Updated 01/04/2025

Sign up

LangGraph training: multi-agent AI

2 days (14 hours)

Presentation

Our LangGraph training course will enable you to build complex multi-agent Large Language Model (LLM) applications. LangGraph is a library from the LangChain ecosystem designed to provide a framework for defining, coordinating and executing multiple LLM agents (or chains) in a structured way.

Our training program will teach you all the skills you need to design and implement an AI multi-agent system in your application development processes. The creation and deployment of an agent will be carried out during the course to enable you to practice in conditions as close to the real thing as possible.

At the end of this course, you'll learn how to build an event-driven architecture made up of several specialized AI agents with distinct roles.

As with all our training courses, this one will be presented with the latest version of LangGraph v0.3.21.

Objectives

- Design and implement a multi-agent AI system with specific, orchestrated responsibilities
- Using LangGraph to manage workflows between AI agents
- Set up an event-driven architecture for agent communication
- Integrate Google Cloud services to deploy a scalable system
- Build tools to enable agents to interact with , APIs and perform web searches.

Target audience

- Data Scientist
- Big Data Engineer
- Machine Learning Engineer
- Lead Developer
- Developers

Prerequisites

- Basic knowledge of Python (key codes will be provided)
- Basic understanding of REST APIs
- Familiarity with the fundamental concepts of generative AI
- Active Google Cloud account
- Container basics

Software requirements

- API access to OpenAI with GPT4 (chargeable)
- a Google account for access to Google Colab (free) - optional if local notebook
- a LangChain.com account and an API key (free)
- a Pinecone.io account for vector DB (free)
- an exa.ai account for the LLM search engine (free)
- an app.tavily.com account for the LLM search engine (free)

LangGraph training program

Introduction to AI multi-agent systems

- Principles and advantages of multi-agent vs. single-agent architectures
- Introduction to large language models (LLMs) and their use cases
- Key concepts: specialized agents, orchestration, inter-agent communication
- Setting up your Google Cloud work environment

Creating the first agent with LangGraph

- LangGraph essential concepts for workflow orchestration
- Agent construction with state and persistent context
- Development of complementary tools (database connector, API client)
- Integration of web search functions with Gemini templates

Deployment of the first agent

- Agent containerization with Docker
- Deployment on Cloud Run
- Securing secrets with Secret Manager

- Testing and validating the deployed agent

Event Architecture

- Principles of event-driven architecture for distributed systems
- Pub/Sub configuration for asynchronous communication
- Using Eventarc to trigger Cloud Run functions
- Implementation of an automated workflow between agents

Specialization and collaboration between agents

- Creation of specialized agents with distinct roles
- Using multiple LLMs for different tasks
- Multimodal generation: integrating audio and text capabilities
- Techniques for advanced orchestration between agents

Industrialization and prospects

- Optimizing performance and costs
- Basic monitoring techniques
- Discussion of possible system extensions
- Best practices and patterns for future projects

Companies concerned

This training course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

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

Organization

The course alternates theoretical inputs from the trainer supported by examples and

brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.