

Developing Generative AI Applications on AWS – Intensive Training («AWS03»)

This course is designed to introduce generative artificial intelligence (AI) to software developers interested in using large language models (LLMs) without fine-tuning.

Duration: 2 days

Price: 1'800.–

Content

The course provides an overview of generative AI, planning a generative AI project, getting started with Amazon Bedrock, the foundations of prompt engineering, and the architecture patterns to build generative AI applications using Amazon Bedrock and LangChain.

Day 1

Module 1: Introduction to Generative AI – Art of the Possible

- Overview of ML
- Basics of generative AI
- Generative AI use cases
- Generative AI in practice
- Risks and benefits

Module 2: Planning a Generative AI Project

- Generative AI fundamentals
- Generative AI in practice
- Generative AI context
- Steps in planning a generative AI project
- Risks and mitigation

Module 3: Getting Started with Amazon Bedrock

- Introduction to Amazon Bedrock
- Architecture and use cases
- How to use Amazon Bedrock
- Demonstration: Setting up Bedrock access and using playgrounds

Module 4: Foundations of Prompt Engineering

- Basics of foundation models
- Fundamentals of prompt engineering
- Basic prompt techniques
- Advanced prompt techniques
- Model-specific prompt techniques
- Demonstration: Fine-tuning a basic text prompt
- Addressing prompt misuses
- Mitigating bias
- Demonstration: Image bias mitigation

Day 2

Module 5: Amazon Bedrock Application Components

- Overview of generative AI application components
- Foundation models and the FM interface
- Working with datasets and embeddings
- Demonstration: Word embeddings
- Additional application components
- Retrieval Augmented Generation (RAG)
- Model fine-tuning
- Securing generative AI applications
- Generative AI application architecture

Module 6: Amazon Bedrock Foundation Models

- Introduction to Amazon Bedrock foundation models
- Using Amazon Bedrock FMs for inference
- Amazon Bedrock methods
- Data protection and auditability
- Demonstration: Invoke Bedrock model for text generation using zero-shot prompt

Module 7: LangChain

- Optimizing LLM performance
- Using models with LangChain
- Constructing prompts
- Demonstration: Bedrock with LangChain using a prompt that includes context
- Structuring documents with indexes
- Storing and retrieving data with memory
- Using chains to sequence components
- Managing external resources with LangChain agents

Module 8: Architecture Patterns

- Introduction to architecture patterns
- Text summarization
- Demonstration: Text summarization of small files with Anthropic Claude
- Demonstration: Abstractive text summarization with Amazon Titan using LangChain
- Question answering
- Demonstration: Using Amazon Bedrock for question answering
- Chatbot
- Demonstration: Conversational interface – Chatbot with AI21 LLM
- Code generation
- Demonstration: Using Amazon Bedrock models for code generation
- LangChain and agents for Amazon Bedrock
- Demonstration: Integrating Amazon Bedrock models with LangChain agents

- Describing generative AI and how it aligns to machine learning
- Defining the importance of generative AI and explain its potential risks and benefits
- Identifying business value from generative AI use cases
- Discussing the technical foundations and key terminology for generative AI
- Explaining the steps for planning a generative AI project
- Identifying some of the risks and mitigations when using generative AI
- Understanding how Amazon Bedrock works
- Familiarizing yourself with basic concepts of Amazon Bedrock
- Recognizing the benefits of Amazon Bedrock
- Listing typical use cases for Amazon Bedrock
- Describing the typical architecture associated with an Amazon Bedrock solution
- Understanding the cost structure of Amazon Bedrock
- Implementing a demonstration of Amazon Bedrock in the AWS Management Console
- Defining prompt engineering and apply general best practices when interacting with foundation models (FMs)
- Identifying the basic types of prompt techniques, including zero-shot and few-shot learning
- Applying advanced prompt techniques when necessary for your use case
- Identifying which prompt techniques are best suited for specific models
- Identifying potential prompt misuses
- Analyzing potential bias in FM responses and design prompts that mitigate that bias
- Identifying the components of a generative AI application and how to customize an FM
- Describing Amazon Bedrock foundation models, inference parameters, and key Amazon Bedrock APIs
- Identifying Amazon Web Services (AWS) offerings that help with monitoring, securing, and governing your Amazon Bedrock applications
- Describing how to integrate LangChain with LLMs, prompt templates, chains, chat models, text embeddings models, document loaders, retrievers, and Agents for Amazon Bedrock
- Describing architecture patterns that you can implement with Amazon Bedrock for building generative AI applications
- Applying the concepts to build and test sample use cases that use the various Amazon Bedrock models, LangChain, and the Retrieval Augmented Generation (RAG) approach

Methodology & didactics

This course includes presentations, demonstrations, and group exercises. Please note that currently there are no hands-on labs for this course, however, this is subject to change in the future.

Target audience

Software developers interested in using LLMs without fine-tuning

Requirements

- Some exposure to Python
- Attendance of the following courses or equivalent knowledge:
 - [AWS Discovery Day – Introduction to Prompt Engineering \(«AWSDDP»\)](#)
 - [AWS Discovery Day – Generative AI Essentials for Technical and Business Decision Makers \(«AWSDDG»\)](#)
 - [AWS Technical Essentials – Intensive Training \(«AWSE01»\)](#)
 - [Practical Data Science with Amazon SageMaker – Intensive Training](#)

Any questions?



We are happy to advise you on +41 44 447 21 21 or info@digicomp.ch. You can find detailed information about dates on www.digicomp.ch/courses-it-provider/amazon-web-services-aws/aws-machine-learning-ai/course-developing-generative-ai-applications-on-aws-intensive-training