🔹 Zero-Shot Prompting

Definition

Zero-shot prompting asks a model to perform a task without giving any examples. The prompt includes only instructions or a question.

Example Prompt

Translate the following sentence into Spanish 'Where is the nearest train station'

Applications

Quick utility tasks (translation, summarization)

General-purpose queries where the model's pretraining is sufficient

Chatbots and virtual assistants where brevity is key

Pros

Minimal prompt length

Fast and straightforward for simple tasks

Limitations

Less reliable on complex or nuanced tasks

May misunderstand task intent without context

🔹 Few-Shot Prompting

Definition

Few-shot prompting provides a few examples within the prompt to demonstrate how the model should perform the task.

Example Prompt

Translate the following sentences into Spanish

1. 'Good morning.' → 'Buenos días.'

2. 'How are you' → '¿Cómo estás'

3. 'Where is the nearest train station' →

Applications

Text classification

Style transfer

Dialogue systems with personality or tone matching

Code generation with formatting patterns

Pros

Gives the model a reference to mimic

Improves accuracy over zero-shot, especially for subtle tasks

Limitations

Prompt length limits how many examples can be shown

Example selection is critical to success

🔹 Chain-of-Thought Prompting

Definition

Chain-of-thought (CoT) prompting encourages the model to explain its reasoning process step-by-step before arriving at an answer.

Example Prompt

If a train leaves at 3 PM and travels for 2 hours and 45 minutes, what time does it arrive Let's think step by step.

Applications

Mathematical reasoning and word problems

Logical inference

Multi-step decision making (e.g., game playing, scientific analysis)

Pros

Significantly boosts reasoning performance

Helps debug or audit AI thinking

More aligned with human-like problem solving

Limitations

Longer outputs

Can sometimes lead to overthinking simple problems

Summary Table

| **Technique** | **Key Feature** | **Best Use Cases** | **Trade-offs** |
| --- | --- | --- | --- |
| Zero-Shot | No examples | Simple tasks, direct queries | May lack nuance |
| Few-Shot | Few examples provided | Styling, formatting, classification | Prompt size limits, example quality |
| Chain-of-Thought | Step-by-step reasoning | Math, logic, decision trees | Verbose, slower responses |