

# Alan Anto

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## Education

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