

# Introduction to In-context Learning



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# What you will learn



Describe in-context learning

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11-0100
11001-1
0-0-0
```

Explain the fundamentals of prompt engineering



### In-context learning

- Method of prompt engineering
- Demonstrations of the task provided to the LLM as part of the prompt
- Doesn't require additional training
- New task learned from a small set of examples presented within the context at inference time







### **In-context learning**



#### **Advantages:**

- No fine-tuning needed
- Reduces time and resource consumption
- Improves performance

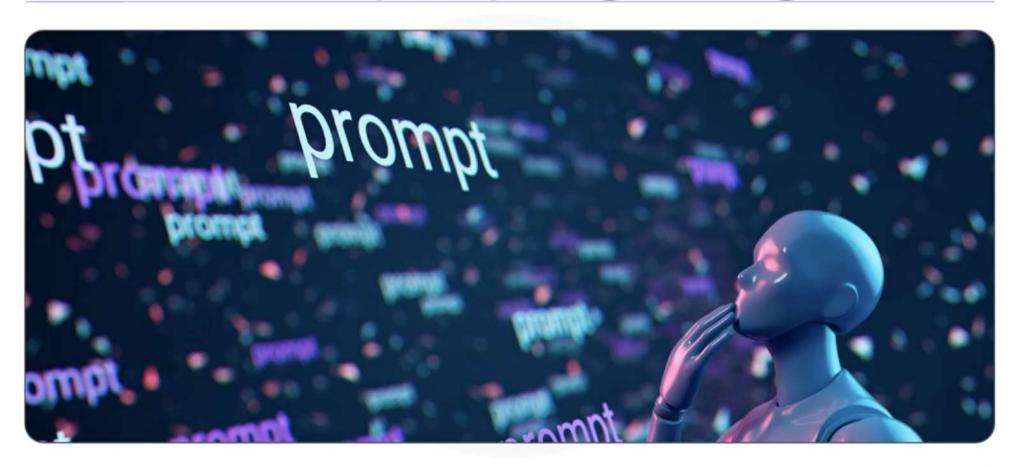


#### **Disadvantages:**

- Limited to what can fit in-context
- Complex tasks need gradient steps
- Involves adjustments based on error gradients



# Introduction to prompt engineering







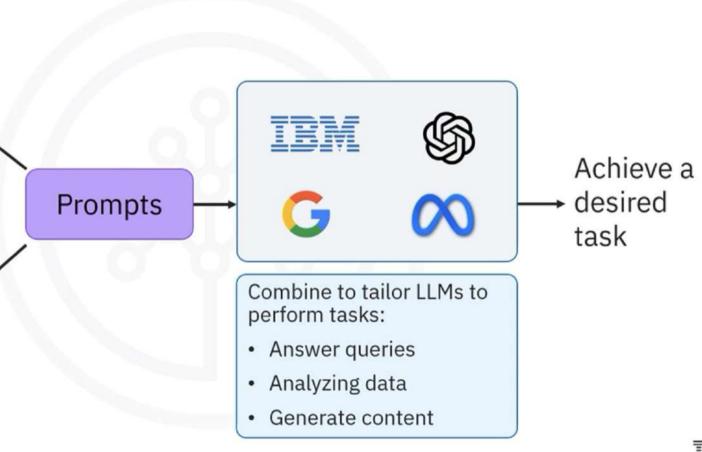
### What are prompts?

#### Instructions

- Clear, direct commands that tell the AI what to do
- Need to be specific to ensure LLM understands the task

#### Context

- Information that helps LLM make sense of instructions
- Relevant details that shape the AI's response







## What is prompt engineering?



- Designing and refining prompts to communicate with AI systems (LLMs)
- Involves crafting questions, commands, or statements to elicit accurate, relevant, and contextually appropriate responses
- Fundamental to customer service and computational linguistics

## Why prompt engineering?

Directly influences the effectiveness and accuracy of LLMs

Ensures LLMs generate relevant, precise, and contextually appropriate responses



Meets user needs through clearer prompts and reduced misunderstanding

Eliminates the need for continual fine-tuning



### First basic prompt

The wind is

Blowing gently through the trees, whispering secrets and stories to anyone who cares to listen.

Source: Response generated from GPT-3.5





### Elements of a prompt

#### **Instructions**



Tell LLM what needs to be done

'Classify the following customer review into neutral, negative, or positive sentiment.' Context



Helps LLM understand the scenario

'This review is part of feedback for a recently launched product.' **Input data** 



The actual data the LLM will process

'The product arrived late, but the quality exceeded my expectations.' **Output indicator** 



Part of the prompt where the LLM's response is expected

'Sentiment:'

### Recap

- In-context learning: Method of prompt engineering where demonstrations of the task are provided to the model
- Prompts are inputs given to an LLM, to guide it toward performing a specific task
- Prompt engineering: Process to design and refine the questions, commands, or statements to get relevant and accurate responses
- Advantages of prompt engineering:
  - Boosts the effectiveness and accuracy of LLMs
  - Ensures relevant responses
  - Facilitates meeting user expectations
  - Eliminates the need for continual fine-tuning





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- Advantages of prompt engineering:
  - Boosts the effectiveness and accuracy of LLMs
  - Ensures relevant responses
  - Facilitates meeting user expectations
  - Eliminates the need for continual fine-tuning
- Key prompt elements: Instructions, context, input data, and output indicator



