Stack Development Course

2025

- Covered end-to-end full-stack development, including building RESTful APIs with Node.js & Express, and creating dynamic UIs with React.

C++ Bootcamp

2023

- Focused on C++ fundamentals, Object-Oriented Programming (OOP) principles, memory management, and common data structures.

Python Bootcamp with Real World Projects

2019

- Emphasized practical Python programming, including data structures, algorithms, and the development of several real-world applications.