Nikolaos Karamousalidis

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SUMMARY

Junior AI Engineer focused on RAG systems, semantic search and LLM evaluation. Experience building FastAPI microservices, vector search and Streamlit-based AI applications. Published work on LLM-generated logic programs and currently completing an MSc in AI and Data Science.

EDUCATION

M.Sc., Artificial Intelligence and Data Science **Expected graduation: June 2027**
University of York, Europe Campus
Relevant coursework: Big Data, Deep Learning, Machine Learning

B.Sc., Computer Science **Graduated July 2025**
University of York, Europe Campus 3.3 GPA
Relevant coursework: Cloud Computing, Web Programming, Software Engineering

TECHNICAL SKILLS

AI / LLM: RAG, Embeddings, LangChain, FAISS, Hugging Face Transformers, Prompt Engineering
Backend / APIs: Python, FastAPI, Node.js, Express, REST APIs
Data / ML: Scikit-learn, Pandas, NumPy, model evaluation, classification, clustering
Databases / Vector Search: PostgreSQL, pgvector, MySQL
DevOps: Docker, GitHub Actions, CI/CD, Pytest
Certifications: Azure AI Fundamentals

PROFESSIONAL EXPERIENCE

AI Engineer Intern, ARI S.A., Thessaloniki **September 2026 – March 2027**

AI Engineer Intern, Gaddr, Remote **November 2025 – February 2026**

- Built a FastAPI semantic search microservice for user profile discovery using Hugging Face embeddings, PostgreSQL and pgvector.

Full-Stack Developer Intern, Municipality of Thessaloniki **October 2024 – February 2025**

- Developed and deployed 10+ new frontend features for PotiZo, a web platform used by the Municipality of Thessaloniki, leveraging React.js, Tailwind CSS, and RESTful API integration.
- Collaborated within a multinational student team to develop new features, resolve software bugs and optimise user experience.

PUBLICATIONS

A Multi-Agent Benchmarking Framework for Evaluating the Performance of LLMs in Logic Programming
SN Computer Science, 2026
DOI: 10.1007/s42979-026-05242-8

- Developed a configurable multi-agent framework for benchmarking LLMs on Prolog code generation, integrating automated code generation, SWI-Prolog execution and LLM-based evaluation.
- Evaluated multiple state-of-the-art LLMs across functional correctness, efficiency, structural code quality and evaluator reliability.

Performance of Large Language Models in Automatic Generation of Logic Programs
11th Balkan Conference in Informatics, 2025
DOI: 10.1007/978-3-032-24513-7

- Developed a multi-agent pipeline for automatic Prolog code generation, execution, and evaluation across multiple LLMs.
- Designed evaluation metrics covering correctness, readability, execution time, token usage and code commenting.

PROJECTS

Retrieval-Augmented PDF Question Answering App

- Built a RAG application allowing users to upload multiple PDFs and query them in natural language.
- Implemented document parsing, chunking, embeddings and semantic retrieval using LangChain, OpenAI and FAISS.
- Added conversational history support for context-aware answers.

Heart Disease Risk Classification & Cluster Analysis

- Trained Random Forest classification and K-Means clustering models on a clinical dataset of 295 samples.
- Achieved 87% accuracy, 75% disease recall and 0.80 F1-score using hyperparameter tuning and class balancing.

ACTIVITIES & VOLUNTEERING

Volunteer - "Acting Together for Nature" | Outward Bound Romania / European Solidarity Corps **August 2026**

• Participated in a 2-week European Solidarity Corps environmental and community volunteering project in Romania.
• Contributed to mountain trail rehabilitation, youth activities and renovation of community facilities.

Community Kitchen Volunteer **November 2025 - June 2026**

Supported the preparation and packaging of vegetarian meal boxes and assisted with distribution to individuals in need as part of Odyssea's community kitchen initiative.

Class Representative **October 2025 - October 2026**

Communicated feedback to faculty, helped resolve academic issues and collaborated with professors.