

Prompt Engineering For AI

Module 1: Introduction to Prompt Engineering

- What is Prompt Engineering?
- Why Prompt Engineering matters in AI
- Applications in NLP, Code, Image Generation, and More
- LLMs Overview (GPT, Claude, PaLM, Gemini)
- Anatomy of a Prompt: Instruction, Context, Input, Output format

Module 2: Basics of Large Language Models (LLMs)

- How LLMs work (Tokenization, Attention, Transformers)
- Language model behavior and capabilities
- Limitations and hallucinations in LLMs
- Temperature, Top-p, Max Tokens, Stop Sequences
- API interaction basics (OpenAI, Anthropic, Cohere)

Module 3: Core Prompting Techniques

- Zero-shot prompting
- One-shot prompting
- Few-shot prompting
- Chain-of-thought prompting (CoT)
- Role-based prompting
- Instructional prompting

Module 4: Advanced Prompting Techniques

- ReAct (Reasoning + Acting)
- Self-Ask prompting
- Tree of Thought (ToT)
- Retrieval-Augmented Generation (RAG) – Introduction
- Prompt Chaining & Composition
- Guardrails and Prompt Filters

Module 5: Prompt Engineering for Text Tasks

- Text Generation (stories, blogs, emails)
- Summarization
- Translation
- Text Classification
- Sentiment Analysis
- Question Answering

- Text Correction & Enhancement

Module 6: Prompting for Code Generation

- Prompting for Python, JavaScript, SQL, etc.
- Code explanation & debugging
- Auto-documentation generation
- Writing test cases using AI
- Pair programming with AI

Module 7: Prompting for Image & Visual AI

- Prompting for DALL·E, Midjourney, Stable Diffusion
- Writing effective image generation prompts
- Style, detail, lighting, composition control
- Prompting for infographics and charts
- Text-to-image vs Image-to-image prompts

Module 8: Prompt Engineering for Chatbots

- Building personas with prompt templates
- Context memory and continuity
- Defining tone and role (teacher, assistant, etc.)
- Creating multi-turn conversations
- Handling ambiguity and refining responses

Module 9: Evaluation and Optimization

- Evaluating prompt quality
- Iterative prompt testing
- Using AI to improve prompts (meta prompting)
- A/B testing of prompts
- Prompt performance tuning

Module 10: Tools and Frameworks

- OpenAI Playground & ChatGPT
- LangChain (prompt templates, chains)
- Flowise (visual prompt flow building)
- PromptLayer
- Agents and Tool Use (Plugins, API calls, browsing)
- Vector Databases (Pinecone, Weaviate) for context injection

Module 11: Ethics, Security & Bias in Prompt Engineering

- Ethical use of AI
- Preventing model misuse via prompts
- Detecting and avoiding prompt injection attacks
- Managing bias and fairness in responses
- Transparency and explainability in prompt outcomes

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