

PROMPT

The instruction or input you give an AI model to produce a response.

System prompt — sets the AI's role, rules & behavior

User prompt — your instruction or question

PROMPT ENGINEERING

The practice of designing and refining prompts to get more accurate, useful, and reliable AI outputs — the techniques below are its core toolkit.

PROMPTING TECHNIQUES simple → agentic

Zero-Shot Prompting

BASIC

The AI gets only the task instruction — no examples are provided.

PROMPT

Summarize this journal article in 150 words for first-year psychology students.

One-Shot Prompting

BASIC

The AI is given one example of the desired format or style before completing the task.

Also known as in-context learning.

PROMPT

Example feedback: "Your thesis is clear, but the paragraph lacks evidence from academic sources." Now give feedback on this sociology essay paragraph.

Chain of Thought

INTERMEDIATE

The AI is encouraged to reason step-by-step instead of giving only the final answer.

Does not improve performance for reasoning models.

PROMPT

Perform a hypothesis test step by step: define hypotheses, calculate the test statistic, determine the p-value, interpret the result.

Self-Consistency

INTERMEDIATE

The AI solves the same problem multiple ways and compares results to find the most reliable answer.

Works well for math and logical reasoning.

PROMPT

Estimate the regression line using both the least-squares formula and software output interpretation, then compare results.

ReAct (Reasoning + Acting)

ADVANCED

The AI combines reasoning with actions such as gathering data, checking formulas, or consulting statistical resources.

What Claude / ChatGPT are now doing by default.

PROMPT

Find a recent dataset about university student stress levels, calculate descriptive statistics, and explain the trends you observe.

AI ROLES TO IMPROVE LEARNING overview

— Motivator

Encourages you and keeps momentum going.

— Like I'm Five

Explains ideas in the simplest possible terms.

— AI as a Learner

You teach the AI to test your own understanding.

— Collaboration Buddy

Co-creates and brainstorms as an equal partner.

— Dramatic Dialogue

Turns material into a scripted conversation.

— Socratic Opponent

Challenges your argument with pointed questions.

— Assessor

Evaluates your work and flags gaps or errors.

PROMPT ENGINEERING 101 five steps, test and iterate

01



Define a Goal

02



Mention Context

03



Describe Role

04



Explain Task Set

05



Tone & Style

06



Test & Iterate

DETECT FLAWS

AI sycophancy means that a model **tends to agree with the user**. Watch for these two patterns:

SYCOPHANTIC ANSWER

Validating incorrect statements instead of critically evaluating them.

SYCOPHANTIC PRAISE

Undeserved flattery.

Hallucination means the AI **states false information confidently and fluently**, as if it were fact. Always verify before using AI output in academic work:

FABRICATED SOURCES

Invented citations, authors, or studies that don't exist.

INVENTED DATA

Plausible-looking statistics or quotes with no real basis.