# Assignment 06: Assignment and Practice of Prompt Engineering

## Theory

### 1.1 What is Prompt Engineering?

Prompt engineering is the art and science of designing inputs (prompts) to get desired outputs from AI models. It involves using precise, structured, and contextually relevant instructions to achieve accurate, creative, or useful AI responses.

### 1.2 Why is it Important?

- Enhances productivity using AI tools  
- Reduces misunderstanding or hallucination by the model  
- Improves quality of image, video, and text generation  
- Key skill in modern AI workflows

### 1.3 Types of Prompts

- Instructional Prompts: 'Summarize this article.'  
- Conversational Prompts: 'Can you explain how solar panels work?'  
- Visual Prompts (for DALL·E/SORA): 'A medieval castle under the northern lights, cinematic lighting.'  
- Few-shot Prompts: Providing examples before asking for results

### 1.4 Techniques in Prompt Engineering

- Use clear and specific instructions  
- Define the tone, format, or audience  
- Provide examples or constraints  
- Iterate and refine  
- Use role-based framing (e.g., 'You are a professor...')

## Task 1: Prompt Categorization

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| Prompt | Type | Reasoning |
| Generate a logo for a tech startup using neon colors. | Visual Prompt | Creates an image (logo) with specific styling. |
| Explain blockchain to a 5-year-old. | Instructional Prompt | Gives a structured explanation tailored to a child. |
| You are a UX designer. Suggest improvements to this app layout. | Role-based Conversational Prompt | Frames AI as a UX designer and seeks interactive suggestions. |

## Task 2: Refinement Practice

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| Original Prompt | Refined Prompt |
| Write a story. | Write a 500-word adventure story for teens about friends finding a magical portal in their school library. |
| Draw a car. | Generate an illustration of a futuristic electric car with glowing blue headlights, solar panels, and neon-lit highway background. |
| Make a video. | Create a 15-sec video of sunrise over the Himalayas with changing sky colors and birds flying. |
| Do some coding. | Write a Python program that takes 5 numbers and prints the max, min, and average. |
| Teach me math. | Explain fractions to a 10-year-old with pizza examples + give 3 practice problems with solutions. |

## Task 3: Prompt Design Exercise

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| Domain | Example Prompt | Purpose |
| ChatGPT (Text) | You are a career advisor. Write a roadmap for an engineering graduate moving into investment banking. | Career guidance |
| DALL·E (Image) | A futuristic smart city with flying cars, holograms, vertical gardens, cyberpunk neon style. | Creative image generation |
| SORA (Video) | 20-sec cinematic of space explorer landing on alien planet with glowing forests & creatures. | Immersive video storytelling |
| Coding / Logic | Python program to create a leaderboard sorted by marks with ranks. | Functional code |
| Education / Training | You are a history teacher. Explain WWII as a story for high school students. | Engaging teaching |