

**Introduction to Generative AI for Developers**

**Course Number:** AI-120WA  
**Duration:** 3 days

**Overview**

This Introduction Generative AI (GenAI) training teaches developers how to build intelligent, scalable applications using GenAI and large language models (LLMs).

**Prerequisites**

* Practical experience in Python (at least 6 months):
  + Data Structures, Functions, Control Structures
  + Exception Handling, File I/O, async, concurrency (recommended)
* Practical experience with these Python libraries: Pandas, NumPy, and scikit-learn
  + Understanding of Machine Learning concepts - regression, clustering, classification
  + ML Algorithms: Gradient Descent, Linear Regression
* Loss Functions and evaluation metrics

**Materials**

All Generative AI training students receive comprehensive courseware.

**Software Needed on Each Student PC**

All attendees must have a modern web browser and an Internet connection.

**Objectives**

* Gain a deep understanding of LLM fundamentals to make informed decisions for your organization's AI strategy
* Craft high-impact prompts to unlock the full power of LLMs and achieve precise results
* Bolster your development process with LLM-powered tools that streamline workflows and elevate code quality
* Confidently access and integrate both closed-source and open-source LLMs into your projects
* Customize LLMs for tailored solutions that drive innovation and efficiency

**Outline**

* Introduction
* LLM Foundations
  + Introduction to Generative AI for Software Development
  + Generative Models and their Use Cases
  + Transformer architecture and its impact on LLM performance
  + LLM Training Process - pre-training, fine-tuning, and reinforcement learning
  + Exploring Real-World LLM Applications
* Speaking to LLMs: Prompt Engineering
  + Prompt Engineering Introduction
  + Techniques for creating effective prompts
  + Zero-Shot Learning, Few-Shot, and Chain-of-Thought
  + Prompt Engineering for Developers
  + Leverage LLMs for code generation, completion, and analysis
  + Best practices for prompt design and optimization in a development context
  + Optimize prompting workflows for next-generation scripting
  + Handle and process LLM-generated code
  + Integrate prompts into development pipelines
* Accessing LLMs via APIs
  + Accessing GPT 3.5 and GPT 4 via the OpenAI API
  + Roles and Conversation Threading
  + Popular LLMs, APIs, and Libraries - Generative AI Tech Stack
  + LangChain for Integration
  + Closed-Source LLMs vs Open-Source LLMs
  + Chat Agents for Querying Developer Documentation via API
* Enhancing LLMs with Fine-Tuning
  + State of the Art Open-Source LLMs
  + Building Pipelines with HuggingFace Transformers Library
  + Fine-Tuning with the Hugging Face Transformers library and code-specific data
* Conclusion