

Giuseppe Bellamacina

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SUMMARY

AI Engineer building LLM-based systems, multi-agent architectures, and RAG pipelines for production deployment in regulated environments (healthcare, military). Skilled in model adaptation through fine-tuning, reinforcement learning, and knowledge distillation.

TECHNICAL SKILLS

Languages	Python, C, C++, SQL, Cypher, SPARQL, Bash, JavaScript, TypeScript
LLM / Agent	LangChain, LangGraph, LangSmith, HuggingFace, vLLM, Unsloth, Ollama
RAG & Search	ChromaDB, Weaviate, FAISS, semantic search, reranking
Databases	Neo4j, PostgreSQL, MySQL, Redis, SQLite
APIs & Backend	FastAPI, Flask, REST API design, SDK integration
DevOps	Docker, GitHub Actions, Slurm (HPC cluster)
Cloud & Infra	AWS, multi-GPU on-premise clusters (H100, vLLM), Vercel, Render
ML Frameworks	PyTorch, TensorFlow, scikit-learn, Pandas, Weights & Biases
Model Adaptation	Fine-tuning, GRPO/RL, LoRA, knowledge distillation, domain adaptation

EXPERIENCE

AI Software Engineer Sep 2025 – Present
RICCA IT

- Architected and deployed a multi-agent system (10 specialized agents, LangChain, LangGraph) for ASP, serving public healthcare organizations across southern Italy, regulated, high-stakes environment
- Engineered end-to-end RAG pipelines over 4M+ records with LLM-generated tag embeddings for vector search, achieving sub-second retrieval on large-scale unstructured data
- Constructed and exposed AI modules via REST APIs (FastAPI); containerized with Docker and streamlined CI/CD via GitHub Actions

AI/ML Engineer Jun 2023 – Jul 2025
IntelliSync

- Devised agentic pipelines translating natural language into executable queries across SQL, Neo4j (Cypher), SPARQL, and vector search backends using LangGraph
- Implemented and deployed RAG architectures for the Italian Air Force Academy, mission-critical, security-sensitive context, serving 1,000 cadets annually
- Produced anomaly detection (85% accuracy) and energy forecasting models across 30+ wind farms (Europe, Middle East, North Africa) for Yokogawa-integrated products

PROJECTS

Guardian | Hackathon Winner, NeoData Hackatania 2.0 (Nov 2024)

Multimodal AI assistant for law enforcement: 4-agent system with GraphRAG over a 28M-node Neo4j graph. Accepts image inputs (e.g. license plates) to correlate identities and assess risk in real time. Constructed with LangChain and LangGraph.

GRPO Strict JSON Generation

Adapted 5 LLMs (135M–2B params) via GRPO with RL-based reward system, LoRA, 4-bit NF4 quantization. Achieved 87–99% Pass@1. Dockerized, cluster-ready (Slurm).

Videogame Semantic Search

Natural language-to-SPARQL translation via LLM over OWL2 ontology for structured knowledge graph querying.

EDUCATION

M.Sc. Machine Learning and Artificial Intelligence 2025 – Present
Università degli Studi di Catania

B.Sc. Computer Science, 110/110 cum Laude 2021 – 2024
Università degli Studi di Catania | Specialization in Data Elaboration and Applications

CERTIFICATIONS

LangChain: Deep Agents, Deep Research, Ambient Agents, Introduction to LangGraph, LangSmith (2025)

Anthropic: Claude Code in Action, MCP Advanced Topics, Introduction to MCP (2025)