

Subhrajyoti Mahanta

AI & Automation Specialist

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SUMMARY

Proactive AI Automation Specialist with hands-on experience in implementing cutting-edge AI tools and automating complex business workflows. Skilled in using platforms like n8n, LangChain, and OpenAI APIs to build and deploy intelligent chatbots, analytics summarization tools, and integrated solutions. Proven ability to create AI-powered tools from the ground up, integrate third-party APIs, and collaborate with leadership to enhance operational efficiency.

WORK EXPERIENCE

IIT GUWAHATI (Traffic Engineering Laboratory)

May 2023 – July 2023

Summer Research Internship

Guwahati, India

- Engineered an end-to-end LiDAR sensor assembly integrating **6 LiDAR** units with an Arduino microcontroller, authoring **Python** firmware that captured and aggregated real-time traffic data with **90% accuracy**.
- Optimized data workflows by processing and analyzing over **1 million traffic records** using **Pandas** and **NumPy**—automating preprocessing routines to cut **ETL** runtime by 45% (from 4 hours to 2.2 hours).

DST-SERB, Govt. of India (IIEST, Shibpur)

July 2023 – May 2025

Research Internship

Howrah, West Bengal

- Developed a **6 LIDAR** sensor system synced with **VBox GNSS** and a vehicle-mounted camera using **OpenCV**, achieving intra-vehicular gap measurement precision of **±2 cm**.
- Calibrated and processed **10,000+** multi-sensor data points to compute **lateral velocities** with a **±5%** deviation, enhancing accuracy in flexible traffic conditions.
- Analyzed **100+ traffic flow datasets** to identify **EV-induced traffic** anomalies and sustainability trends, supporting policy-driven transportation planning.

IHFC, IIT Delhi (GUARDIAN EDUCATION SERVICES)

August 2023 – January 2024

Senior Trainer (Robotics & ML)

Kolkata, West Bengal

- Conducted **50+ robotics** and **programming workshops** across **10+ colleges** as part of the NURTURE STEM initiative.
- Organized and led inter-college robotics competitions across 10+ institutions, attracting 100+ participants and resulting in a 40% increase in workshop enrollments, while fostering hands-on STEM innovation at the grassroots level.

TECHNICAL SKILLS

AI Automation Integration

Workflow Automation: n8n, Make.com, Zapier
AI/LLM Orchestration: LangChain, OpenAI API
Chatbot Platforms: Dialogflow, Claude API, Rag
API & Webhooks: FastAPI, REST API, Open API, Gemini API

Web Tool Development

No-Code/Low-Code: Webflow, Wix Studio
Generative AI Tools: Midjourney, ElevenLabs
Programming: Python, SQL
Platforms: Docker, Git, AWS, GCP, Power BI, Lovable

PROJECTS

AI-Powered Chatbot for Travel Agency

- Automated the internal workflow for retrieving **travel policy information** by developing an **intelligent chatbot**, reducing the manual search time by an estimated 90%
- Implemented a scalable, AI-powered solution using **Python** and **LangChain** to orchestrate a complex **RAG pipeline**, successfully processing and structuring a knowledge base of over 20+ unstructured PDF documents.
- Integrated a third-party API (**Open AI API**) to leverage a high-speed LLM and applied advanced **prompt engineering** to improve response accuracy by over 40%, ensuring all generated answers were factually grounded in source material.

Context-Aware Content Extraction and NLP-Driven Sentiment Analysis

- Developed a scraping and **content filtering pipeline** for **50+** articles using **requests**, **BeautifulSoup**, and **pandas**, extracting clean article text from Excel input and saving as over **50** .txt files.
- Performed **sentiment** and readability analysis using **2 custom dictionaries** and **NLTK**, computing **10+** metrics (e.g., **polarity**, **Fog Index**) and saving structured results into an output.xlsx file.

AI-Powered Travel Itinerary Automation

- Engineered an end-to-end automation workflow using Make.com to connect a **Webflow front-end** with a **Gemini AI backend**, utilizing APIs and **Webhooks** to reduce the time for personalized itinerary creation from over 60 minutes to under 90 seconds.
- Implemented a **generative AI solution** by integrating the Google Gemini API, employing advanced prompt engineering to synthesize user inputs with a curated .txt file knowledge base, boosting itinerary personalization and contextual relevance by over 70% compared to generic **LLM outputs**.
- Built and deployed a complete, user-facing micro-tool by integrating 4 distinct platforms (**Webflow**, **Google Drive**, **Make.com**, **Gemini AI**), establishing a seamless data pipeline that captures user requirements and delivers a fully-automated solution directly to the user's inbox.

EDUCATION

Indian Institute of Engineering Science and Technology, Shibpur 

B.Tech, Civil Engineering - (7.06/10)

Howrah, West Bengal

December 2021 – May 2025