

Chain of Symbol (For Planning Tasks)

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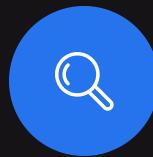
Definition

- Chain-of-symbol (COS) helps language models understand and plan things by replacing long descriptions with easy symbols.
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How Chain-of-Symbol Works



Begins by vocalizing thoughts on a scenario, akin to navigating a maze or locating items in a space, without extra training.



Mistakes in initial output are identified and corrected, ensuring a logical progression of thought.



Detailed verbal explanations are then translated into intuitive symbols that represent spatial relationships, streamlining communication and removing unnecessary verbosity

Chain-of-Symbol: Example

Shared Model Input

There are a set of bricks. The yellow brick C is on top of the brick E. The yellow brick D is on top of the brick A. The yellow brick E is on top of the brick D. The white brick A is on top of the brick B. For the brick B, the color is white. Now we have to get a specific brick. The bricks must now be grabbed from top to bottom, and if the lower brick is to be grabbed, the upper brick must be removed first. How to get brick D

Chain-of-Thought

The bricks from bottom to top are B, A, D, E, C
1. Remove brick A from the top of brick B.
2. Remove brick E from the top of brick D
3. Now brick D is the topmost yellow brick and can be grabbed.

Chain-of-Symbol

B/A/D/E/C
C/E
E/D
D

Model Output

So we get the result as A, E, D.

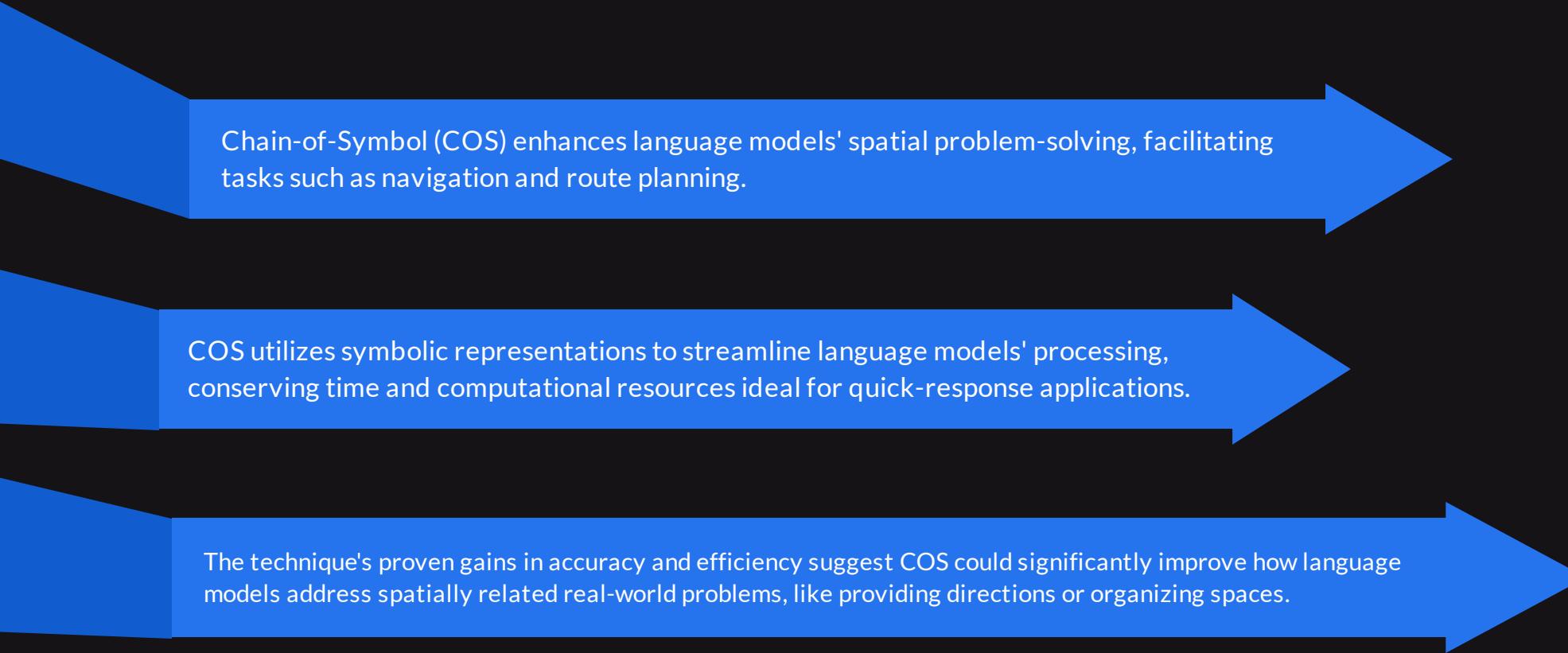


Translation Output

So we get the result as C, E, D



Chain-of-Symbol: Practical Uses



Chain-of-Symbol (COS) enhances language models' spatial problem-solving, facilitating tasks such as navigation and route planning.

COS utilizes symbolic representations to streamline language models' processing, conserving time and computational resources ideal for quick-response applications.

The technique's proven gains in accuracy and efficiency suggest COS could significantly improve how language models address spatially related real-world problems, like providing directions or organizing spaces.

Thank You
