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# GraphRAG Training

2 days (14 hours)

## Overview

GraphRAG is an advanced approach to generative AI that enhances Retrieval-Augmented Generation systems by leveraging knowledge graphs.

Our GraphRAG training will enable you to design intelligent systems capable of understanding complex business contexts, improving the relevance of responses, and building more robust AI applications.

You will learn how to extract entities, structure a knowledge graph, and connect this data to language models to create advanced applications such as business co-pilots or intelligent search engines.

This training course places a strong emphasis on hands-on practice, featuring practical workshops that cover creating graphs with Neo4j, integrating with LLMs, and comparing RAG and GraphRAG.

Like all our training courses, this one will introduce you to **the latest stable version** of the technology and its new features.

## Learning Objectives

- Understand the principles of GraphRAG and how it differs from RAG.
- Design a knowledge graph that can be utilized by an LLM.
- Implement a complete GraphRAG pipeline.
- Integrate GraphRAG into an existing AI architecture.
- Evaluate and optimize the performance of a GraphRAG system.

## Target Audience

- Data engineers
- Data scientists
- Software architects
- AI / Innovation / R&D teams

## Prerequisites

- Basic knowledge of Python
- Understanding of AI / Machine Learning concepts
- Basic understanding of software architecture

# GraphRAG Training Program: Advanced Architectures for Generative AI

[Day 1 - Morning]

## Fundamentals of GraphRAG and its place in the AI ecosystem

- Understanding the Limitations of Traditional RAG
- Introduction to Knowledge Graphs
- Positioning within Generative AI
- Differences between vector search and graph search
- Business use cases
- Hands-on workshop: RAG vs. GraphRAG pipeline.

[Day 1 - Afternoon]

## Data modeling and graph construction

- Identifying entities
- Introduction to Neo4j
- Data structuring
- Extraction via LLM
- Data enrichment
- Hands-on workshop: creating a graph.

## GraphRAG pipeline: ingestion and structuring

- Pipeline steps
- Data collection
- Text-to-graph transformation
- Enrichment
- Storage and querying
- Hands-on workshop: complete pipeline.

[Day 2 - Morning]

## Integration with LLMs

- Graph/LLM connection
- Advanced contextualization
- Hybrid querying
- Multi-hop reasoning
- Prompt optimization
- Hands-on workshop: response generation.

[Day 2 - Afternoon] Architecture

## and best practices

- Scalable design
- Data tool integration
- DDD patterns
- Performance management
- Monitoring
- Hands-on workshop: GraphRAG architecture.

## Deployment and optimization

- RAG vs. GraphRAG Comparison
- Advanced use cases
- Security
- Deployment
- AI agents roadmap
- Hands-on workshop: final project.

## Target Audience

This training is designed for both individuals and companies—large or small—seeking to train their teams in new advanced IT technologies or to acquire specific industry knowledge or modern methodologies.

## Assessment upon enrollment

The initial assessment at the start of the training program complies with Qualiopi quality standards. Upon final enrollment, the learner receives a self-assessment questionnaire that allows us to evaluate their estimated proficiency with various types of technologies, as well as their expectations and personal goals for the upcoming training, within the limits imposed by the selected format. This questionnaire also enables us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could

problematic for the monitoring and smooth running of the training session.

## Teaching Methods

Practical Course: 60% Practical, 40% Theory. Training materials distributed in digital format to all participants.

## Organization

The course alternates between theoretical input from the trainer, supported by examples and reflection sessions, and group work.

## Assessment

At the end of the session, a multiple-choice questionnaire is used to verify that the skills have been properly acquired.

## Certification

A certificate will be issued to each trainee who has completed the entire training program.