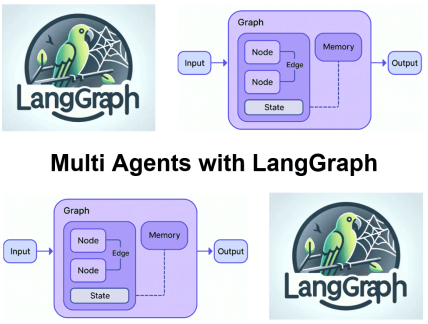
Multi Agents with LangGraph

Duration: 3 days Price: € 2250

Open Schedule



Audience Course Multi Agents with LangGraph

This course is intended for AI engineers, software developers, and data scientists who want to build multi-agent systems using LangGraph and orchestrate AI workflows.

Prerequisites Course Multi Agents with LangGraph

Participants should have Python skills and understanding of LLMs and AI agents. Familiarity with LangChain, graph theory, and asynchronous programming is beneficial.

Realization Training Multi Agents with LangGraph

The training combines theoretical instruction with hands-on exercises guided by an expert trainer. Participants build real multi-agent systems throughout the course.

Multi Agents with LangGraph Certificate

After successful completion, participants receive a certificate of participation in Multi Agents with LangGraph.

Content Multi Agents with LangGraph

The course Multi Agents with LangGraph from SpiralTrain teaches you how to design and build sophisticated multi-agent AI systems using LangGraph. You will learn how to orchestrate multiple autonomous agents, manage complex workflows, implement state machines, and create production-ready agentic applications that collaborate to solve challenging problems.

Introduction LangGraph

The course Multi Agents with LangGraph begins with a comprehensive introduction to LangGraph, exploring how it differs from traditional agent frameworks. Graph-based architectures, StateGraph concepts, nodes, edges, and conditional routing are discussed.

Graph Fundamentals

This module covers essential graph theory concepts including directed graphs, state machines, and different node and edge types. Participants learn about entry points, conditional edges, cyclic graphs, and techniques for graph compilation and visualization.

State Management

State management in LangGraph is explored in depth, covering state schema definition using TypedDict, state updates, reducers, and immutability. The module addresses checkpointing, state persistence, restoration, and debugging techniques.

Building Agents

Here participants learn to build agent nodes with tool-calling capabilities using the ReAct pattern. Topics include custom agent logic, agent state management, error handling, monitoring, testing, and established best practices for robust agent development.

Multi-Agent Patterns

This part focuses on architectural patterns for multi-agent systems including hierarchical structures, supervisor patterns, and manager-worker configurations. Sequential, parallel, and collaborative agent patterns are explored along with orchestration strategies.

Agent Communication

Communication between agents is addressed through message passing, shared state, and handoff mechanisms. The module covers communication protocols, event systems, inter-agent messaging, state broadcasting, and synchronization techniques.

Advanced Workflows

Complex workflow patterns are introduced including human-in-the-loop systems, approval workflows, and branching logic. Topics include loop detection, retry mechanisms, fallback strategies, subgraphs, and workflow composition for sophisticated multi-agent applications.

Production Deployment

Deployment considerations are covered with focus on the LangGraph API, scaling strategies, and streaming responses. The module addresses persistence backends, checkpoint storage, cloud deployment options, and cost optimization for production environments.

SpiralTrain BV
Standerdmolen 10, 2e verdieping
3995 AA Houten

info@spiraltrain.nl
www.spiraltrain.nl
Tel.: +31 (0) 30 – 737 0661

Locations
Houten, Amsterdam, Rotterdam, Eindhoven, Zwolle, Online

Modules Multi Agents with LangGraph

Module 1: Introduction LangGraph	Module 2: Graph Fundamentals	Module 3: State Management
LangGraph Overview	Graph Theory Basics	State in LangGraph
Agents vs Workflows	Directed Graphs	State Schema Definition
Graph-Based Architecture	State Machines	TypedDict States
StateGraph Concepts	Node Types	State Updates
Nodes and Edges	Edge Types	State Reducers
Conditional Routing	Entry Points	Immutable State
LangGraph vs LangChain	Conditional Edges	State Persistence
Use Cases	Cyclic Graphs	Checkpointing
Installation and Setup	Graph Compilation	State Restoration
Development Environment	Graph Visualization	State Debugging
Module 4: Building Agents	**Module 5: Multi-Agent Patterns**	**Module 6: Agent Communication**
Agent Nodes	Hierarchical Agents	Message Passing
Tool-Calling Agents	Supervisor Pattern	Shared State
ReAct Pattern	Manager-Worker Pattern	Agent Handoffs
Agent Executors	Sequential Agents	Communication Protocols
Custom Agent Logic	Parallel Agents	Event Systems
Agent State	Collaborative Agents	Inter-Agent Messages
Error Handling	Competitive Agents	State Broadcasting
Agent Monitoring	Specialized Agents	Conflict Resolution
Agent Testing	Agent Orchestration	Synchronization
Agent Best Practices	Design Patterns	Communication Debugging
Module 7: Advanced Workflows	**Module 8: Production Deployment**	**Module 9: Real-World Applications**
Complex Workflows	LangGraph API	Customer Support Systems
Human-in-the-Loop	Deployment Strategies	Research Automation
Approval Workflows	Scaling Considerations	Code Review Agents
Branching Logic	Streaming Responses	Data Analysis Workflows
Loop Detection	Persistence Backends	Content Generation Pipelines
Retry Mechanisms	Checkpoint Storage	Decision Support Systems
Fallback Strategies	Cloud Deployment	Process Automation
Subgraphs	Monitoring Solutions	Testing Frameworks
Workflow Composition	Cost Optimization	Case Studies
Performance Optimization	Production Best Practices	Capstone Project