

# Abhimanyu Singh

Data Scientist (Manager) | Agentic AI Specialist | Robotics Engineer

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## SUMMARY

Highly skilled **Data Scientist Manager** and **AI Engineer** with **4+ years of industrial experience** in designing robust data pipelines, **Agentic AI** systems, and advanced analytics. Possesses an additional **2 years of research experience** in Computer Vision and Robotics. Currently leading GenAI initiatives at **HFDC Bank**, focusing on autonomous agent catalogues and MLOps. Adept at bridging the gap between research innovation and production-grade software engineering to deliver scalable, high-impact solutions.

## TECHNICAL SKILLS

**Generative AI & Agents:** Google ADK, OpenAI SDK, LangChain, LlamaIndex, LangGraph, LiteLLM, CrewAI, RAG, Vertex AI

**Cloud & MLOps:** AWS (SageMaker, ECR), GCP, Docker, HashiCorp Vault, MQTT, MLFlow, Airflow

**Languages:** Python, SQL, C++, Dart (Flutter), JavaScript, LaTeX

**Frameworks & Embedded:** FastAPI, Flask, Streamlit, TensorFlow (TFLite), OpenCV, ESP32, FreeRTOS, PlatformIO

## EXPERIENCE

### HFDC Bank

*Data Scientist - Manager*

Dec 2025 – Present

Noida, India

- Developing the **Agent Catalogue** for the Neev platform, abstracting low-level **LiteLLM** routing into a card-based UI, enabling teams to discover and configure autonomous agents without raw config files.
- Built a Streamlit-based MLOps dashboard for **data annotation**, facilitating internal crowdsourcing to generate labeled datasets for fine-tuning and RAG applications.

### Quantiphi Analytics Solutions

*Senior Machine Learning Engineer*

Sep 2025 – Nov 2025

Bengaluru, India

- Executed a large-scale POC using **GCP Vertex AI Document OCR** for batch processing, converting unstructured financial documents into structured JSON for downstream analytics.

### Alphadroid India Ltd

*Software Engineer (AI & Robotics)*

Jun 2024 – Sep 2025

Noida, India

- Orchestrated autonomous robot workflows including synchronization with **Lift PLC** systems and a **GeoJSON**-based app for real-time multi-floor navigation.
- Optimized **Conversational AI** pipelines using **LangChain** and AWS SageMaker, enhancing RAG context classification for multilingual customer support avatars.
- Transitioned facial recognition to edge devices using **Flutter** and **TFLite** (Google ML Kit), optimizing MobileFaceNet for 99.5% accuracy with quantization.
- Scaled robot updates via **MQTT** and managed AWS ECR logins with HashiCorp Vault.

### IIT Guwahati (TIH Foundation)

*Junior Research Fellow (Underwater Vision Enhancement)*

Jun 2023 – May 2024

Pune, India

- Developed pipelines using **GroundingDINO** (zero-shot detection), improving underwater surveillance dataset quality (PSNR/SSIM) by 35%.
- Optimized inference using **ONNX Runtime**, reducing latency by 3-4 seconds for real-time tracking.

### Health View

*Data Scientist*

Jul 2019 – Jul 2021

Jaipur, India

- Developed NLP-driven content curation models and D3.js dashboards to boost user engagement.

## PROJECTS

### MicroClaw - Agentic Firmware for ESP32

*C++, Python, FreeRTOS, Gemini/Groq API, FastAPI*

Feb 2026

- Developed agentic firmware from scratch for ESP32 microcontrollers, enabling autonomous reasoning and physical hardware control via **Google Gemini** and **Groq** LLMs.
- Engineered an autonomous tool-use system (ReAct loop) utilizing **FreeRTOS** for dynamic GPIO scripting, WiFi/BLE scanning, and persistent LittleFS memory management.
- Built a complete ecosystem including an on-device web chat interface and a **FastAPI**-based Python desktop manager for OTA flashing, configuration, and real-time monitoring.

**HealthBuddy - AI Wellness Companion** | *Flutter, Groq API, Health Connect*

Jan 2026

- Developed a privacy-first health app integrating **Google Health Connect** to sync steps, sleep, and heart rate.
- Built **NutriGPT**, a conversational AI using **Groq API** (Llama 3) for low-latency wellness advice and automated, personalized diet chart generation.
- Implemented a "Bring Your Own Key" (BYOK) architecture for secure, personalized AI interactions.

**Resume JD Matcher** | *Python, Gemini 2.5, LangChain, Streamlit*

2025

- Engineered an AI recruitment tool using **Gemini 2.5 Flash** for skill extraction and TF-IDF scoring.
- Automated PDF parsing and generated dynamic radar charts for candidate evaluation using Plotly.

**EDUCATION****Defence Institute of Advanced Technology (DIAT), DRDO**

2021 – 2023

*M.Tech in Automation and Robotics Engineering; CGPA: 8.47**Pune, India***The LNM Institute of Information Technology**

2015 – 2019

*B.Tech in Mechanical Engineering; CGPA: 8.16**Jaipur, India***PUBLICATIONS****Article:** "The Evolution of Object Detection: YOLO & NAS Revolutionizing Computer Vision" (IndiaAI.gov.in)**Conference:** "Subaqueous Crack Detection using Fusion-Based Image Enhancement" (RCRM 2024)