Faysal Aziz

Embracing GenAI & Prompting

A Practical Introduction to AI and Prompt Engineering for Experienced Engineers - 2-Days

FA-0186 · 2-Days

Agentic & Generative AI

Introduction

Artificial Intelligence (AI) is transforming industries worldwide, from automating complex tasks to revolutionizing creative workflows. For engineers who have honed their skills in traditional fields, the integration of AI offers a unique opportunity to enhance problem-solving capabilities, optimize processes, and even venture into new creative domains.

This two-day course is designed to introduce seasoned engineers to the fundamentals of AI and the emerging field of prompt engineering.

We'll explore popular AI tools such as ChatGPT, Gemini, and Stable Diffusion, as well as creative platforms like MidJourney. With over 30 years of industry experience, our instructor will deliver practical, real-world insights and applications, ensuring that participants leave with skills they can immediately apply in their professional environment.

Learning outcomes

By the end of this course, participants will be able to:

- Understand the basics of AI, machine learning, and neural networks.
- Utilize AI tools such as ChatGPT, Gemini, and Stable Diffusion for engineering and creative problem-solving.
- Develop effective prompts for AI systems to generate high-quality outputs.
- Apply prompt engineering techniques to enhance AI interactions and outputs.

- Navigate creative AI platforms like MidJourney to explore innovative design and visualization.
- Integrate AI-driven solutions into traditional engineering workflows for increased efficiency and innovation.

Prerequisites

- Basic understanding of engineering principles and workflows.
- Familiarity with computers and digital tools.
- Curiosity and openness to exploring new technologies.

Training outline

1. 1. Introduction to AI and Its Impact on Engineering

Overview of AI and Machine Learning:

- Definition and types of AI (narrow, general, and superintelligent AI).
- Key concepts: machine learning, deep learning, and neural networks.

AI in Engineering:

- Current applications in various engineering fields (automation, design optimization, predictive maintenance).
- Case studies of successful AI integrations in traditional engineering projects.

Future Trends and Opportunities:

- AI in Industry 4.0 and digital twins.
- Potential impact of AI on engineering roles and skills.

2. 2. Introduction to Prompt Engineering

What is Prompt Engineering?

- Concept and importance of crafting effective prompts.
- Differences between prompt engineering for various AI models.

Components of a Good Prompt:

- Clarity, context, constraints, and creativity.
- Examples of effective and ineffective prompts.

Tools and Platforms:

- Overview of popular AI models and tools: ChatGPT, Gemini, Stable Diffusion, and MidJourney.

3. 3. Hands-On with ChatGPT and Gemini for Engineering Applications

Exploring ChatGPT:

- Basic usage and capabilities.
- Engineering-specific applications: technical documentation, troubleshooting, and brainstorming.
- Crafting engineering-related prompts for efficient outputs.

Gemini:

- Introduction to Gemini and its unique features.
- Comparing Gemini with ChatGPT: strengths and limitations.
- Use cases: advanced problem-solving and predictive modeling.

4. 4. Introduction to AI-Driven Creative Tools: Stable Diffusion and MidJourney

Stable Diffusion:

- Understanding text-to-image models.
- Using Stable Diffusion for visualizing engineering designs and concepts.
- Hands-on: generating engineering diagrams and visual content.

MidJourney:

- Exploring the capabilities of MidJourney for creative visualization.
- Practical applications: conceptual design, product visualization, and presentation graphics.
- Developing effective prompts for high-quality outputs in MidJourney.

5. 5. Advanced Prompt Engineering Techniques

Optimizing Prompts:

- Techniques for refining and iterating prompts.
- Utilizing context and constraints to guide AI outputs.
- Balancing creativity with precision in engineering contexts.

Advanced Use Cases:

- Multi-step prompting for complex problem-solving.
- Combining different AI models for hybrid solutions.

6. 6. Integrating AI into Engineering Workflows

Workflow Integration:

- Identifying potential points of integration in existing engineering processes.
- Best practices for adopting AI tools in a traditional engineering environment.

Collaborative AI:

- Using AI as a collaborative tool for team projects.
- Ethical considerations and responsible use of AI.

7. 7. Practical Lab Sessions and Case Studies

Interactive Lab Sessions:

- Guided exercises with ChatGPT and Gemini for engineering problem-solving.
- Creating visual content with Stable Diffusion and MidJourney.

Real-World Case Studies:

- Analyzing successful AI applications in engineering.
- Group discussions on potential applications in participants' fields.

This course aims to demystify AI for seasoned engineers, providing them with the knowledge and hands-on experience needed to start leveraging AI in their own work. Whether you're looking to automate tasks, enhance creativity, or stay ahead of technological advancements, this course will equip you with the essential skills to get started.

© 2026 Faysal Aziz · Kuala Lumpur