Tree Of Thought
Reflexion
Self-Consistency

1. Tree of Thoughts (ToT) – Exploring Multiple Reasoning Paths

What is Tree of Thoughts?

Tree of Thoughts (ToT) is a prompting technique where AI is encouraged to **explore multiple possible reasoning paths** before choosing the best solution.

Instead of following only one thinking path, AI:

- Generates multiple ideas
- Evaluates each idea
- Selects the best possible answer

This technique mimics human brainstorming.

Example Without Tree of Thoughts

Prompt:
Suggest a business idea for a 50000 dollars.

AI might give only one idea without exploring alternatives.

Example With Tree of Thoughts

Prompt:
Suggest three different business ideas for a 50000 dollars

For each idea:
1. Explain benefits
2. Explain risks
3. Suggest expected profitability

Then choose the best idea and justify your choice.

This forces AI to explore multiple reasoning paths.

When to Use Tree of Thoughts

Tree of Thoughts is useful when:

- Making strategic decisions
- Brainstorming creative solutions
- Solving complex business or technical problems
- Evaluating multiple alternatives
- Planning projects

2. Reflexion – Asking AI to Critique and Improve Its Own Output

What is Reflexion?

Reflexion is a technique where AI is asked to:

- Generate an answer
- Critically analyze its answer
- Improve or correct its response

This technique helps AI simulate self-review and quality improvement.

Example Without Reflexion

Prompt:
Write an email requesting leave.

AI provides one response without quality review.

Example With Reflexion

Prompt:
Write an email requesting leave.

After writing the email:
1. Review the email for clarity and professionalism.
2. Suggest improvements.
3. Provide a revised version.

This produces higher quality results.

When to Use Reflexion

Reflexion is particularly useful for:

- Writing tasks
- Coding improvement
- Research summaries
- Report generation
- Professional communication

3. Self-Consistency – Generating Multiple Answers and Choosing the Best

What is Self-Consistency?

Self-Consistency is a technique where AI is asked to **generate multiple independent answers** to the same question and then select the most reliable or common answer.

The process usually involves:

- Ask AI to generate multiple solutions
- Compare the solutions
- Choose the most logical or consistent answer

Instead of trusting one output, this method relies on repeated reasoning.

Example Without Self-Consistency

Prompt:

Solve this math problem:
A train travels at a speed of 40 km/h for 3 hours. It then travels at 60 km/h for 2 hour.
What is the average speed of the train for the entire journey?

AI may produce one answer without verification.

Example With Self-Consistency

Prompt:

Solve this math problem using three different reasoning methods.
A train travels at a speed of 40 km/h for 3 hours. It then travels at 60 km/h for 2 hour.
What is the average speed of the train for the entire journey?

After solving:
Compare the results and select the most consistent answer.

When to Use Self-Consistency

Self-Consistency is useful for:

- Mathematical problems
- Logical reasoning tasks
- Coding solutions
- Data analysis
- Scientific calculations

Combining All Three Techniques

Example Combined Prompt

Generate three different marketing strategies for launching a new mobile app.

For each strategy:

1. Explain implementation steps
2. Evaluate advantages and disadvantages

Then review all strategies and identify weaknesses.

Finally, choose the most effective strategy and explain why.

This prompt uses:

- Tree of Thoughts (multiple strategies)
- Reflexion (review weaknesses)
- Self-Consistency (choose best option)