

ABHASH CHAKRABORTY

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Professional Summary

Software Engineer and AI Researcher. Proficient in **C++**, **System Architecture**, and **Data Structures**, with experience in **Embedded IoT**, **Multimedia Image Processing**, and backend development. Oracle Certified Professional building high-performance solutions from edge devices to cloud-native AI pipelines.

Education

Vellore Institute of Technology

July 2022 – June 2027 (Expected)

Integrated Masters of Technology in Artificial Intelligence

Bhopal, Madhya Pradesh

Relevant Coursework: **Data Structures & Algorithms**, **Operating Systems**, **OOP (C++)**, Computer Architecture, Deep Learning, Digital Image Processing, DBMS.

Technical Skills

Languages & Core: C++, C, Python, SQL, Java, OOD

Systems & IoT: Linux/Unix, ESP32, Computer Vision, OpenCV, Docker, Git

AI & Multimedia: TensorFlow, PyTorch, Scikit-learn, RAG, Image Processing, NLP, LLMs

Web & Cloud: Next.js, FastAPI, OCI, AWS, Redis, PostgreSQL

Projects

PentaVault: Runtime Secrets Control Platform

May 2026

Next.js, Fastify, TypeScript, Docker, PostgreSQL, CLI

[GitHub](#)

- Building an open-source secrets management platform for AI-assisted development, combining a **Next.js dashboard**, **Fastify backend**, and CLI-based runtime secret injection workflow.
- Designed policy-driven secret access, audit logging, tokenized environment variables, and deny-by-default controls to reduce plaintext secret exposure during local development.
- Implemented backend architecture for authentication, encrypted secret storage, project access policies, and runtime resolution flows for developer and team-based environments.

Find: Privacy-First Multimedia Intelligence

Feb. 2025

Python, FastAPI, CLIP, YOLOv8, pgvector, Redis

[GitHub](#)

- Designed a multimedia analysis engine with **CLIP embeddings** and **pgvector**, cutting query latency by 350ms and resolving three primary causes of performance bottlenecks within the multimedia pipeline.
- Optimized the multimedia analysis engine's index size by 20% through vector quantization and compression, enabling the engine to process over 100,000 images with ease and speed.
- Developed a multimedia analysis engine, achieving 98% accuracy in image recognition, while decreasing memory usage by 15% and improving image processing throughput by 30% using efficient machine learning techniques.

AgroHealth: IoT & Computer Vision System

Jan. 2025

C++, Python, OpenCV, ESP32 (Embedded), TensorFlow

[GitHub](#)

- Devised a real-time **embedded IoT solution** using **ESP32** hardware for on-field crop pathogen detection, reducing diagnosis latency from hours to seconds.
- Formulated a custom image processing pipeline utilizing **CNNs** and **OpenCV**, achieving **94% accuracy** in identifying 20+ distinct pathogens.
- Integrated hardware-software communication protocols to enable seamless data transfer between edge devices and the central inference engine.

Experience

Sports Naukri

Sept. 2025 – March 2026

Tech & Innovation Intern

Remote

- Architected a scalable software infrastructure using **Next.js** and **Supabase**, significantly improving platform stability and page load performance by 35%.
- Engineered an **AI-driven Pipeline** using RAG for programmatic document parsing, automating candidate matching and reducing manual processing overhead by 60%.

- Integrated Vercel KV for **efficient** rate-limiting and implemented real-time notification systems, enhancing user retention metrics by 40%.

VIT Bhopal AI Innovators Hub

July 2024 – Oct. 2024

Project Lead

Bhopal, India

- Led the development of an **MCP-based client** for autonomous agent communication, streamlining logistics workflows and reducing error rates.
- Managed a cross-functional team of 5 developers, enforcing strict code quality standards via **GitHub** version control and Agile methodologies.

Certifications

- Oracle Cloud Infrastructure 2025 Certified Data Science Professional
- AWS Certified Solutions Architect - Associate

Leadership

Mozilla Firefox Club VIT Bhopal

April 2024 – July 2025

Creative Team Lead

Bhopal, India

- Managed a 10+ person creative team for 5 flagship events with 2,000+ attendees, ensuring visual consistency and high engagement.
- Launched a high-performance event portal, increasing registrations by 40% through **streamlined** UX design and efficient frontend logic.