### What is the future trend of reasoning?

### 1. Tree of Thoughts: Enhancing AI's Structured Reasoning

Tree of Thoughts (ToT) is an advanced reasoning technique that extends Chain-of-Thought prompting by enabling AI models to explore multiple reasoning paths before arriving at a final decision. Unlike linear reasoning approaches, ToT structures problem-solving into a branching framework, where different solution paths can be considered, evaluated, and refined before converging on the most optimal answer.

The key advantage of ToT lies in its ability to facilitate structured and exploratory reasoning, making it highly effective for complex decision-making tasks such as mathematical proofs, strategic planning, and problem decomposition. By incorporating mechanisms to assess intermediate steps and backtrack when necessary, ToT enhances the robustness and reliability of AI-generated conclusions. This approach has demonstrated significant improvements in logical coherence, adaptability, and performance across diverse applications, including scientific research, business intelligence, and automated theorem proving.

As AI continues to evolve, Tree of Thoughts is expected to play a critical role in enabling more sophisticated and human-like reasoning, helping AI systems navigate complex problem spaces with greater precision and flexibility.

### 2. Chain-of-Thought (CoT) and Advanced Reasoning Techniques

Chain-of-Thought (CoT) prompting has emerged as a key advancement in AI reasoning, enabling models to perform step-by-step logical inference. Unlike traditional approaches where language models generate direct answers, CoT encourages explicit reasoning steps, leading to more reliable and complex problem-solving capabilities.

Further extensions, such as Tree-of-Thoughts and Graph-of-Thoughts, allow AI systems to explore multiple reasoning paths before converging on a final decision. Reflection-based reasoning enhances this by enabling models to evaluate and refine their own responses, iteratively improving output quality. Another promising direction is multi-agent reasoning, where AI systems collaborate to cross-verify and refine conclusions.

These techniques have demonstrated significant improvements in mathematical reasoning, code generation, and strategic decision-making. As AI systems become more adept at structured thinking, they will play a crucial role in tasks requiring critical analysis and deep problem-solving.

### 3. Memory and Long-Term Context Retention

A major limitation of current AI models is their inability to retain long-term context across interactions. Traditional neural networks process inputs in an isolated manner, making it difficult to maintain continuity in reasoning. To address this challenge, researchers are exploring dynamic memory architectures that allow AI models to store and retrieve relevant information across extended interactions.

Techniques such as Retrieval-Augmented Generation (RAG) integrate external vector databases, enabling AI models to access vast knowledge repositories in real time. Persistent memory systems further enhance AI's ability to recall and apply learned knowledge over multiple sessions. These advancements are particularly beneficial in applications such as personal AI assistants, legal research, and historical data analysis, where contextual understanding is crucial.

By improving memory retention, AI can offer more coherent, personalized, and context-aware responses, making it a valuable tool for industries that require continuous and adaptive learning.

**What can be applied for Persian to improve reasoning?**

Train Persian models to break down reasoning problems step by step, similar to CoT prompting in English. In order to achieve this use Persian-specific CoT datasets or generate them from structured texts (e.g., legal rulings, philosophical discourse).

You can also experiment with Tree-of-Thoughts (ToT) for complex multi-step reasoning in Persian.

Integrate Persian Wikipedia, books, and knowledge bases for context-aware reasoning using RAG.