Debarpita Dutta

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EDUCATION

Vellore Institute of Technology **Oct 2022-Apr 2026**
B. Tech Computer Science and Engineering [Specialization in Cloud Computing and Automation] **CGPA: 8.26/10**

EXPERIENCE

KodeKloud **[Remote]**
[Cloud Intern] **[Sept 2024 – Dec 2024]**

- **Improved multi-cloud system reliability by 30%** across 5+ environments (AWS, GCP, Azure) through fault-tolerant, version-controlled infrastructure design — ensuring consistent availability and resilience under production workloads.
- **Accelerated CI/CD release cycles by 40%** and **cut deployment failures by 30%** by engineering robust validation, automated rollback, and pipeline optimization workflows — enhancing developer productivity and release confidence.
- **Enhanced end-to-end system uptime and observability** through cross-functional collaboration on monitoring, scaling, and alerting frameworks — reinforcing delivery ownership and operational excellence across distributed environments.

PROJECTS

Smart Traffic Management System: ***[As a team of 8, coordinated cross-functional work among 8 team members to deliver an end-to-end solution.]***
[Python | OpenCV | YOLO | Tensorflow | Keras | LSTM models | Flask | NumPy | Raspberry Pi | Intel NUC] Project Link **[April 2025]**

- Developed an end-to-end full-stack AI application with a **Flask backend**, real-time video processing pipeline, and predictive LSTM models for congestion analysis.
- Built APIs for device communication, dashboards, and real-time data streaming.
- Improved system responsiveness by **45%** through optimized inference pipelines.

SSH Log Analysis for Brute-Force Attack Detection:
[Python | HTML/CSS | JavaScript | Shell | Perl | Nix] Project Link **[April 2025]**

- Designed a lightweight anomaly-detection engine using Python (Scikit-learn-style algorithms) for log parsing and predictive flagging.
- Created a web-based monitoring interface using HTML, CSS, and JS.
- Developed scalable pipelines achieving 25% fewer false positives and sub-second detection.

Scalable Multi-Cloud CI/CD Pipeline with Canary Deployments,enhanced with a Streamlit-based DevOps Monitoring Dashboard:
[Jenkins | Docker | Kubernetes | ArgoCD | Prometheus | Grafana | React/Streamlit | Terraform] Project Link **[June 2025]**

- Built an end-to-end platform with automated deployments, Git-based validation, and a modern **React/Streamlit frontend** for visualization.
- Integrated observability dashboards visualizing 500+ build logs and deployment statuses.
- Automated **infrastructure provisioning with Terraform** and developed a Streamlit-based DevOps dashboard visualizing 500+ builds and 40+ deployments

Core- Scheduler: Kernel-Like Process Scheduler Simulator:
[C | GCC | Makefile | Linux(POSIX IPC) | GDB | Valgrind | GNU plot/Python(for visualisation)] Project Link **[August 2025]**

- Developed a **Linux-style process scheduler simulator** implementing RR, Priority, and FCFS algorithms with fairness and starvation prevention.
- Designed **modular process control blocks and IPC mechanisms**, emulating real kernel abstractions for inter-process communication.
- Validated and visualized **CPU performance metrics** through rigorous debugging and testing to ensure reliable, stable backend process handling.

Kernel-Driver: Linux Character Device Driver: **[August 2025]**
[GCC | Linux Kernel Headers | Kernel APIs | Terminal | Vim/Nano] Project Link

- Developed a **custom Linux character device driver** from scratch, implementing file operations (read, write, open, release) for user–kernel communication.
- Followed **kernel coding conventions** and modular design patterns to ensure extensibility, fault isolation, and clean abstraction boundaries.
- Validated driver performance through GDB and Valgrind, reinforcing system reliability under varying workloads.

Autonomous Quadcopter using Ground Control Station (GCS):[Final Year Project] **[Ongoing]**
[As a team of 5, managed task distribution, sprint planning, and ensured timely deliverables.]
[Tech Stack: PX4/ ArduPilot(Embedded C) | mission Planner | QGroundControl | MAVLink | OpenCV | SITL | Gazebo | GIS Maps]
[Hardware: Pixhawk Flight Controller | BLDC Motors | ESCs | GPS (M8N) | Magnetometer | LiPo Battery | Propellers (1045) | RX/TX Modules]

- Architected and implemented a **fully autonomous drone system** leveraging PX4/ArduPilot firmware and GCS telemetry for real-time mission control.
- Deployed **GIS-based map injection and waypoint navigation**, enabling autonomous flight missions validated in both simulation (Gazebo, SITL) and real-world trials.
- Ensured end-to-end reliability through sensor fusion, system monitoring, and safety failsafes—key principles in distributed real-time systems.

ACHIEVEMENTS

- Amongst the top 1000 from 50,000 girls in India selected for **Walmart Codehers'25**
- Earned several badges at **Google 2025 GenAI Exchange Program**
- Finalist at the **ServiceNow hackathon for Women**
- Participant, **Google Gen AI Hackathon (APAC Region) – Team of 5**
- **GOOGLE CLOUD AIML BADGES:** Prompt Design in Vertex AI, Build Real-World AI Applications with Gemini & Imagen, GenAI App Development with Streamlit..

KEY SKILLS

Programming Languages: Python,(primary) Java, JavaScript, Go, C++
Full-Stack & Frameworks: Frontend: React, HTML, CSS, JavaScript **Backend:** Flask, FastAPI, Node.js (basics), Django (basics)
Databases: MySQL, PostgreSQL, MongoDB, DynamoDB
AI/ML Foundations: Machine Learning (supervised/unsupervised), TensorFlow, Keras, Scikit-learn, OpenCV, LSTMs, Object Detection (YOLO)
Software Engineering & Tools: Git, GitHub, Linux, Docker, Kubernetes, CI/CD, REST APIs, Version Control, Testing & Debugging
Systems/Cloud Knowledge: AWS, GCP, Terraform, ArgoCD, Observability (Prometheus/Grafana)
Domain Understanding & E2E Delivery: Product Support (E2E lifecycle), Monitoring, Debugging, Observability, Issue Resolution, API Development, System Integration, Automation of operational workflows, Continuous Learning: Financial systems interest, distributed systems, reliability engineering

CERTIFICATION & COURSEWORK

AWS: Certified AWS Cloud Practitioner 2024, AWS Solutions Architect Associate 2025, AWS DevOps Engineer 2025.
IBM: IBM- Cyber Security Analyst & Generative AI
CLOUD & SECURITY: Cloud Data and Security Management
DISTRIBUTED & EDGE PARADIGMS: Grid Computing, Fog & Edge Computing, Parallel & Distributed Algorithms, HPC

RESEARCH PAPERS

- "Secure File Storage Using Hybrid Cryptography ":-Link
- "Federated Learning: Privacy-Preserving Machine Learning Across Decentralized Devices with Insights from the GDPR Perspective ":- Link

POSITIONS OF RESPONSIBILITY

- Campus Ambassador at VITB, representing the state: West Bengal: Engaged with 200+ students and external partners to promote initiatives. [2023 - Present]
- Member at the Google Developer Students Club, VITB: Organized workshops and mentored peers in AI/ML and cloud tools [2022 - Present]
- Club Coordinator at the VITB Photography Club [2023- 2024]
- General Secretary at the West Bengal Cultural Regional Club at VITB [2023 -2024]