

Ujaan Mukherjee

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B.Tech Computer Science & Engineering student who ships production systems, not classroom exercises: a CLIP-powered semantic search engine over 14,000+ images, a sub-100ms IoT thermal tracking system, and a globally deployed REST API serving 2,000+ records at under 10ms latency. Deep working knowledge of agentic AI, Retrieval-Augmented Generation (RAG) pipelines, and LangChain, with automation experience in n8n and Docker. Backed by 15 industry certifications in Generative AI and machine learning from IBM, Google Cloud, and Duke University.

EXPERIENCE

Technical Director | JAAGO NGO, Kolkata 2026 - Present

- Own all technical operations for the NGO, running its website and core systems end to end
- Built and shipped the organization's website solo, eliminating all third-party vendor costs

Physics Virtual Labs Intern | IEM IIFR, Kolkata 2026 - Present

- Develop virtual physics lab simulations used for hands-on student instruction at IEM-IIFR
- Validated and debugged simulation models, improving physical accuracy by ~15%

Secretary, Space Byte Club | Don Bosco School, Liluah 2024 - 2025

- Ran end-to-end club operations as elected Secretary
- Organized and hosted 10+ technical events reaching 100+ students

PROJECTS

Argus: AI Semantic Face Search System github.com/KireinaR/argus

Python, CLIP, NumPy, GPU

- Engineered a CLIP-based semantic face search system that cut query time by ~70%
- Optimized the embedding pipeline across 14,000+ images, slashing disk I/O by ~60%

Heat Seeker: Real-Time Thermal Tracking System github.com/KireinaR/heat-seeker

ESP32, MLX90640, Python, OpenCV

- Engineered an ESP32 + MLX90640 thermal tracker achieving sub-100ms end-to-end latency with Python and OpenCV
- Delivered heat-signature detection and tracking at 90%+ accuracy
- Designed fully self-contained, plug-and-play deployment in under 5 minutes with zero cloud dependency

Global Air Bases REST API airbases.mris.workers.dev

Hono, Cloudflare Workers, REST

- Built and deployed a global REST API covering 2,000+ air bases across 50+ countries on Cloudflare Workers, serving responses in under 10ms
- Architected a scalable geospatial schema with query filtering, running at zero server cost

YDSE Simulator: Interactive Physics Web App ydse-ujaaan.vercel.app

JavaScript, Physics Modelling, Vercel

- Built a physics-accurate double-slit experiment simulator sustaining 60 FPS across all major browsers
- Implemented wave interference and diffraction modelling from first principles

JAAGO NGO Website

HTML, CSS, JavaScript, Vercel

- Led the development team behind the NGO's public website
- Built the core frontend components and drove the UX direction
- Shipped a responsive, performance-optimized build on Vercel

TECHNICAL SKILLS

Languages	Python, JavaScript, Java, C++, Bash
AI & Machine Learning	CLIP, RAG, LangChain, LLM Fine-Tuning, Prompt Engineering, Transformer Models, Generative AI, NLP
Automation	n8n, AI-augmented development, intelligent tooling integration
Backend & APIs	Node.js, Express.js, Hono, Cloudflare Workers, REST API design
DevOps & Infrastructure	Docker, Git, Vercel, WSL, Oracle VirtualBox
Embedded Systems	ESP32, ESP8266, Arduino, OpenCV, real-time data streaming
Frontend	HTML, CSS, JavaScript

EDUCATION

Institute of Engineering and Management (IEM), Salt Lake, Kolkata	2025 - Present
B.Tech, Computer Science and Engineering	
Don Bosco School, Liluah, CISCE Board	2024 - 2025
Class 12, Science Stream: 89.5%	
Don Bosco School, Liluah, CISCE Board	2022 - 2023
Class 10: 93%	

CERTIFICATIONS

IBM	Fundamentals of AI Agents Using RAG and LangChain; Generative AI Advanced Fine-Tuning for LLMs; Generative AI Engineering and Fine-Tuning Transformers; Generative AI Foundational Models for NLP and Language Understanding; Generative AI: Introduction and Applications; Generative AI: Prompt Engineering Basics; Introduction to Artificial Intelligence
Google / Google Cloud	Introduction to Generative AI; Accelerate Your Job Search with AI; Use AI Responsibly; Stay Ahead of the AI Curve
Duke University	GenAI Basics: How LLMs Work; Python Scripting
Coursera	Perplexity AI for Beginners: AI-Powered Search