

SUDIPTA SARKAR

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Education

Examination	College / School	University / Board	Year	Stream	Score
B.Tech	Narula Institute of Technology	MAKAUT	2023 – Present	Computer Science & Technology (CST)	8.45 (till 7 th sem)
Diploma In Eng	BPC Institute of Technology	WBSCTE	2020 – 2023	Computer Science & Technology (CST)	82%

Projects

FileTracker | Full-Stack File Management System *FastAPI, React, AWS S3, PostgreSQL*

- Built a production-ready file management platform with **FastAPI** and **React + TypeScript (Vite)**, supporting secure file upload, download, and organization for users and organizations.
- Integrated **Supabase Auth**, **Amazon S3** signed URLs, and **PostgreSQL** (Amazon RDS) via **SQLAlchemy** ORM for authentication, storage, and persistence.
- Deployed on **AWS EC2** with **Nginx**, **systemd**, **CloudFront** CDN, and **ACM** HTTPS certificates for a fully production-grade environment.

AI-Powered TOF Drone System | Intelligent Drone Perception Platform *YOLOv8, Ensemble Learning, Flask*

- Developed a patent-related AI system for **Time-of-Flight (TOF)** drones using **YOLOv8** and **Ensemble Learning**, achieving **84%** object detection accuracy for real-time drone perception.
- Integrated a **Flask** backend with a custom **HTML/CSS/JS** frontend for API routing, ML inference, and live drone data visualization; deployed backend on **AWS EC2** with static frontend hosted on **Amazon S3** via **CloudFront** CDN.
- Trained and optimized models on **Google Colab**; deployed live testing environment via **ngrok** tunneling with aggregated multi-model ensemble predictions.

Fabricanova | AI-Powered Fashion Design Platform *Next.js, FastAPI, PyTorch, Tailwind CSS*

- Built an AI fashion design platform with **Next.js + React** frontend and **FastAPI** backend, enabling garment generation from text prompts via **diffusion models**.
- Developed an interactive canvas for real-time SVG sketch editing using **OpenCV**, **PIL**, and custom geometry scripts, with **Framer Motion** for UI animations.
- Prototyped generative models with **PyTorch** and **Hugging Face Diffusers**; deployed frontend on **Vercel** with AI endpoints via **ngrok**.

Research & Publications

A Multimodal AI Approach for Fashion Design using Retrieval-Augmented Generation and Diffusion Models

Prof. Ritwika Mukherjee | NIT, Kolkata *JAN, 2025 – Present*

- Integrated **RAG** pipelines with **diffusion models** to design the system model, alongside formulating the abstract and reviewing prior literature for AI-assisted fashion generation.
- Validated system effectiveness through comparative analysis and benchmarking against baseline generative models.

Technical Skills

Programming Languages: Java, JavaScript, Python, SQL, HTML5, CSS
Frameworks & Libraries: FastAPI, Flask, React, Node.js, Tailwind CSS
Machine Learning & AI: Scikit-learn, Pandas, NumPy, Matplotlib, OpenCV
Database Management: PostgreSQL, MySQL
Tools & Platforms: AWS, Git, GitHub, Vercel, Postman, Docker, HuggingFace
Technologies: RESTful APIs

Achievements

- Participated in **Hack-O-NiT 2026** Hackathon, organized by **Narula Institute of Technology**, Kolkata.
- IIT Madras (NPTEL)** certified **Introduction to IoT** with **87%**.
- IIT Guwahati (NPTEL)** certified **Fundamentals of Artificial Intelligence** with **66%**.
- Led the college project group as **Team Leader**, coordinating development, task delegation, and delivery across all project milestones.
- Contributed as an **Open Source Contributor** in multiple projects during **GirlScript Summer of Code 2026 (GSSoC'26)**.