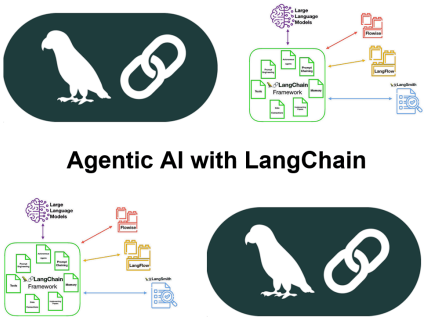
Agentic AI with LangChain

Duration: 3 days **Price: € 2250**

Open Schedule



Audience Course Agentic AI with LangChain

This course is intended for software developers, data scientists and AI engineers, who want to build autonomous AI systems using LangChain.

Prerequisites Course Agentic AI with LangChain

Participants should know Python programming and a basic understanding of machine learning.

Realization Training Agentic AI with LangChain

The training combines theoretical instruction with hands-on exercises guided by an experienced trainer. Participants build working agents throughout the course.

Agentic AI with LangChain Certificate

After successful completion, participants receive a certificate of participation in Agentic AI with LangChain.

Content Agentic AI with LangChain

The course Agentic AI with LangChain from SpiralTrain teaches you how to build intelligent, autonomous AI agents that can reason, plan, and execute complex tasks. You will learn how to leverage the LangChain framework to create agentic systems that interact with tools, manage memory, and make independent decisions to solve real-world problems.

Intro Agentic AI

The course Agentic AI with LangChain begins with a comprehensive introduction to agentic AI systems, exploring how they differ from traditional chatbots and what makes an agent truly autonomous. The architecture patterns, core components, and the role of LLMs as reasoning engines are discussed, along with common challenges and real-world use cases.

LangChain Fundamentals

This module provides a thorough foundation in the LangChain framework, covering its architecture, the distinction between chains and agents, and essential components like prompt templates, memory modules, and document loaders.

Building First Agent

Here participants create their first functional AI agent from scratch. The module covers choosing appropriate LLMs, defining clear agent goals, writing effective prompts, integrating tools, managing state, and implementing robust error handling.

Agent Tools and Actions

This part focuses on expanding agent capabilities through tools and actions. Participants learn to create custom tools, integrate APIs, connect to databases, implement search functionality, enable web scraping, and handle tool execution errors properly.

Memory and Context

Memory management is explored in depth, covering different memory types including short-term, long-term, conversation buffers, and vector stores. The module addresses entity memory, knowledge graphs, and techniques for optimizing memory.

Multi-Agent Systems

This module introduces collaborative multi-agent systems using frameworks like LangGraph. Topics include agent collaboration patterns, message passing between agents, task decomposition, workflow orchestration, and evaluating multi-agent performance.

RAG and Knowledge

Retrieval Augmented Generation is covered comprehensively, including document processing, embeddings, vector databases, and semantic search. Participants learn chunking strategies, and methods for evaluating RAG system performance.

Production Deployment

Deployment considerations are addressed with attention to API development, scalability, performance optimization, caching, rate limiting, and security best practices. The module also covers monitoring, observability, cost management, and testing strategies.

Advanced Applications

The course concludes with advanced real-world applications including coding assistants, research agents, customer service automation

Modules Agentic AI with LangChain

Module 1: Introduction to Agentic AI	Module 2: LangChain Fundamentals	Module 3: Building First Agent
What is Agentic AI	LangChain Architecture	Choosing an LLM
Agents vs Chatbots	Models and Prompts	Defining Agent Goals
Agent Architecture Patterns	Chains vs Agents	Writing Effective Prompts
LLMs as Reasoning Engines	Prompt Templates	Tool Selection and Integration
Agent Core Components	Memory Modules	Managing Agent State
Autonomy and Decision-Making	Document Loaders	Error Handling Strategies
Agent Frameworks Overview	Output Parsers	Multi-Step Task Planning
LangChain Introduction	Streaming Responses	Agent Personality Design
Use Cases and Applications	Tool Integration Basics	Logging and Monitoring
Common Challenges	LangSmith Debugging	Sandbox Environments
Module 4: Agent Tools and Actions	**Module 5: Memory and Context**	**Module 6: Multi-Agent Systems**
Tool Abstractions	Memory Types Overview	Multi-Agent Concepts
Custom Tool Creation	Short-Term Memory	Agent Collaboration Patterns
API Integration	Long-Term Memory	LangGraph Framework
Search Tools	Conversation Buffer	Agent Roles and Responsibilities
Calculator and Math Tools	Vector Store Memory	Message Passing
Database Connections	Entity Memory	Task Decomposition
File System Access	Knowledge Graphs	Goal Refinement
Web Scraping Tools	Memory Retrieval Strategies	Workflow Orchestration
Code Execution Tools	Context Window Management	Conflict Resolution
Tool Error Handling	Memory Optimization	Evaluation Strategies
Module 7: RAG and Knowledge	**Module 8: Production Deployment**	**Module 9: Advanced Applications**
Retrieval Augmented Generation	Agent Deployment Patterns	Coding Assistants
Document Processing	API Development	Research Agents
Embeddings and Vectors	Scalability Considerations	Customer Service Bots
Vector Databases	Performance Optimization	Finance and Analytics Agents
Semantic Search	Caching Strategies	Enterprise Automation
Chunking Strategies	Rate Limiting	Real-Time Agent Systems
Hybrid Search	Security Best Practices	Guardrails and Safety
Reranking Techniques	Monitoring and Observability	Ethical Considerations
Citation and Sources	Cost Management	Future of Agentic AI
RAG Evaluation	Testing Strategies	Capstone Project

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