

Program: AI and Us



# Advanced Techniques in Prompt Engineering

#### Introduction

As the frontier of AI evolves, so does the art and science of Prompt Engineering. Advanced Techniques in Prompt Engineering is a specialised course designed for data science and AI professionals who aspire to push the boundaries of interaction with generative AI technologies such as LLMs. This course ventures beyond the basics, diving into the intricate methodologies that define expert-level prompting systems. Exploring further, this course delves into specialised prompting systems and techniques including Tree of Thoughts (ToT), Retrieval Augmented Generation (RAG), Automatic Reasoning and Tool-use, Automatic Prompt Engineer, Active-Prompt, Directional Stimulus Prompting, ReAct, Graph Prompting, Analogical Reasoners etc. In addition, the course culminates in exploring real-world business applications, future trends, evolving landscape of LLM vulnerabilities and opportunities.



#### Module Roadmap

The module operates in a hybrid mode: lessons are instructor-independent and delivered through our cutting-edge online platform. It comprises 5 main lessons. Please find below an illustrative summary outlining the lessons, their corresponding outcomes, and the time required for each.



## Intermediate Techniques in Prompt Engineering

- Grasp Chain of Thought prompting and self-consistency methods to solve complex problems and verify LLM reasoning paths.
- Integrate advanced techniques such as Retrieval-Augmented Generation (RAG) for dynamic content enrichment and APE for efficient prompt creation.



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40 minutes

40 minutes

40 minutes

Utilise specialised prompting strategies to navigate and enhance LLM task performance effectively.

#### Specialised Systems in Prompt Engineering – Part A

- k Identify and understand the role of specialised systems like Tree of
- Thought (ToT) and Automatic Reasoning and Tool-use (ART) in overcoming the limitations and enhancing LLM creativity.
- Recognise the importance of automatic prompt optimisation with APE to reduce manual effort in prompt creation.

Understand domain-specific problem-solving, improving LLMs.

#### Specialised Systems in Prompt Engineering – Part B

- Apply advanced systems like Active-Prompt and Directional Stimulus Prompting for LLM adaptability, and explore ReAct for integrating reasoning with action.
- Utilise Graph Prompting and Analogical Reasoners to model complex relationships.
- Understand tailoring specialised prompting techniques to diverse professional fields

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#### Real-World Business Applications and Future Trends

- Recognise the importance of precise prompt crafting.
- Understand adversarial prompting and threat modelling to safeguard LLMs for business against emerging threats.
- Explore NLG threat dynamics and integrate ethical defences, preparing for future vulnerabilities and ensuring trustworthy GenAl solutions.

### A New Way to Learn Al

Countless AI introductions exist online, what sets this module apart is not solely the content, but the innovative approach to presentation and delivery methods we offer:



