

ChatGPT Workshop for Software Developers

8 academic hours

Overview:

At the end of 2022, ChatGPT stormed into our lives. This was the first step towards making AI accessible to the masses. With the excitement it brought to our lives of having the ability to ask questions and receive fast answers on specific topics, came a fear of a change in software programmers employment options and the possibility that ChatGPT would replace some positions. In our workshop, we will learn how to utilize ChatGPT's capabilities to our own benefit to perform our programming positions better.

Welcome to the "ChatGPT for Programmers" workshop! In this course, we will explore how to leverage the power of ChatGPT, a language model developed by OpenAI, to assist and enhance your programming tasks. Whether you are a seasoned programmer or just starting your coding journey, this course aims to equip you with the knowledge and skills to effectively use ChatGPT as a programming tool.

Course Objectives:

- Understand the capabilities of ChatGPT
- Setup and integration
- Using ChatGPT for code completion and generation:
 - Leveraging ChatGPT for problem-solving
 - Customizing and fine-tuning ChatGPT
- Ethical considerations and best practices:
 - Integrating OpenAI API
 - Exploring the Copilot Plugin for Programming Assistance
 - Future developments and advancements

Stay up to date with the latest developments in the field of language models and their implications for programmers. Explore emerging trends, ongoing research, and potential advancements that can shape the future of programming with ChatGPT.

By the end of this course, you will have a solid understanding of how to incorporate ChatGPT into your programming workflow effectively. You will be equipped with the skills to use ChatGPT as a powerful tool, improving your productivity, problem-solving capabilities, and overall programming experience.

So, let's embark on this exciting journey of exploring ChatGPT for programmers and unlock the potential of natural language processing in your programming endeavors!

Who Should Attend:

This workshop is relevant for programmers of all disciplines, including Front end developers, Backend Developers and any developers who are seeking to better understand ChatGPT, its capabilities, and its limitations for assisting with everyday tasks.

Course Contents:

Section 1: Effective prompt engineering

- Understanding Prompt Engineering
 - cover the basics of prompt engineering, explaining what it is and why it is crucial in developing effective language models
- Design Principles for Prompts
 - Explore the key design principles for effective prompts
 - Discussing how to make prompts clear, specific, and unambiguous
 - Discuss the importance of providing context, using appropriate instructions, and leveraging different prompt formats such as completion, classification, or question-answering
- Tuning Prompt Parameters
 - Explain the process of fine-tuning prompt parameters to improve model performance
 - Discuss techniques such as prompt rewriting, length adjustments, and strategic keyword placement
- Evaluating and Iterating Prompts
 - Discuss the importance of evaluating prompt effectiveness and the metrics used to assess performance
 - Explain techniques such as human evaluation, probing tasks, and adversarial testing
 - Explore the iterative nature of prompt engineering and how continuous evaluation and refinement can lead to improved outcomes

Section 2: Understanding OpenAI API

- Introduction to OpenAI API
 - Overview of OpenAI API
 - explaining what it is and how it can be utilized
 - Discuss the capabilities of the API, such as natural language processing, language translation, chatbot development, and content generation
 - Explain the significance of OpenAI API in enabling developers to leverage powerful language models
- API Access and Usage
 - Cover the process of accessing and using the OpenAI API
 - Discuss the registration and authentication process, obtaining API keys, and making API calls
 - Explain the different API endpoints and their functionalities, such as generating text, translating languages, or analyzing sentiment
 - Provide examples and code snippets to demonstrate the practical usage of the API
- Working with API Parameters
 - Dive into the various parameters and options available when making API request
 - Discuss parameters such as temperature, max tokens, and top p/top k values, explaining their effects on the generated output
 - Explore how adjusting these parameters can influence the creativity, length, and coherence of the generated text
 - Discuss best practices and guidelines for selecting appropriate parameter values
- API Limitations and Considerations
 - Highlight the limitations and considerations when working with the OpenAI API
 - Discuss factors such as rate limits, cost considerations, and the importance of responsible and ethical usage

- Address potential challenges such as managing bias in generated content and mitigating risks associated with malicious use
- Discuss OpenAI's guidelines and recommendations for safe and ethical utilization of the API

Section 3: Coding Using GitHub Copilot

- Introduction to GitHub Copilot
 - Overview of GitHub Copilot, explaining what it is and how it works
 - Discuss its use of machine learning and artificial intelligence to assist developers in writing code
 - Explain the benefits of using Copilot, such as increased productivity, code completion, and suggestions for entire code blocks
- Setting up GitHub Copilot
 - Explain the process of setting up and integrating GitHub Copilot into popular code editors, such as Visual Studio Code
 - Provide step-by-step instructions for installation and configuration
- Utilizing Copilot for Code Completion
 - Discuss how GitHub Copilot can assist developers with code completion
 - Demonstrate how Copilot can suggest code snippets, functions, and classes based on the context
 - Explain how developers can leverage these suggestions to speed up their coding process and reduce the likelihood of errors
- Understanding Copilot's Limitations
 - Address the limitations of GitHub Copilot and potential challenges that developers may encounter
 - Discuss scenarios where Copilot may provide incorrect or insecure code suggestions
 - Highlight the importance of code review, testing, and maintaining a critical eye while using Copilot's suggestions
- Training and Customizing Copilot
 - Explore the concept of training and customizing GitHub Copilot to align with specific coding styles or project requirements
 - Discuss the process of fine-tuning Copilot using your own codebase or through the sharing of feedback with the GitHub Copilot community
- Ethical and Legal Considerations
 - Discuss the ethical and legal considerations associated with using GitHub Copilot
 - Address concerns related to intellectual property, code licensing, and potential misuse of Copilot's suggestions
 - Highlight the need for responsible usage and adherence to relevant legal frameworks
- Future of GitHub Copilot
 - Conclude the lecture by discussing the future developments and enhancements planned for GitHub Copilot
 - Talk about potential integration with other tools, expansion of language support, and improvements in accuracy and reliability

Section 4: Creating a project using chatGPT plugins

- Using all what we learned and implement our own new project using chatGPT and its plugins