

DEEPAN SADHUKHAN

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SUMMARY

AI/ML Engineer specializing in Agentic AI systems, LLM-powered products, and multimodal ML with 3+ years of experience delivering production-grade AI applications. Proven track record designing multi-agent orchestration frameworks (LangGraph, Claude API), RAG pipelines, real-time ML inference, and full-stack AI interfaces. Combines strong ML engineering depth with frontend fluency in React.js/Next.js to ship end-to-end AI products independently.

SKILLS

Generative AI & LLMs: LangGraph, Agentic AI, RAG Systems, Prompt Engineering, Claude API, OpenAI API, Hugging Face Transformers

Machine Learning: PyTorch, TensorFlow, Scikit-learn, OpenCV, CNNs, LSTMs, Object Detection/Tracking, Model Evaluation

Data & Vector Infra: pgvector, PostgreSQL, MongoDB, Redis, ClickHouse, Kafka, AWS S3

Edge AI & Deployment: Raspberry Pi, RTSP, MQTT, FFMPEG, Docker, ONNX

Frontend & UI: Next.js, React.js, TypeScript, Tailwind CSS, Streamlit, Gradio

Backend & APIs: Python, Flask, Express.js, REST APIs, Cloudflare Workers

Tools: Git/GitHub, n8n, Postman, Roboflow, LaTeX

EXPERIENCE

Product Development Intern

Mar 2026 – June 2026

Deep Duo Foundation

Jadavpur, West Bengal, India

- Architecting MarketOS, an AI-native marketing operations platform with a Supervisor agent orchestrating 16 specialized sub-agents, enabling one-click campaign intent to transform into fully coordinated, autonomous execution across channels.
- Designing an event-driven multi-agent system using LangGraph, Claude API, Kafka, pgvector, PostgreSQL, ClickHouse, and Redis to power 24/7 autonomous execution, persistent memory, and continuous optimization loops.
- Defining inter-agent message schemas, observability pipelines, and product-facing dashboards so AI decisions remain traceable and actionable for non-technical marketing teams.

Machine Learning Intern

Dec 2025 – Feb 2026

IEMA Research & Development Pvt. Ltd. – IEMLabs

Kolkata, West Bengal, India

- Built TradeSim, an agentic trading-simulation platform integrating OHLCV market data, live news retrieval via RAG, technical-indicator computation, and LLM-driven analysis to generate structured, explainable stock reports.
- Engineered production-grade workflows including real-time P&L simulation, schema-validated authentication, and structured LLM output pipelines with a strong emphasis on data correctness and controlled access.

Full Stack Software Developer Intern

Mar 2025 – Dec 2025

VitaniumX

Gurugram, Haryana, India

- Built Bol Bachhan, an AI voice call management platform (comparable to Retell AI) using Next.js, TypeScript, and Tailwind CSS – shipping dashboard modules for campaign management, call-log analytics, AI workflow building, lead management, knowledge-base integration, and audio asset management.
- Automated GoHighLevel CRM workflows via n8n and rebuilt landing pages, contributing to **40% sales growth**, **~70% more qualified inbound calls**, and **30% improvement** in lead conversion rate.

Software Developer Intern

Jan 2024 – Apr 2024

NexaWings International Software Solutions

Sector 1, Kolkata, West Bengal, India

- Developed several Flask microservices with CRUD endpoints supporting core product workflows.
- Identified 9 critical backend issues through systematic Postman API testing, improving reliability before production deployment.
- Scraped and validated ~1,500 high-intent sales leads using BeautifulSoup, directly supporting the sales pipeline.

Student Researcher

Sep 2023 – Nov 2023

IEM IEDC

Kolkata, West Bengal, India

- Developed and deployed a disease-diagnosis RAG chatbot achieving **85% diagnostic accuracy**, validated against 500+ test users – an early production RAG system built from scratch.
- Built an automated portal managing 30+ student–project mappings, reducing participation fraud and improving accountability.

SELECTED PROJECTS

Deepfake Video Detection (2024)

Built a multimodal deepfake detection pipeline combining ResNeXt-50 CNNs, LSTMs, and Librosa audio analysis, achieving **96.68% accuracy**. Integrated Kafka message queuing and AWS S3 for scalable, real-time inference on video streams.

Bloodlink (2025)

Engineered a full-stack blood bank platform with React.js, Express.js, MongoDB Atlas, and Redis. Integrated a TensorFlow-based demand forecasting model for inventory optimization, automated donor–recipient matching, and real-time inventory synchronization to reduce shortage risk.

Eco-Alert (2025)

Built a cross-platform hazard reporting app using React.js, Express.js, REST APIs, and Google Maps SDK. Delivered geotagged reporting, AI-powered heatmap analysis, and real-time notifications to accelerate environmental incident response.

PUBLICATIONS

HiLex: Image-Based Hierarchical Layout Extraction from Question Papers **ICDAR 2025** (*Accepted*)
Co-Author

- Developed a hierarchical document layout extraction system using PyTorch and Roboflow object detectors; benchmarked on a multimodal dataset of 1,965 exam papers to automate digital question-bank creation.
- Published at ICDAR (International Conference on Document Analysis and Recognition) – a premier IEEE/IAPR venue for multimodal AI, document understanding, and vision-language research.

EDUCATION

BTech in Computer Science, Specialization in AI & Machine Learning

2023 – 2027

Institute Of Engineering and Management, Salt Lake, Kolkata, West Bengal, India

ACHIEVEMENTS & ACTIVITIES

- Led interdisciplinary teams in national-level hackathons and innovation programs: Startup Mahakumbh, MSME IP-Yatra, IDE Bootcamps, Google Solution Challenge – building experience in rapid AI prototyping under competitive conditions.
- Proactively explore emerging AI tools, LLM frameworks, and automation platforms, designing end-to-end workflow automations that eliminate repetitive processes.
- Continuously track applied AI research and arXiv preprints to stay current with fast-moving developments in LLMs, multi-agent systems, and AI infrastructure.