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LlamaIndex for AI Automation and Generation

FA-0292 · 2 days

Automation, RPA & Power Platform

Introduction

Duration: 2 days

Welcome to the cutting edge of AI engineering. Gone are the days when AI was just a Silicon Valley catchphrase - today, it's the engine powering innovation across industries. At the heart of this revolution is LlamaIndex, a game-changing framework that turns raw, unstructured data into intelligent conversations with AI.

Think of this two-day deep dive as your launchpad into the future of AI development. You'll work hands-on with LlamaIndex to create AI agents that don't just process data – they understand it, learn from it, and transform it into actionable intelligence. Whether you're a seasoned developer, a data scientist pushing boundaries, or an AI enthusiast ready to level up, this course puts industrial-strength tools in your hands.

Your guide? A veteran tech pioneer with three decades of battlefield experience in software engineering. Together, we'll move beyond theory to build real-world AI systems that solve actual business problems. This isn't just training – it's your gateway to mastering the next wave of AI automation.

Learning outcomes

By the end of this course, participants will be able to:

- Understand the core functionality and purpose of LlamaIndex in AI applications.
- Build and integrate LlamaIndex-powered agents for automated workflows.
- Optimize AI-driven data retrieval and generation pipelines.
- Use LlamaIndex to connect unstructured data to advanced AI models like OpenAI’s GPT series.
- Design and deploy scalable solutions for real-world business or research challenges.

Prerequisites

- Deep understanding of Python programming.
- Understanding of AI concepts, including natural language processing (NLP).
- Experience working with APIs (e.g., OpenAI, LangChain).
- A working knowledge of data structures, especially JSON and text files.
- Access to a laptop with SSH terminal, VS Code, installed and internet connectivity.

Training outline

1. Introduction to LlamaIndex

1. Overview of LlamaIndex: Features and Capabilities

   Understanding the Role of Indexing in AI

   1. Connecting unstructured data to AI models
   2. Differences between LlamaIndex and traditional approaches

3. Exploring Use Cases: Real-World Scenarios in Automation and AI Generation

2. Setting Up Your Environment

1. Installing LlamaIndex and Required Dependencies
2. Configuring APIs (OpenAI, LangChain, and others)
3. Best Practices for Environment Setup

3. Fundamentals of LlamaIndex

Structure of LlamaIndex: Components and Workflows

1. Documents, Nodes, and Index Structures
2. Creating and Managing Multiple Indexes

Index Construction: Techniques and Strategies

1. Handling Text Files, PDFs, and Web Data
2. Optimizing Index Creation for Large Data Sets

Query Engines: How LlamaIndex Retrieves Information

1. Weighted Queries and Filtering Options

4. Building Agents with LlamaIndex

1. Agent Framework Overview: What Are AI Agents?
2. Integrating LlamaIndex with LangChain for Agent Development
3. Designing Agents for Automation Workflows

5. Advanced LlamaIndex for Data Automation

1. Connecting LlamaIndex to Databases and APIs
2. Automating Data Ingestion and Indexing Pipelines

   Combining LlamaIndex with Machine Learning Models

   1. Training Custom Models for Specific Applications
   2. Augmenting Retrieval with Predictive Insights

6. AI Generation with LlamaIndex

   Leveraging LlamaIndex for Creative and Analytical Tasks

   1. Text Generation: Reports, Narratives, and Articles
   2. Generating Insights from Raw Data
2. Prompt Engineering: Customizing Responses from AI Models
3. Case Study: Building a Chatbot with Dynamic Data Integration

7. Performance Optimization and Scalability

1. Measuring the Efficiency of Indexing and Querying
2. Techniques for Reducing Latency in Large Systems
3. Scaling LlamaIndex Applications for Enterprise Use

8. Deployment and Real-World Applications

1. Packaging and Deploying LlamaIndex Solutions
2. Ensuring Data Security and Compliance
3. Examples from Industry: How Businesses Use LlamaIndex

9. Troubleshooting and Best Practices

1. Common Errors in LlamaIndex and How to Resolve Them
2. Tips for Maintaining and Updating AI Solutions

3. Discussion: Staying Ahead in the AI Automation Landscape

This course promises to provide a blend of foundational knowledge and hands-on practice, ensuring participants leave with actionable skills to build transformative AI solutions.

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