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Training: Developing a Chatbot with Rasa and LlamaIndex

3 days (21 hours)

Overview

The combination of Rasa and LlamaIndex represents the new frontier of conversational agents. While Rasa excels at managing dialogue and business processes, LlamaIndex enhances the agent's intelligence by dynamically connecting it to your own data sources via RAG (Retrieval-Augmented Generation) architectures.

Our training will teach you how to build next-generation conversational agents. You'll discover how to orchestrate complex conversations with the open-source Rasa framework while leveraging the power of LLMs to answer specific questions based on your internal documents using LlamaIndex.

You will learn how to structure intents, extract entities, and create high-performance data indexes to transform your chatbot into a true domain expert. The training emphasizes the technical integration of these two ecosystems to produce a seamless, secure, and scalable assistant.

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

Objectives

- Design an intelligent chatbot
- Manage natural language processing
- Integrate and deploy the chatbot
- Optimize understanding and responses

Target Audience

- AI developers
- NLP Engineers

Prerequisites

- Knowledge of Python and ML

Software requirements

- At least 8 GB of RAM, 16 GB recommended
- Linux, macOS, or Windows (with WSL2)
- A code editor (VS Code, PyCharm)
- Access to an API key (OpenAI, Anthropic, or local model via Ollama)

Course Outline: Developing an Assistant with Rasa and LlamaIndex

[Day 1 - Morning]

Rasa Architecture and NLU

- Understanding the Rasa Open Source architecture
- Configuring the NLU (Natural Language Understanding) pipeline
- Defining intents and training examples
- Entity Extraction and Synonym Management
- Using Regex and Lookup Tables
- Hands-on Workshop: Creating Your First Domain and Training a Basic NLU Model.

[Day 1 - Afternoon]

Dialogue management and Stories

- Conversation flow: Stories vs. Rules
- Form Management for Data Collection
- Using Slots for short-term memory
- Dialogue Policies (Memoization, TED Policy)
- Hands-on Workshop: Developing a Complex Appointment Scheduling Scenario

Custom Actions and the Rasa SDK

- Developing custom actions in Python
- Interaction with external APIs and databases
- Event and dispatcher management
- Debugging the action server
- Hands-on workshop: Connecting Rasa to a weather API or a mock CRM.

[Day 2 - Morning]

Introduction to LlamaIndex and RAG

- The concept of RAG (Retrieval-Augmented Generation)
- LlamaIndex Architecture: Loaders, Indexers, and Query Engines
- Connecting to data sources (PDF, JSON, SQL databases)
- Embedding Management and Vector Storage
- Hands-on Workshop: Indexing Technical Documentation with LlamaIndex.

[Day 2 - Afternoon]

Advanced Search Strategies

- Optimizing document chunking
- Hybrid Search and Result Re-ranking
- Using LlamaIndex agents for reasoning
- Prompt engineering for response control
- Hands-on workshop: Improving response accuracy on a specific dataset.

Rasa + LlamaIndex Hybridization

- Technical architecture for integration
- Calling LlamaIndex from a Rasa Custom Action
- Shared context management between Rasa and the search engine
- Choosing between pre-programmed and generative responses
- Hands-on workshop: Creating a Rasa assistant capable of answering "FAQ" questions via LlamaIndex.

[Day 3 - Morning]

Optimization and Evaluation

- End-to-end testing with Rasa Test
- Evaluation of RAG response quality (Accuracy, Relevance)

- Using Rasa X / Enterprise (overview) for Continuous Learning
- Optimizing response times (Latency)
- Hands-on Workshop: Setting up a test bench to evaluate chatbot regressions.

[Day 3 - Afternoon] Deployment

and Industrialization

- Containerization with Docker and Docker Compose
- Securing endpoints and managing secrets
- Connection to third-party channels (Slack, Telegram, Webchat)
- Monitoring conversations and error logs
- Hands-on workshop: Deploying the complete stack on a remote server.

Final case study: The Expert Assistant

- Specifications: Create a comprehensive assistant for a specific business domain
- Implementation of business workflows (Rasa) and the knowledge base (LlamaIndex)
- Live demo and critical feedback
- Review of best practices in security and AI ethics
- Hands-on workshop: Final capstone project integrating all concepts covered in the training.

Target Audience

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

Entry-level assessment

The pre-training assessment complies with Qualiopi quality standards. Upon final registration, the learner receives a self-assessment questionnaire that allows us to evaluate their estimated proficiency in 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 allows us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could pose challenges for monitoring and ensuring the 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.