

?????????--???????

???

Transformer?“????”??

1. Attention [] dot[]
 1. []
2. “[] ” [] “[] ”
 1. [] LLM[] MoE[] TopK[] Token []
3. [] RNN[] transformer []
4. [] []

CoT??Chain of Thought

1. CoT[] “[] ” [] attention
2. CoT [] LLM[]
3. [] LLM[]
4. CoT[]

??

[]

Khaoutar El Maghraoui [] [] []

test-time compute[] AI []

OpenAI o1

[]

[]

[]

???????

1. “[] ” []
2. “Attention”[] token[] token[]
3. “multi-Head”[]

??

1.
 1. LLM
 1. Phi-2 34% 85%
 2. 100 ChatGPT Reddit 48% 73%
 3.
 4. mnist 90% 100%
2. /
2.
3. /
 1.
4.
 1. CoT RL
 2.
5.
 1.
 2.

??????/????? ??????

1.
2.

???

1.
 1.
 1.
 2. LLM
2. <https://arxiv.org/abs/2506.08184>
3.
 1.
4. LLM KV cache
 1. kvcache

1.

