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Tree of Thoughts Prompting

Instructor

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Definition

- Tree of Thoughts Prompting is a method to solve problems by exploring different paths or 'thoughts' that lead to a solution.

- This method breaks down the problem-solving process into smaller parts called 'thought steps'.

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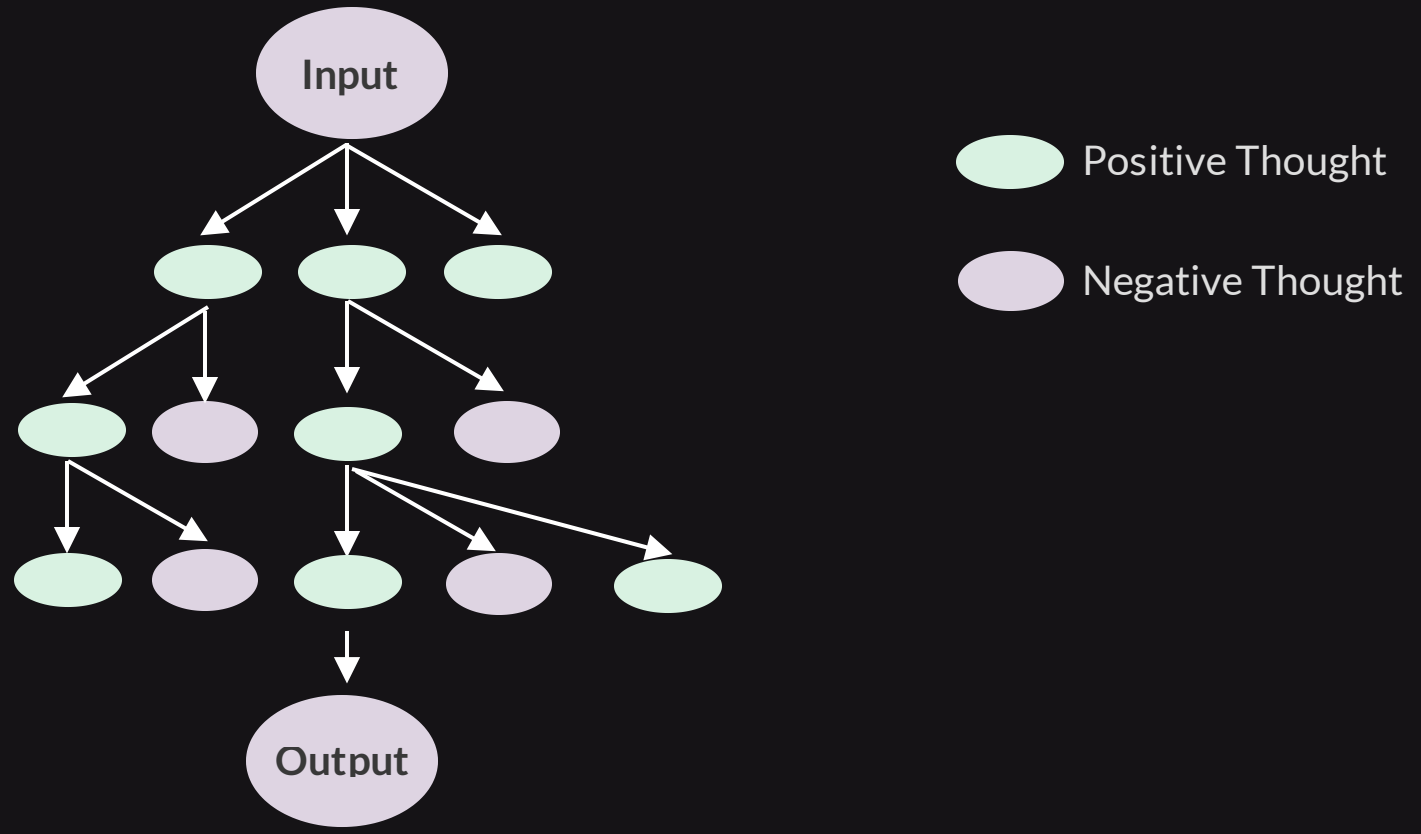
How Tree of Thought (TOT) Works?

Step 1

Generates multiple 'thoughts' per step, selecting the most promising to solve problems.



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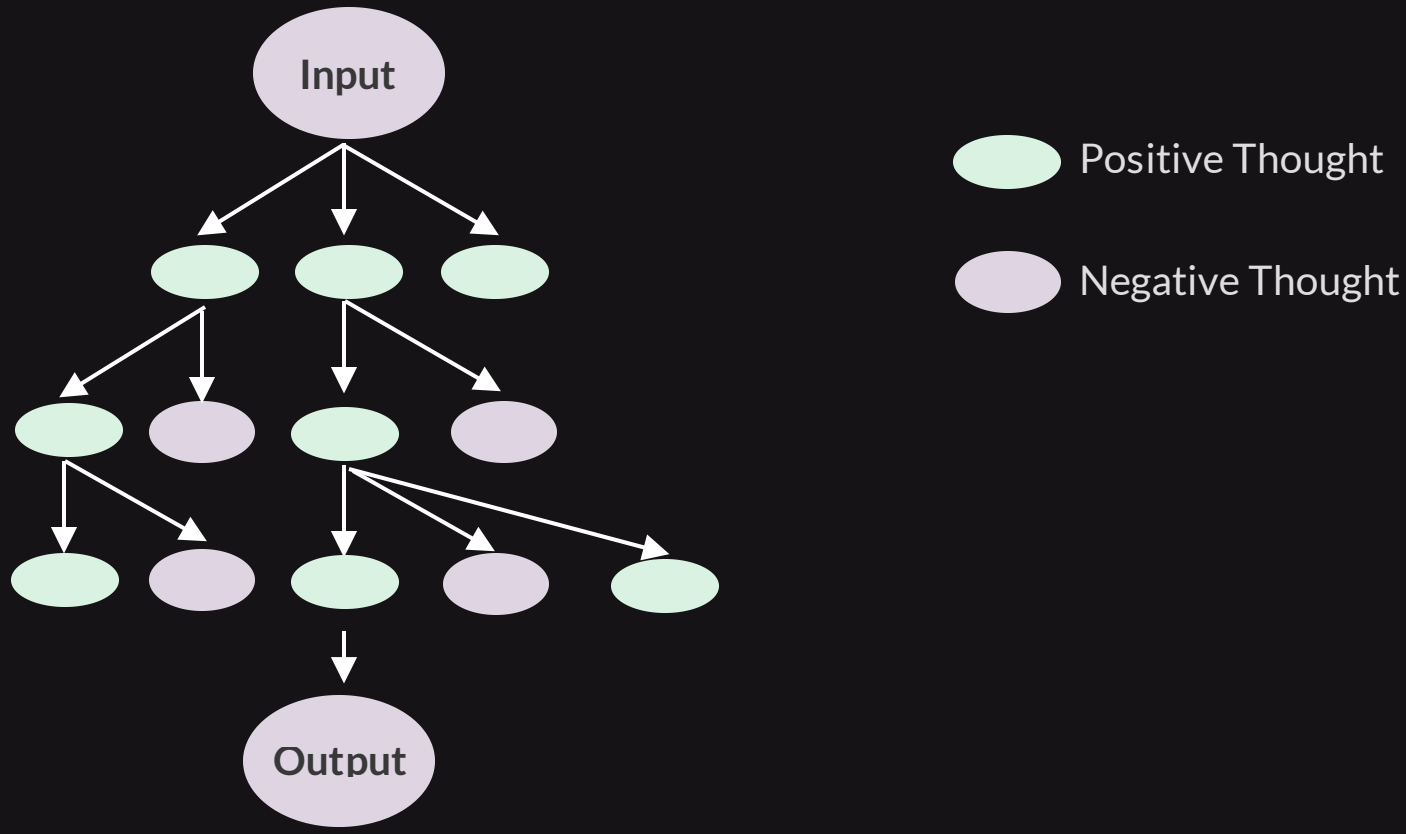
How Tree of Thought (TOT) Works?

Step 2

Employs straightforward search tactics to determine which paths to pursue.



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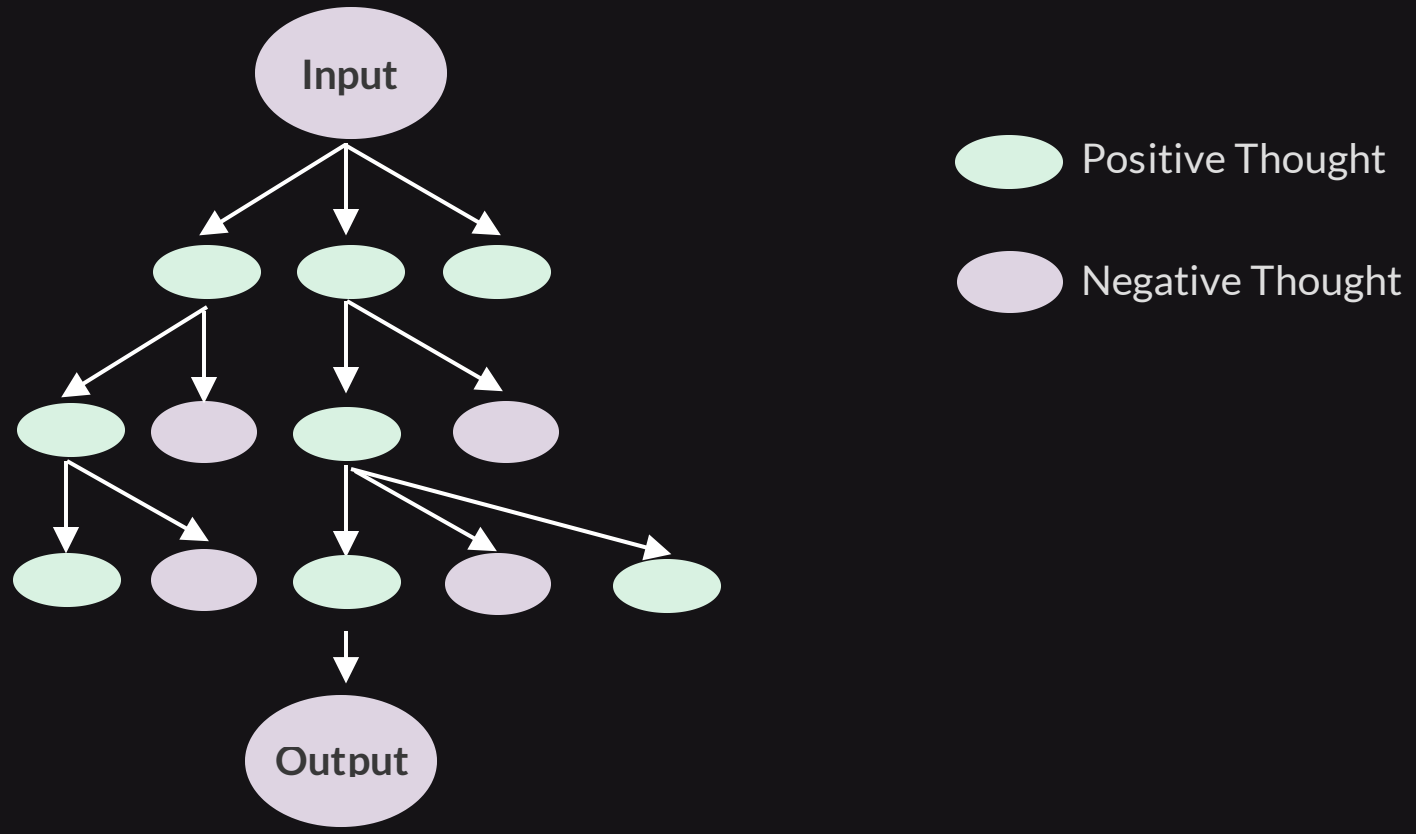
How Tree of Thought (TOT) Works?

Step 3

Resembles a decision tree, exploring various 'thought branches' for optimal solutions.



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Difference Between Tree of Thoughts and Chain-of-Thoughts

Single vs. Multiple Paths

CoT advances in a single direction, while ToT branches out into multiple paths.

Sequential Reasoning

CoT generates a sequence of thoughts, whereas ToT considers different sequences to derive the best outcome.

Flexibility in Approach

ToT can reverse or change its reasoning paths if they don't lead to a solution, a flexibility not present in the CoT approach.

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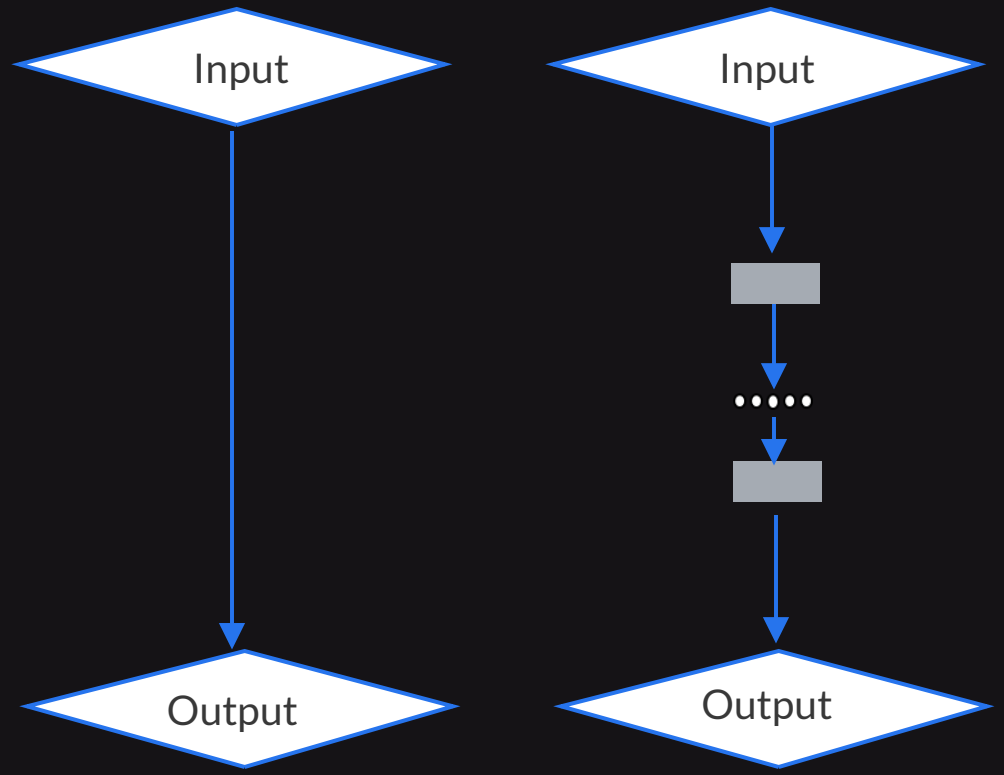
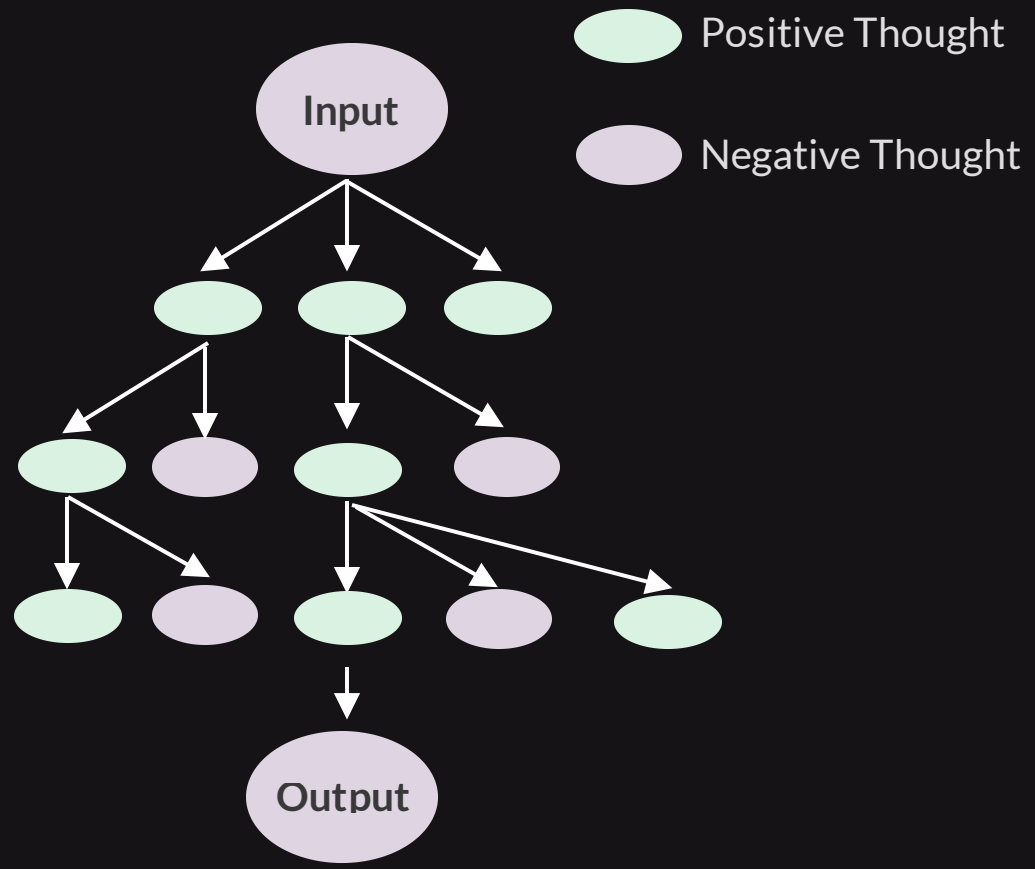
Difference Between Tree of Thoughts and Chain-of-Thoughts



Input-Output Prompting

Chain of Thought Promoting



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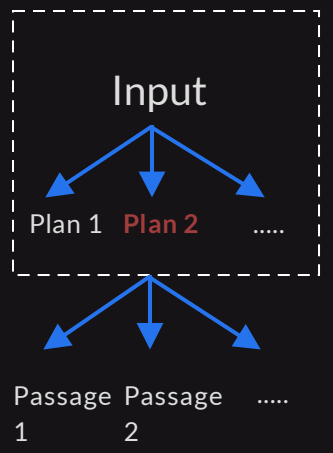
Tree of Thoughts Prompting: Example



(a) Input

Write a coherent passage of 4 short paragraphs. The end sentence of each paragraph must be: 1. It isn't difficult to do a handstand if you just stand on your hands. 2. It caught him off guard that the space smelled of seared steak. 3. When she didn't like a guy who was trying to pick her up, she started using sign language. 4. Each person who knows you has a different perception of who you are.

(b) Plans

Plan 1

1. Introduce and explain the technique of doing a handstand. 2. Switch to a story about an astronaut's first time in space. 3. Describe a situation where a woman uses sign language to avoid unwanted attention. 4. The final paragraph explains how everyone has different perceptions of others.

0/5 votes

Plan 2

1. Introduction to an unusual self-help book, mentioning a handstand as a metaphor for embracing challenges. 2 Discuss the unexpected things learned from astronauts, including the smell of space. 3. Describe a woman's clever tactic for avoiding unwanted attention at a bar. 4. Contemplate how different perceptions of oneself can shape one's identity.

3/5 votes

Plan 3-5

1...
2..

n/5 votes

(c) Votes

Analyze each choice in detail: Choice 1, while incorporating the required end sentences, seems to lack a clear connection between the paragraphs {...}. Choice 2 offers an interesting perspective by using the required end sentences to present a self-help book's content. It connects the paragraph with the theme of self-improvement and embracing challenges, making for a coherent passage.

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Pros: Tree of Thoughts Prompting

- Enables language models to plan and select from various problem-solving strategies for better outcomes.
- Enhances adaptability in problem-solving by allowing the model to revise its decisions.
- Outperforms other methods by evaluating multiple options for complex problems.
- Facilitates understanding of decision-making processes by tracing the model's reasoning steps.

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Cons: Tree of Thoughts Prompting

- May consume more computing resources than simpler methods, increasing costs.
- Unnecessary for simpler tasks where less complex methods suffice.
- As a nascent technique under research, it may not be universally effective across problem types.

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Thank You

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