Training Course on Building Conversational AI and Chatbots with Large Language Models

Professional Development Training Course Outline

Category	Data Science	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today's rapidly evolving digital landscape, **Conversational AI** and **Large Language Models (LLMs)** are revolutionizing human-computer interaction. Training Course on Building Conversational AI & Chatbots with LLMs: Development of Sophisticated Dialogue Systems delves into the cutting-edge realm of developing sophisticated **dialogue systems** and **intelligent chatbots** powered by **Generative AI**. Participants will gain practical expertise in leveraging **Natural Language Processing (NLP)**, **Machine Learning (ML)**, and advanced LLM architectures to create highly effective and context-aware conversational agents. This program is essential for professionals seeking to lead the charge in **AI innovation** and deliver seamless **customer experiences** through automated, intelligent interactions.

The demand for skilled professionals in **AI development** is skyrocketing, driven by businesses seeking to automate customer service, enhance user engagement, and streamline operations. This course provides a comprehensive **training methodology** focused on hands-on development, real-world **case studies**, and best practices in **LLM fine-tuning** and **deployment**. By mastering the intricacies of **conversational design**, **intent recognition**, **entity extraction**, and **dialogue management**, participants will be equipped to build robust and scalable **AI solutions** that drive significant **business value** and competitive advantage in the **digital transformation** era.

Programme Curriculum

Training Course on Building Conversational AI & Chatbots with LLMs: Development of Sophisticated Dialogue Systems

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Course Duration

5 days

Course Objectives

Upon completion of this course, participants will be able to:

1. Grasp core principles of Artificial Intelligence, Machine Learning, and Deep Learning relevant to **conversational systems**.
2. Apply advanced NLP techniques for **text preprocessing**, **tokenization**, **sentiment analysis**, and **named entity recognition**.
3. Differentiate and utilize various LLM architectures (e.g., Transformers, GPT series, BERT) for **dialogue generation**.
4. Implement robust models for accurately identifying user intent and extracting crucial information in **conversational AI applications**.
5. Create intuitive and engaging **dialogue management** strategies for multi-turn interactions.
6. Apply methodologies for **customizing LLMs** with domain-specific data to enhance chatbot performance.
7. Develop, integrate, and deploy fully functional **intelligent chatbots** for various business use cases.
8. Utilize metrics and methodologies for assessing chatbot accuracy, coherence, and user satisfaction.
9. Understand and mitigate ethical considerations, including **data privacy**, fairness, and transparency in **AI development**.
10. Learn to connect chatbots with databases, APIs, and enterprise applications for seamless functionality.
11. Understand the principles of integrating voice capabilities and multimodal interactions into **dialogue systems**.
12. Utilize cloud services (e.g., AWS, Azure, Google Cloud) for scalable **chatbot deployment** and management.
13. Analyze emerging trends in **Generative AI**, **AI-powered customer service**, and the future of human-AI interaction.

Organizational Benefits

- Deploy **AI-powered chatbots** for 24/7 support, personalized interactions, and improved customer satisfaction.
- Automate routine tasks, reduce response times, and significantly lower customer support costs through **conversational automation**.
- Accelerate the adoption of **Generative AI solutions** across departments, fostering innovation and competitive advantage.
- Leverage conversational data to gain valuable insights into customer behavior, preferences, and pain points for strategic decision-making.
- Handle high volumes of inquiries efficiently without increasing staffing, ensuring consistent service quality.
- Utilize **intelligent dialogue systems** for proactive lead qualification, personalized recommendations, and conversion optimization.
- Develop **ethical AI** solutions that adhere to data privacy regulations and minimize bias.
- Equip teams with the skills and knowledge necessary to develop, manage, and evolve **cutting-edge AI applications**.

Target Audience

- Aspiring AI Developers.
- Software Engineers & Developers.
- Data Scientists & ML Engineers.
- Product Managers & Business Analysts
- Customer Service & Support Professionals
- UX/UI Designers.
- IT Professionals & Architects
- Entrepreneurs & Startup Founders.

Course Outline

Module 1: Foundations of Conversational AI & LLMs

- Introduction to Conversational AI: History, evolution, and key components of dialogue systems.
- Understanding Large Language Models (LLMs): Architectures, capabilities, and limitations.
- Core NLP Concepts for Chatbots: Tokenization, stemming, lemmatization, and word embeddings.
- Generative AI Overview: How LLMs generate human-like text and drive intelligent conversations.
- **Case Study:** Analyzing the evolution from rule-based chatbots to early NLP-driven systems (e.g., ELIZA, PARRY) and the challenges they faced in maintaining coherence.

Module 2: Natural Language Understanding (NLU) with LLMs

- Intent Recognition: Techniques and models for identifying user intentions (e.g., using BERT, GPT-variants).
- Entity Extraction (Named Entity Recognition): Identifying key information from user input (dates, names, products).
- Slot Filling & Dialogue State Tracking: Managing conversational context and extracting parameters.
- Training NLU Models: Data annotation, model training, and performance evaluation.
- **Case Study:** How a financial institution uses LLMs to accurately identify customer intent (e.g., "check balance," "transfer funds") and extract relevant entities (account numbers,

amounts) from complex queries to streamline banking operations.

Module 3: Dialogue Management & Conversational Design

- Designing Conversational Flows: Best practices for creating intuitive and engaging user journeys.
- Dialogue Policy & Strategy: Determining how the chatbot responds and transitions between turns.
- Context Management: Maintaining conversation history and user preferences for personalized interactions.
- Error Handling & Fallback Mechanisms: Strategies for gracefully handling unexpected user inputs and guiding conversations.
- **Case Study:** Examining a successful e-commerce chatbot's conversational design, focusing on how it manages product search, recommendation, and checkout processes through effective dialogue state tracking and error recovery.

Module 4: Large Language Model Integration & Fine-tuning

- Integrating Pre-trained LLMs: API interactions and leveraging models like GPT-3/4 or open-source alternatives.
- Fine-tuning LLMs for Specific Domains: Techniques for adapting general LLMs to specialized datasets (e.g., medical, legal).
- Prompt Engineering: Crafting effective prompts to guide LLM behavior and generate desired outputs.
- Retrieval-Augmented Generation (RAG): Combining LLMs with external knowledge bases for factual accuracy and reduced hallucinations.
- **Case Study:** A healthcare provider fine-tuning an LLM on medical literature to create a chatbot that provides accurate information on symptoms and treatments, showcasing the importance of domain-specific data.

Module 5: Chatbot Architecture & Development Frameworks

- Common Chatbot Architectures: Overview of pipeline architectures (NLU, Dialogue Management, NLG).
- Introduction to Popular Chatbot Frameworks: Exploring frameworks like Rasa, Botpress, or custom Python-based solutions.
- Backend Integration: Connecting chatbots to databases, CRM systems, and external APIs.
- Deployment Strategies: Cloud-based deployment (AWS Lambda, Azure Functions, Google Cloud Run) and containerization (Docker, Kubernetes).
- **Case Study:** A tech company building a customer support chatbot using a framework like Rasa, demonstrating its architecture for intent classification, entity extraction, and seamless integration with their existing ticketing system.

Module 6: Advanced Conversational AI Features

- Voice AI & Speech Recognition: Integrating Automatic Speech Recognition (ASR) and Text-to-Speech (TTS) for voice assistants.
- Multimodal Chatbots: Combining text, voice, and visual inputs for richer interactions.
- Personalization & User Profiling: Tailoring responses based on individual user data and history.
- Proactive & Predictive AI: Using AI to anticipate user needs and initiate conversations.

- **Case Study:** Amazon Alexa or Google Assistant's multimodal capabilities, analyzing how they combine voice commands, visual feedback on smart displays, and personalized responses based on user preferences.

Module 7: Evaluation, Testing, and Ethical AI

- Chatbot Performance Metrics: Accuracy, F1-score, perplexity, user satisfaction, and task completion rate.
- A/B Testing & Iterative Improvement: Continuously refining chatbot performance through user feedback and data analysis.
- AI Ethics & Bias: Addressing fairness, transparency, accountability, and potential biases in LLM training data.
- Data Privacy & Security: Implementing robust measures to protect user data and ensure compliance (e.g., GDPR, CCPA).
- **Case Study:** A public sector organization implementing ethical AI guidelines for its citizen-facing chatbot, focusing on transparency in AI usage, data anonymization, and mechanisms for human oversight.

Module 8: The Future of Conversational AI & LLMs

- Emerging Trends in Generative AI: Advanced LLM capabilities, multimodal generation, and real-time inference.
- Role of Human-in-the-Loop: Collaboration between AI and human agents for complex queries and continuous learning.
- Conversational Commerce & Marketing: How chatbots are transforming sales and marketing funnels.
- Industry-Specific Applications: Exploring the impact of conversational AI in healthcare, finance, education, and more.
- **Case Study:** The transformative impact of LLM-powered chatbots in the legal industry, assisting with document review, legal research, and providing initial legal advice, while highlighting the ethical considerations and regulatory challenges.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000

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