

Alan Anto

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Education

- **Brandenburg University of Technology**
MSc.in Artificial Intelligence; Grade: 2.4/5
Courses: Virtual Agents, Neural Networks, Computer vision, Cognitive Systems
Cottbus ,Germany
Apr 2025 - Apr 2027
- **APJ Abdul Kalam Technological University**
B.Tech(Hons.)in Artificial Intelligence and Data Science; Grade: 9.1/10
Courses: Artificial Intelligence, Machine Learning, Data Structures, Databases, NLP, Deep Learning
Kerala ,India
Dec 2020 - Jun 2024

Skills Summary

- **Languages:** Python, SQL, C++
- **GenAI & NLP Research:** LLM,Transformers, Hugging Face, RAG, Prompt Engineering, QLoRA
- **Agentic AI Frameworks:** LangChain, LangGraph, BeeAI, crewAI
- **Machine Learning & Computer Vision:** PyTorch, TensorFlow, Keras, OpenCV, Scikit-learn, pandas, NumPy
- **Databases:** MySQL, VectorDB, GraphDB
- **Cloud & Tools:** AWS, Azure, Docker, Gradio, REST API
- **Soft Skills:** Leadership, Event Management, Writing, Documentation, Time Management

Experience

- **Indian Institute of Information Technology** Jun 2023 - Aug 2023
AI Engineering Intern Kerala, India
 - Achieved real-time inference on edge devices with speeds of **30 FPS** by optimizing **YOLOv8** object detection models for limited hardware.
 - Improved model robustness by **15%** against environmental variations, as measured by precision scores across diverse test conditions, by engineering an automated **OpenCV pipeline** augmenting 5,000+ training images with noise and rotation injection.
 - Established production-grade baselines for **4 computer vision** algorithms, as measured by precision-recall **benchmarks** under edge constraints, by designing a systematic evaluation framework optimized for deployment reliability.

Projects

- **DocChat - Multi-Agent RAG System** | *LangGraph, Langchain, Cuda, LLM, ChromaDB, BM25, Gradio*
 - Improved answer accuracy by **30%** by architecting a **LangGraph** self-correction loop that auto-retries on verified retrieval failures.
 - Reduced retrieval failure rate by **40%** by building a **Hybrid Retriever** fusing **BM25** lexical search with **ChromaDB** dense embeddings.
 - Increased fact-verification pass rate by **25%** by engineering a **multi-agent workflow** with automated relevance checking across **150 test queries**.
- **Multi-Modal Vision Agent** | *CrewAI, Llama 3 Vision, WatsonX Granite, Gradio, Pydantic*
 - Achieved **90%** object detection accuracy by developing a **Llama 3 Vision** pipeline to process and reason over raw image inputs.
 - Eliminated structured output errors across **500+ responses** by enforcing strict **Pydantic** schemas for all agent data contracts.
 - Delivered personalized dietary plans in under **3 seconds** by engineering dual **CrewAI** agents for parallel recipe generation and nutrient analysis.
- **Autonomous Multi-Agent Travel System** | *BeeAI, Custom Tools, Agent Delegation, Safety Middleware*
 - Reduced itinerary planning time by **70%** by orchestrating four specialized **BeeAI** agents (Coordinator, Meteorologist, Researcher, Planner) with distinct tool assignments.
 - Achieved **100%** human-approval compliance on sensitive tool calls by implementing **AskPermission** middleware validated across **50+ test runs**.
 - Eliminated cross-agent task conflicts entirely by engineering a **HandoffTool** mechanism that enforces strict ownership boundaries at runtime.

Publications

- **Autonomous Wheeled Robot for Intelligent Supermarket Restocking** Jun 2025
IEEE 2nd International Conference on Trends in Engineering Systems and Technologies (ICTEST)

Certifications & Awards

- **IBM RAG and Agentic AI Professional Certificate** Dec 2025
- **AWS Generative AI for Developers Professional Certificate** Oct 2025
- **Microsoft Azure AI Essentials Professional Certificate** Aug 2025
- **IBM AI Engineering Professional Certificate** Jul 2025
- **Docker Foundations Professional Certificate** Nov 2025

Languages

- **German:** B1 (Currently pursuing B2)
- **English:** C1 (Professional Working Proficiency)