

Soumya Chakraborty

Software Development Engineer | Machine Learning Engineer | Backend Developer

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Professional Summary

Software Engineering graduate (July 2026) with hands-on experience deploying production-grade AI/ML systems and scalable backend services. Proven track record building computer vision pipelines (YOLOv10, object detection), deep learning models (GANs, reinforcement learning), and distributed data systems processing 500+ events/min with 95% reduction in operational failures. Strong foundation in data structures, algorithms, and cloud-native development (Python, C++, GCP, Docker). Seeking full-time Software Development Engineer or Machine Learning Engineer roles.

Education

RCC Institute of Information Technology (MAKAUT University)

Bachelor of Technology in Information Technology | CGPA: 7.2 / 10

Kolkata, India

Aug 2022 – July 2026

Heritage Institute of Technology (MAKAUT University)

Masters of Technology in Computer Science Engineering

Kolkata, India

Aug 2026 – July 2028

Relevant Coursework: Data Structures & Algorithms · Database Management Systems · Object-Oriented Programming · Operating Systems · Computer Networks · Artificial Intelligence · Deep Learning · Cloud Computing

Professional Experience

Hi-Tech System & Services Ltd.

Software Engineering & Machine Learning Intern | R&D Division

Kolkata, India

Dec 2024 – Oct 2025

Production AI System — Torpedo Leak Detection (IISCO Steel Plant)

- Engineered a **real-time computer vision system** using **YOLOv10 object detection** and thermal imaging to detect molten-steel leaks, reducing undetected incidents by **95%** and preventing ₹12L/month in production loss across **24/7 operations**.
- Developed **RFID-based inventory management system** with **PostgreSQL backend** and REST API, serving 200+ daily users and tracking 5,000+ components with **100% accuracy**, eliminating 8–10 manual errors/week.
- Optimized incident response pipeline using event-driven architecture, reducing mean-time-to-respond by **40%** (25→15 min) through automated alerting and workflow standardization.

Embedded Systems — Camera Calibration System (JUSCO)

- Designed and deployed **FFT-based signal processing algorithm** for automated pan-tilt camera drift correction, achieving positional accuracy within $\pm 0.5^\circ$ — 4× improvement over manual calibration baseline.
- Implemented **closed-loop control system in Python** with real-time feedback, reducing equipment downtime by **40%** across 12 CCTV installations and eliminating daily manual adjustments.

IoT Data Platform — Substation Monitoring (JUSCO)

- Architected **distributed real-time telemetry system** processing 500+ sensor signals/min (temperature, voltage, load) using **event-driven microservices** and time-series database.
- Built **RESTful API** and web dashboard for real-time monitoring with intelligent threshold-based alerting, enabling proactive fault detection and reducing transformer downtime by **10%** in first quarter.

Technical Projects

Unsupervised Video Summarization via GAN + Reinforcement Learning | PyTorch, DL, RL Nov 2024 – Jun 2025

- Developed **end-to-end deep learning pipeline** combining Generative Adversarial Networks with **PPO reinforcement learning** for automated video summarization; designed custom reward functions optimizing temporal diversity and semantic relevance.
- Outperformed state-of-the-art baselines** (DR-DSN, random selection) on SumMe benchmark by 30% reduction in redundant frames while maintaining 95% coverage quality; trained on 4-GPU cluster.
- Research collaboration with Indian Statistical Institute (ISI), Kolkata** — premier national research institute; co-authored technical report.

High-Performance DataFrame Library in Python | C, Systems Programming, Algorithms Jan 2024 – Nov 2024

- Implemented **memory-efficient data processing library** in pure C with columnar storage, supporting filtering, aggregation, joins, and CSV I/O — zero external dependencies for embedded systems deployment.
- Optimized data structures achieving **$O(n \log n)$ sorting** and **$O(1)$ column access** via hash-indexed maps; benchmarked handling 500K-row datasets with **sub-linear memory growth** and 10× faster I/O than Pandas baseline.

- Designed comprehensive test suite with **95% code coverage**; implemented custom memory allocator reducing fragmentation by 40%.

Scalable Sensor Data Pipeline & Analytics Platform | Python, Flask, PostgreSQL, Docker Aug 2024 – Oct 2024

- Built **distributed microservices architecture** using Flask, PostgreSQL, and Redis for real-time IoT sensor data ingestion, processing 10,000+ events/min with **sub-100ms p99 latency**.
- Developed **RESTful API gateway** with authentication, rate limiting, and caching; containerized services using **Docker Compose** for horizontal scalability and CI/CD integration.
- Implemented time-series anomaly detection using statistical methods and sliding-window algorithms, reducing false-positive alerts by **60%**.

Technical Skills

Programming Languages: Python (Expert), C, SQL, Bash/Shell Scripting

Machine Learning & AI: PyTorch, Scikit-learn, Computer Vision, Object Detection (YOLOv10, R-CNN), GANs, Reinforcement Learning, Transfer Learning, Model Deployment

Backend & Databases: Flask, REST APIs, Microservices, PostgreSQL, MySQL

Data Engineering: Pandas, NumPy, Stream Processing, Data Warehousing, Real-Time Analytics

Cloud & DevOps: Google Cloud Platform (Compute Engine, Cloud Storage, BigQuery), Docker, Git, CI/CD, GitHub Actions

Systems & Embedded: Linux System Administration, FFT Signal Processing, RFID Integration

Tools & Frameworks: OpenCV, Matplotlib, Seaborn, Jupyter, VS Code

Certifications

- **HackerRank Certifications:** Python (5-star), Machine Learning (5-star), C Programming (5-star) — Top 5% globally in each domain
- **Google Cloud Skills:** Cloud Digital Leader, Compute Engine, Cloud Storage (2024)
- **Deep Learning Specialization:** Coursera (Andrew Ng) — Neural Networks, CNNs, RNNs, Sequence Models (2024)

Achievements & Leadership

- **Smart Bengal Hackathon 2024 — Runner-Up (2nd Place):** Placed 2nd among 500+ teams statewide; built and presented end-to-end AI solution within 36-hour deadline.
- **Smart India Hackathon 2023 — National Finalist:** Selected among top 1% of teams nationally; represented RCCIIT in Healthcare AI track; developed prototype emergency response system.
- **ACM RCCIIT Student Chapter — Vice Chair (Dec 2024 – Present):** Led 40% membership growth; organized 3 technical workshops (Python, ML, Cloud) and 2 inter-college coding competitions with 300+ participants; managed ₹2L annual budget.
- **Competitive Programming:** Solved 300+ algorithmic problems across LeetCode, Codeforces, and CodeChef.
- **Open Source Contributions:** Linux AUR package maintainer (500+ downloads); contributed to 5+ GitHub projects; maintained 2 public repositories with 100+ stars combined.