Introduction to GitHub Copilot (1 Day)

Overview

GitHub Copilot is powered by OpenAI's language model, which has been trained on a massive dataset of public code repositories. It helps developers write code by suggesting lines and entire functions. This course teaches attendees how to leverage GitHub Copilot's AI capabilities with proper prompting so that Copilot can produce code that they would have to write themselves.

Skills Gained

- Gain foundational knowledge of generative AI and Large Language Models (LLMs)
- Gain practical experience in prompt engineering (crafting) for coding tasks
- Iterate with Copilot

Who Can Benefit

This course is best suited for the following student profiles:

- Software developers
- IT architects
- Technical managers

Prerequisites

Experience coding in Python or other programming languages.

COURSE OUTLINE

GitHub Copilot: The World's First At-Scale Generative AI Coding Tool

What is GitHub Copilot?
Machine Learning and Generative Models
Generative AI and Large Language Models (LLMs)
AI-Powered Chatbots
Retrieval-Based Chatbots
Generative Chatbots
Enhancing Chatbot Performance with LLMs
Context-aware conversation handling
OpenAI Codex
The Pair Programming Paradigm
The Pragmatic Programmer's Rubber Duck Debugging Modality
Benefits of Copilot
Copilot Privacy
Copilot Individual and Business Plans
Summary
A Brief History of Machine Learning
Generative AI and Large Language Models (LLMs): Applications
What is Transfer Learning?
Benefits of Transfer Learning
Challenges of Transfer Learning

Getting Started with GitHub Copilot

- Getting started in Visual Studio (VS) Code
- Enable GitHub Copilot in Visual Studio Code
- Enable Inline Suggestions in Visual Studio Code
- Prompt a Copilot code Suggestion
- Copilot Quick Fix
- Question Answering
- HTML & CSS: Live Preview Extension
- JavaScript: Regular Expressions
- JavaScript: Unit Testing
- Evaluating Multiple Suggestions
- Synthesizing Solutions

Copilot Chat

- What is Copilot Chat?
- Open Copilot Chat
- Why Build a Chat Feature Directly in VS Code?
- Inline Copilot Chat Experience
- Open Chat Session in the Editor Space
- Chat History
- Slash commands
- /createWorkspace command
- /explain command
- /tests command

Prompt Engineering for Copilot

- What is prompt engineering?
- Prompt Types
- Prompt Context
- Prompt Word Choice
- Prompt Formatting
- Python: Process a JSON File Using Prompt Engineering
- Summary: Best Practices for Prompt Engineering
- LLMs as 0-Shot Learning
- Zero-Shot Prompting
- LLMs as 1-Shot Learning
- LLMs as Multi-Shot Learning
- Few-Shot Prompting
- Chain-of-Thought Prompting
- How is Standard prompting different than Chain-of-Thought Prompting:
- How does Cot works better than N-shot prompting
- Context Aware Chatbots

Data Analysis with Copilot

- GitHub Copilot can also be used in Jupyter Notebooks

Lab Exercises

- Lab 1. Leverage GitHub Copilot to Enhance a Website Using Bootstrap
- Lab 2. Develop a Webpage using Copilot Chat
- Lab 3. Develop a REST API
- Lab 4. Analyze Gapminder Data