



Adding Logics to AI Chatbot

KRIN CHINPRASATSAK

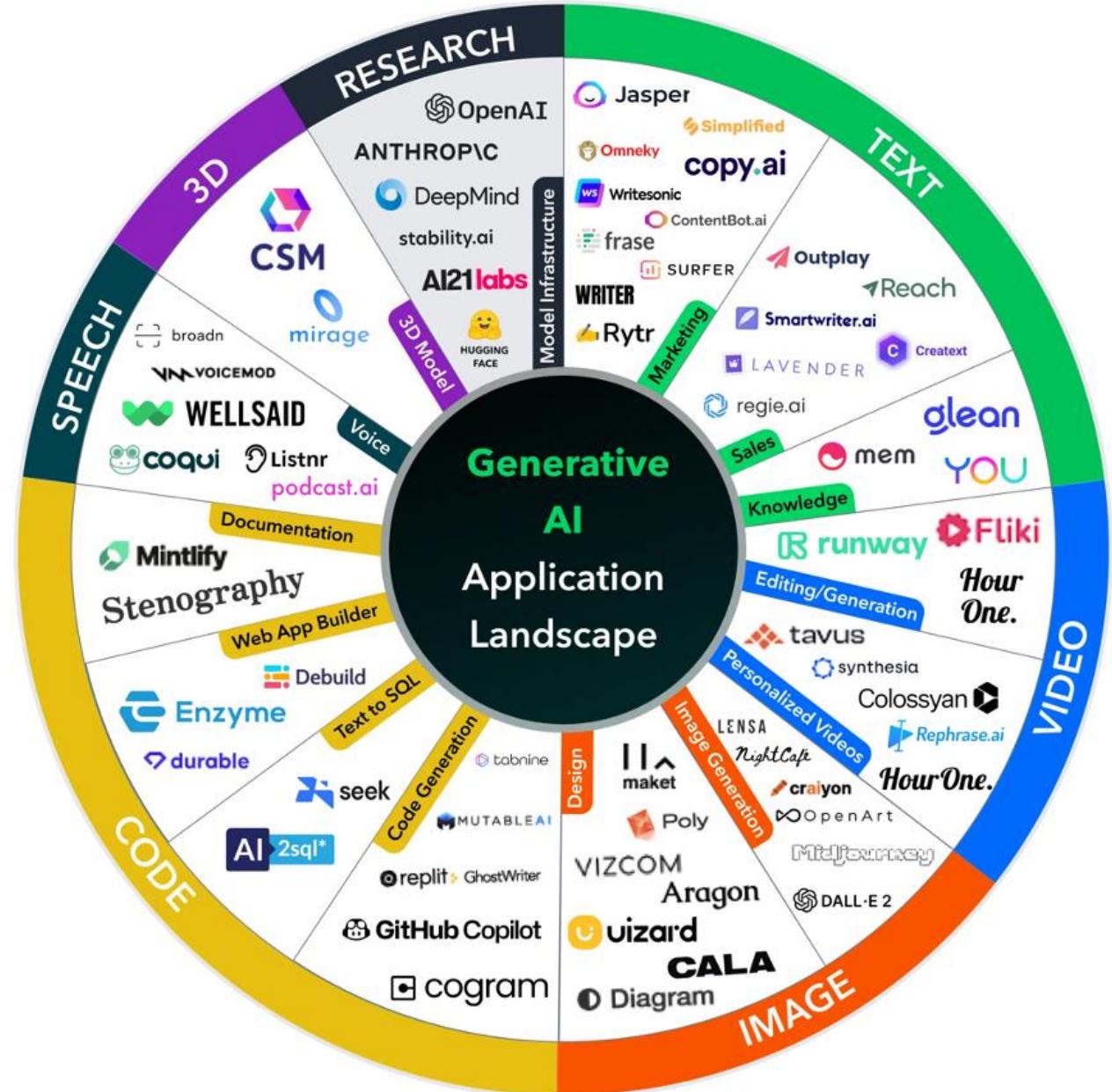
DATASCIENTIST
INSTRUCTOR
SPEAKER

Experienced data scientist, instructor and speaker,
AI consultant for the public and private sectors,
CEO & Co-founder of MADEBYAI and QuantMetric



AI business opportunities

- ref: <https://www.rapidops.com/blog/generative-ai-tools/>
 - ref: <https://medium.com/@stanfordgseit/a-new-class-of-ai-tools-9055131bfc53>



The Artificial Creativity Landscape



Linguistic Creativity

ALL-Purpose Text Generation



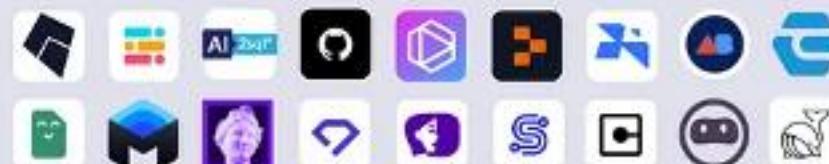
Marketing & Sales Copy



Text Optimization



Coding & Web Development



Musical Creativity

Sound & Music Generation

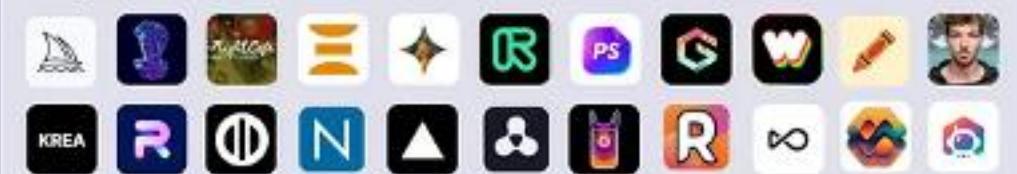


Voice Synthesis



Visual & Artistic Creativity

Image Generation



Video Generation



Design

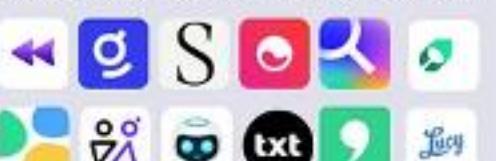


Scientific Creativity



Other

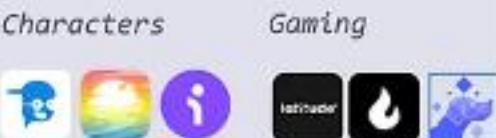
Knowledge Management & Search



Customer Support & Automation



Characters



Gaming



Erotica

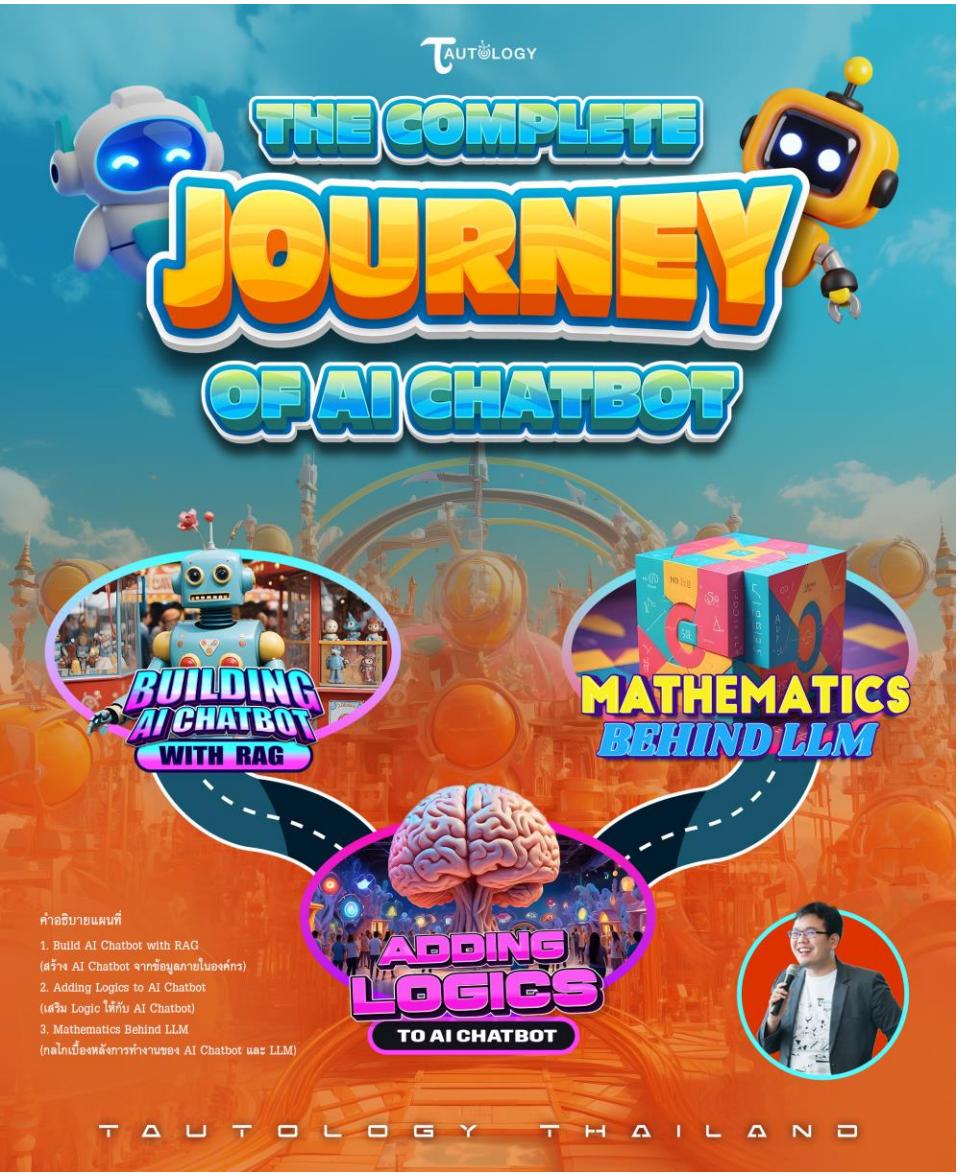
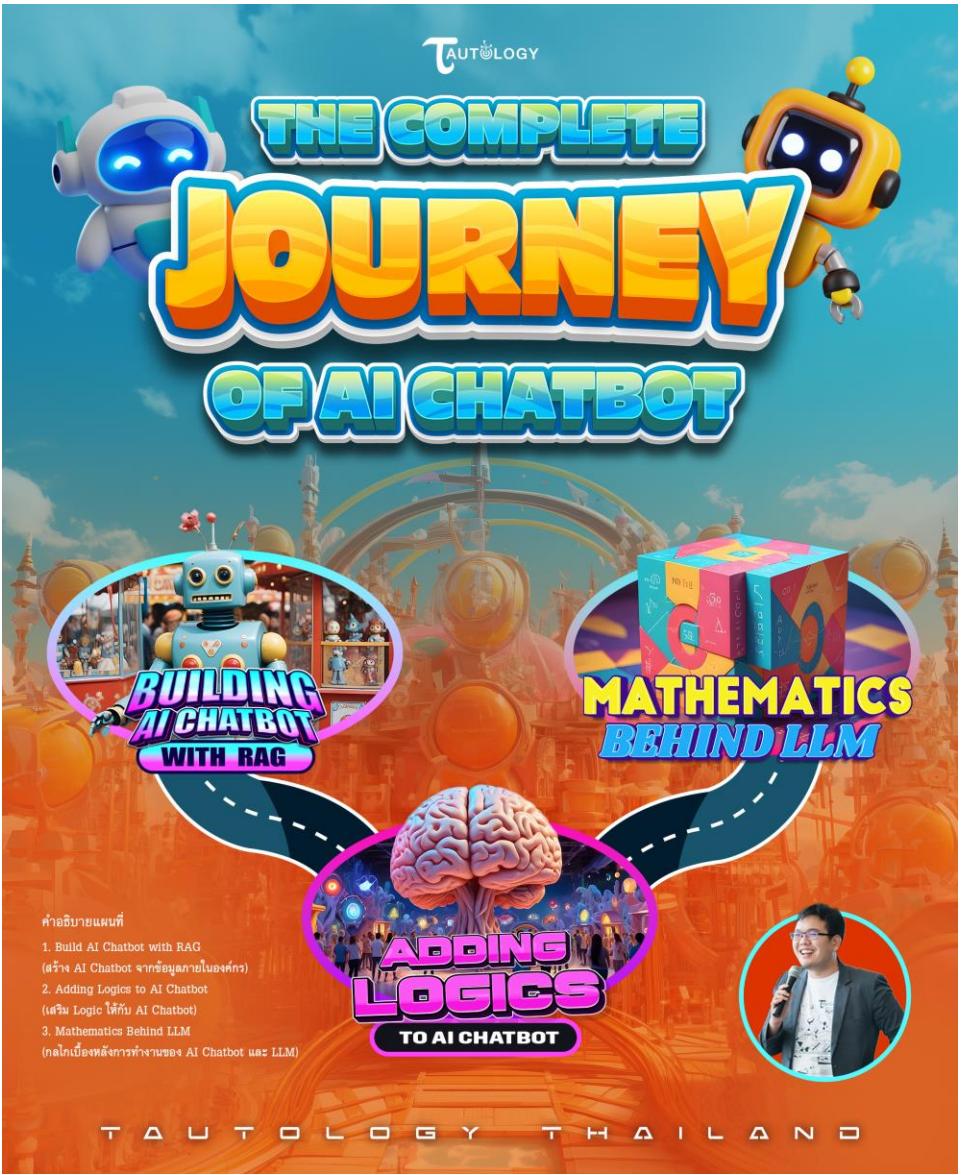


Market Intelligence





The more you
understand about AI, the
more successful you
become.





Krin Chinprasatsak

เพื่อน 975 คน



+ เพิ่มลงในสตอรี่

แก้ไขโปรไฟล์



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<https://madebyai.io/register/>

Agenda

- Setting up chatbot
- Instruction prompting
- Intent categorization
- Tree of thought
- Chain of thought
- Graph of thought
- Reflection
- Agentic workflow



Setting up AI chatbot

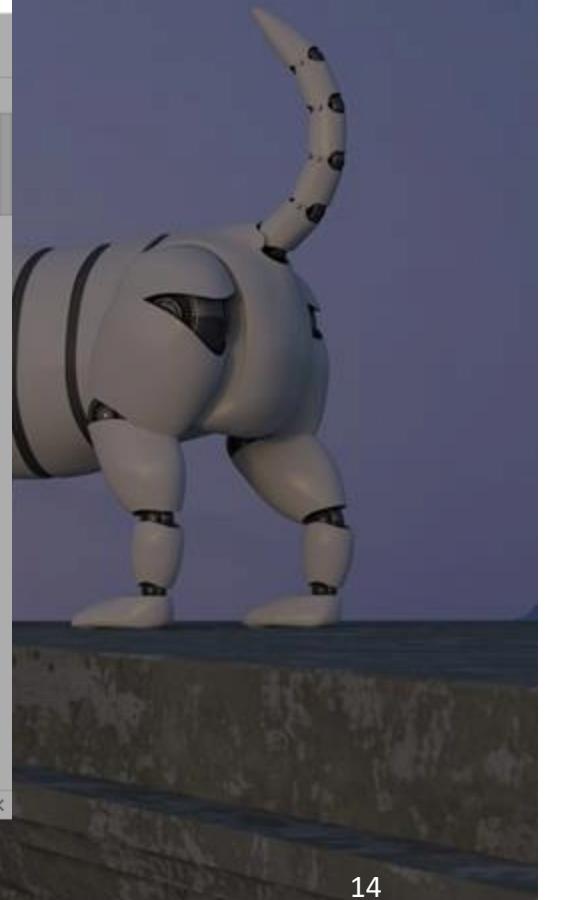
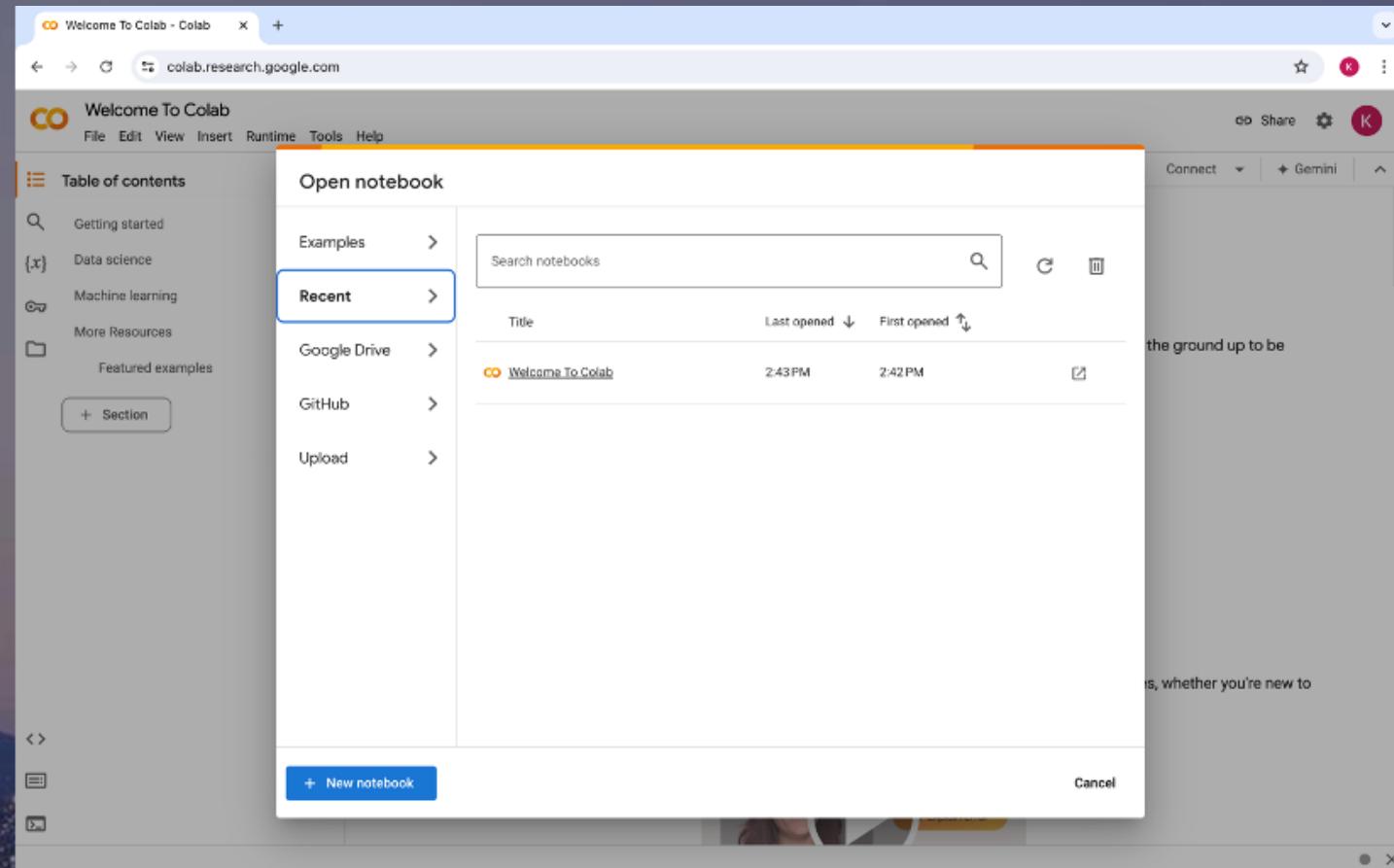


Setting up AI chatbot

- Google colab
- API keys
- API pricing
- Why no LLaMa?



Google colab (<https://colab.research.google.com/>)



API keys

way_to_get_API_keys.pdf



API pricing

- <https://openai.com/api/pricing/>
- <https://ai.google.dev/pricing>
- <https://www.anthropic.com/pricing#anthropic-api>



LARGE LANGUAGE MODEL
VS
SMALL LANGUAGE MODEL

Why not LLaMa?

405B requires 8xH100

8xH100 = \$64/hour

= \$1536/day

= \$46080/month

≈ 1.7 ล้านบาท/เดือน



Instruction prompting





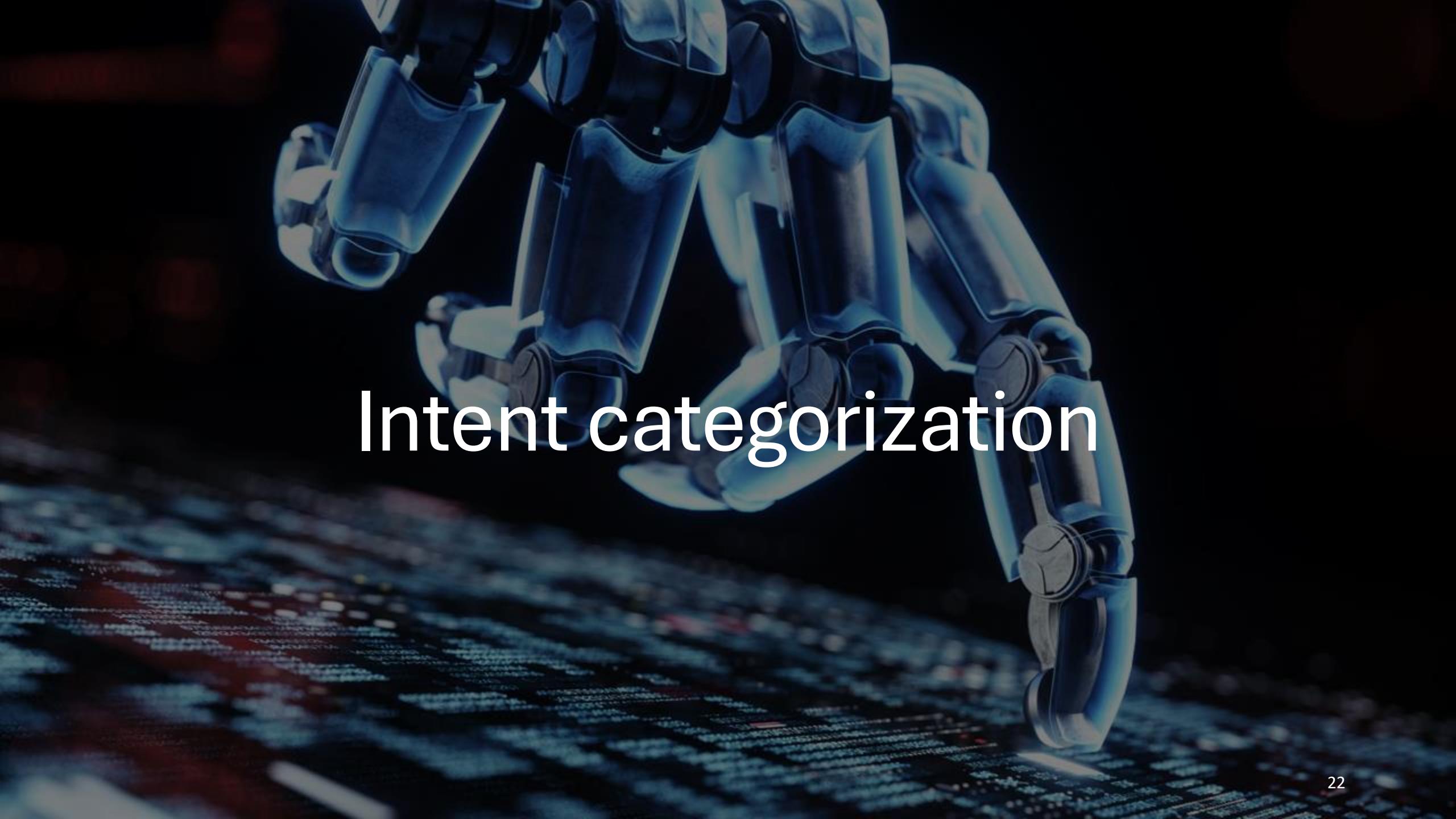
Q: What is instruction prompting?

A: Instruction prompting involves providing a language model with explicit instruction or context to guide its response. This approach helps shape the model's output in a more controlled and specific manner compared to free-form queries.

Instruction prompting

Good_vs_Bad_instruction_ChatGPT.ipynb
Good_vs_Bad_instruction_Gemini.ipynb
Good_vs_Bad_instruction_Claude.ipynb





Intent categorization

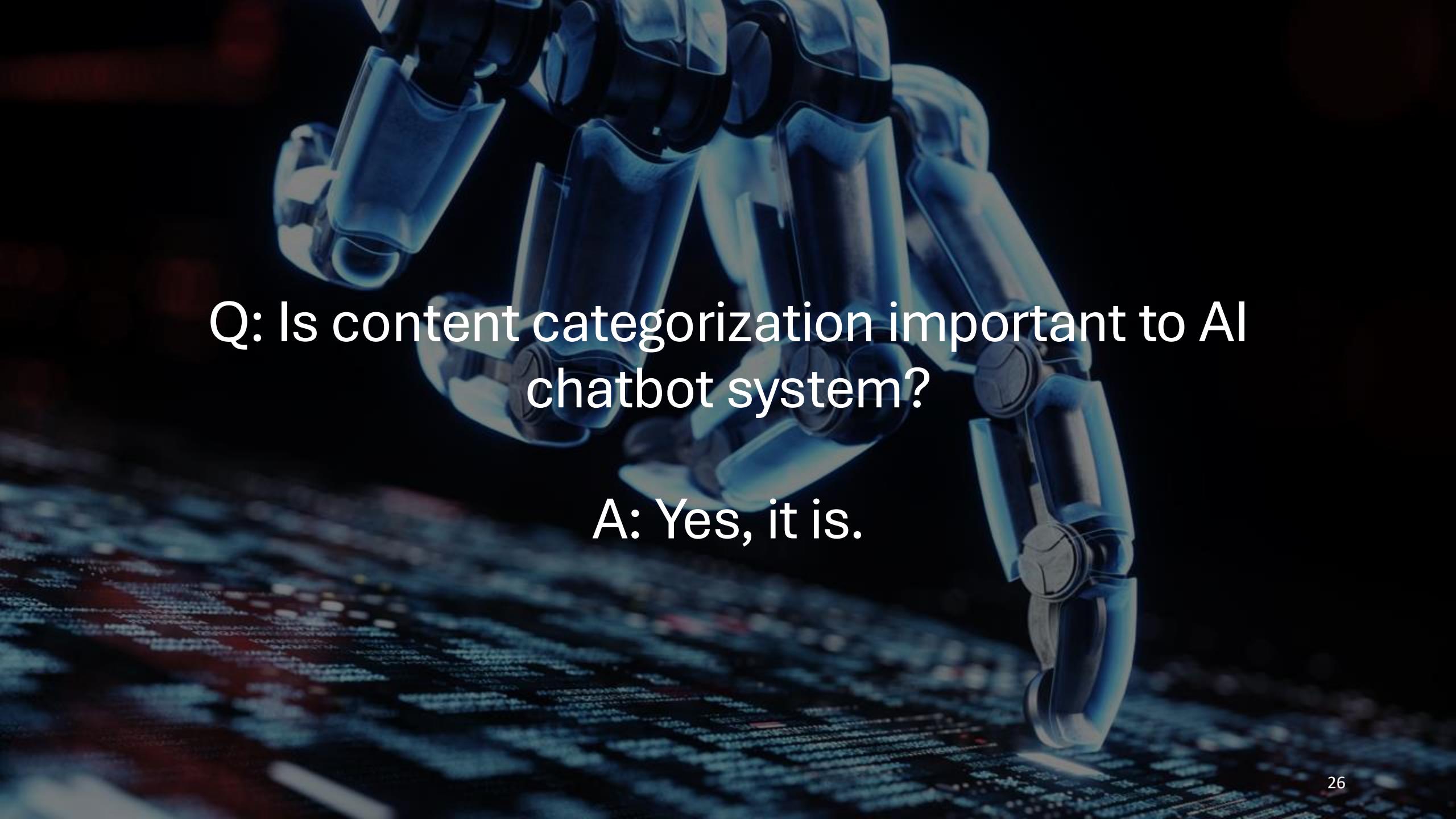
Intent categorization

- AI chatbot system
- Is content categorization important to AI chatbot system?
- Does ChatGPT has intent categorization?
- Should we implement new AI chatbot to deal with new intent?
- Should we have new instruction prompting for new thought?
- Drawback of ChatGPT (in the aspect of intent categorization)
- Ways to implement intent categorization
- What is the difference between each way?

AI chatbot system

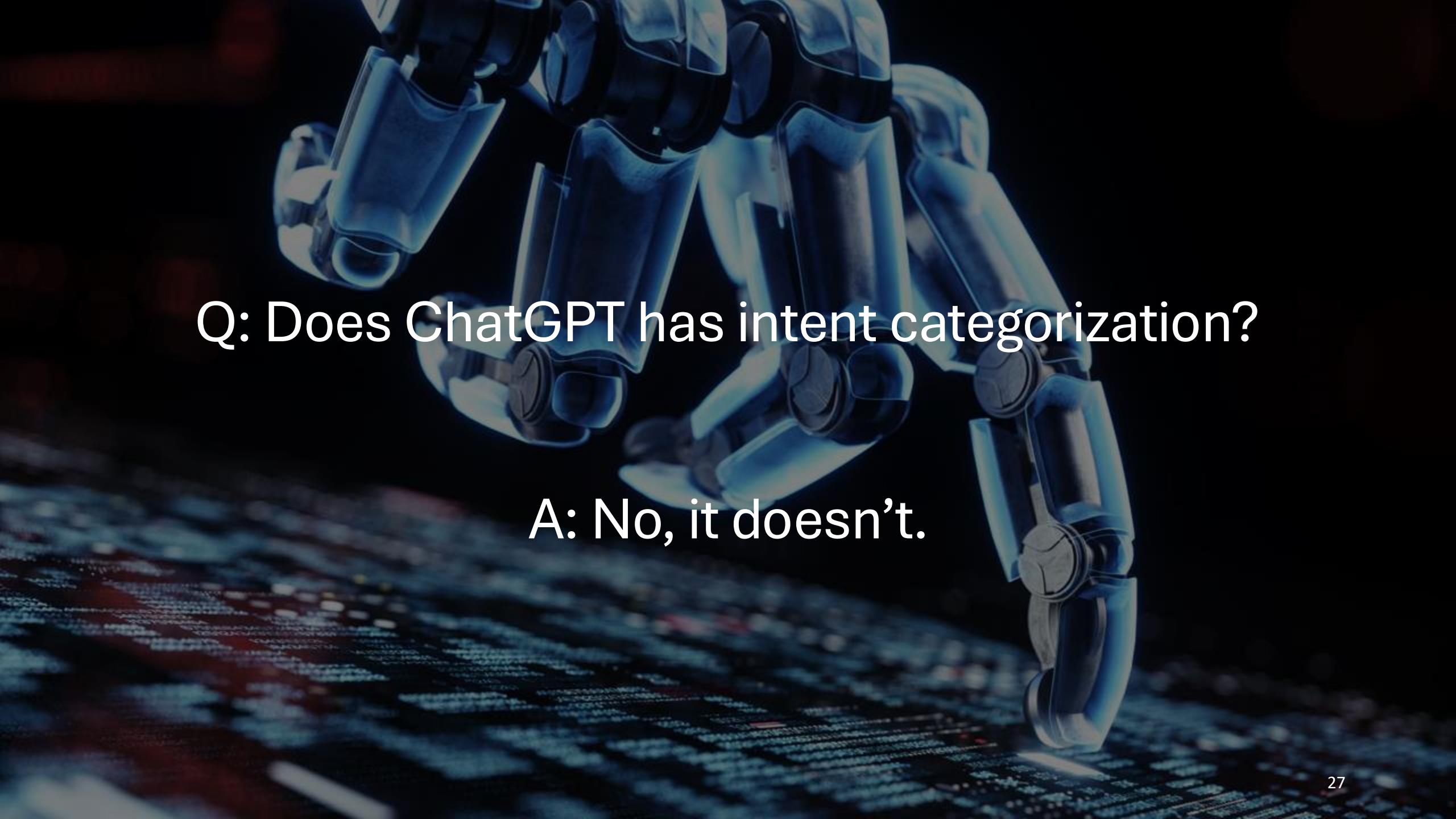


AI chatbot system



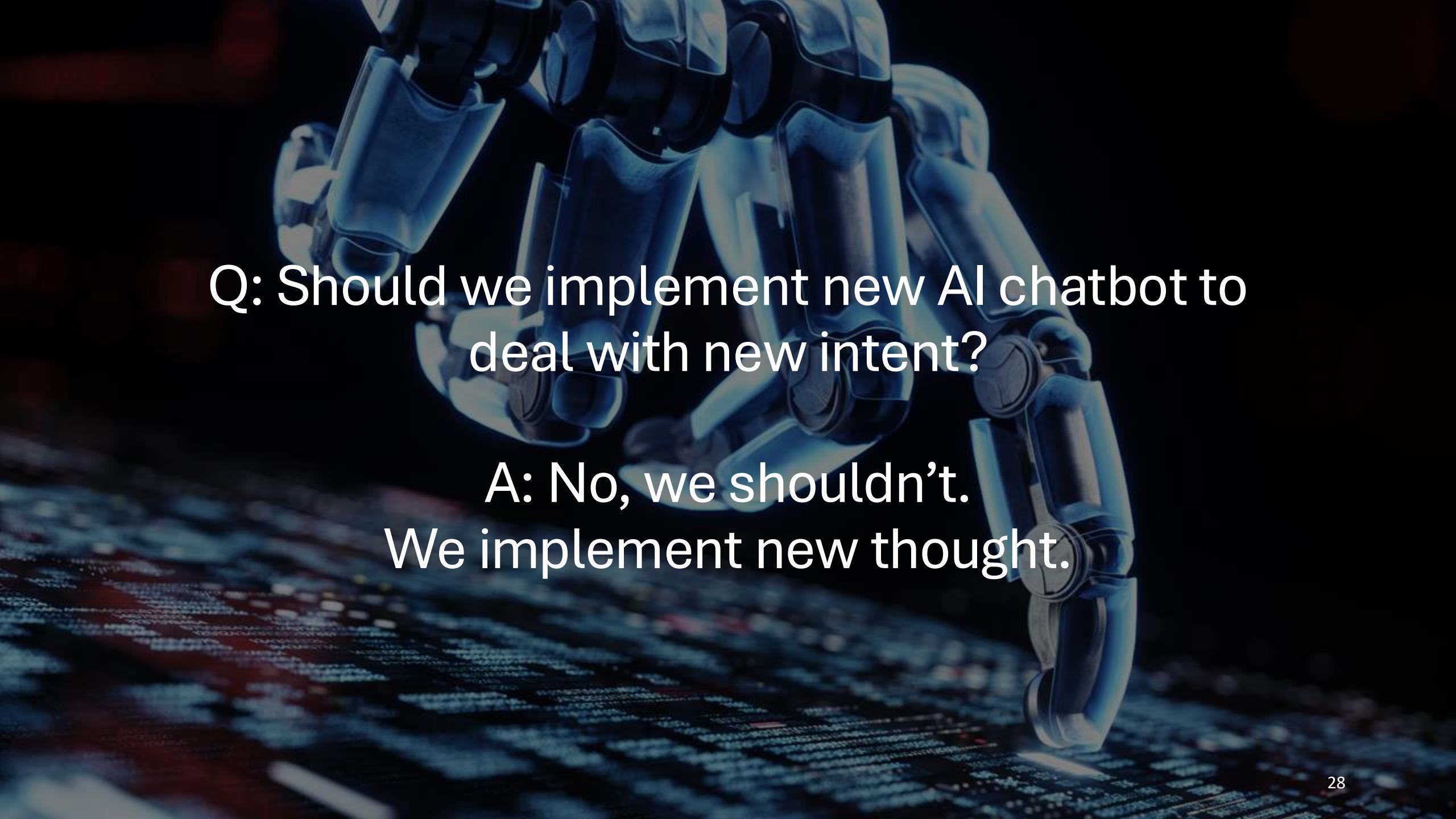
Q: Is content categorization important to AI chatbot system?

A: Yes, it is.



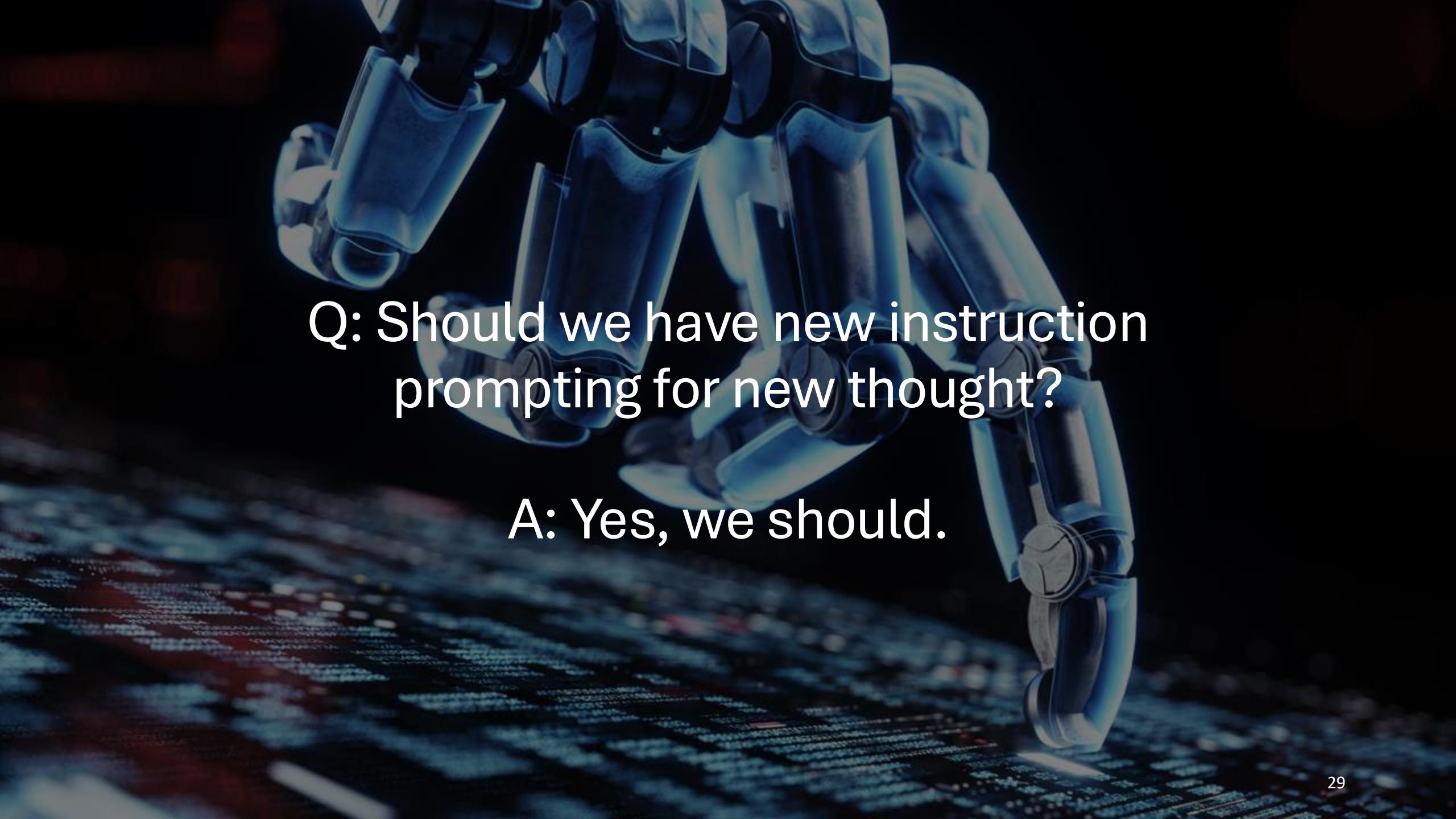
Q: Does ChatGPT has intent categorization?

A: No, it doesn't.



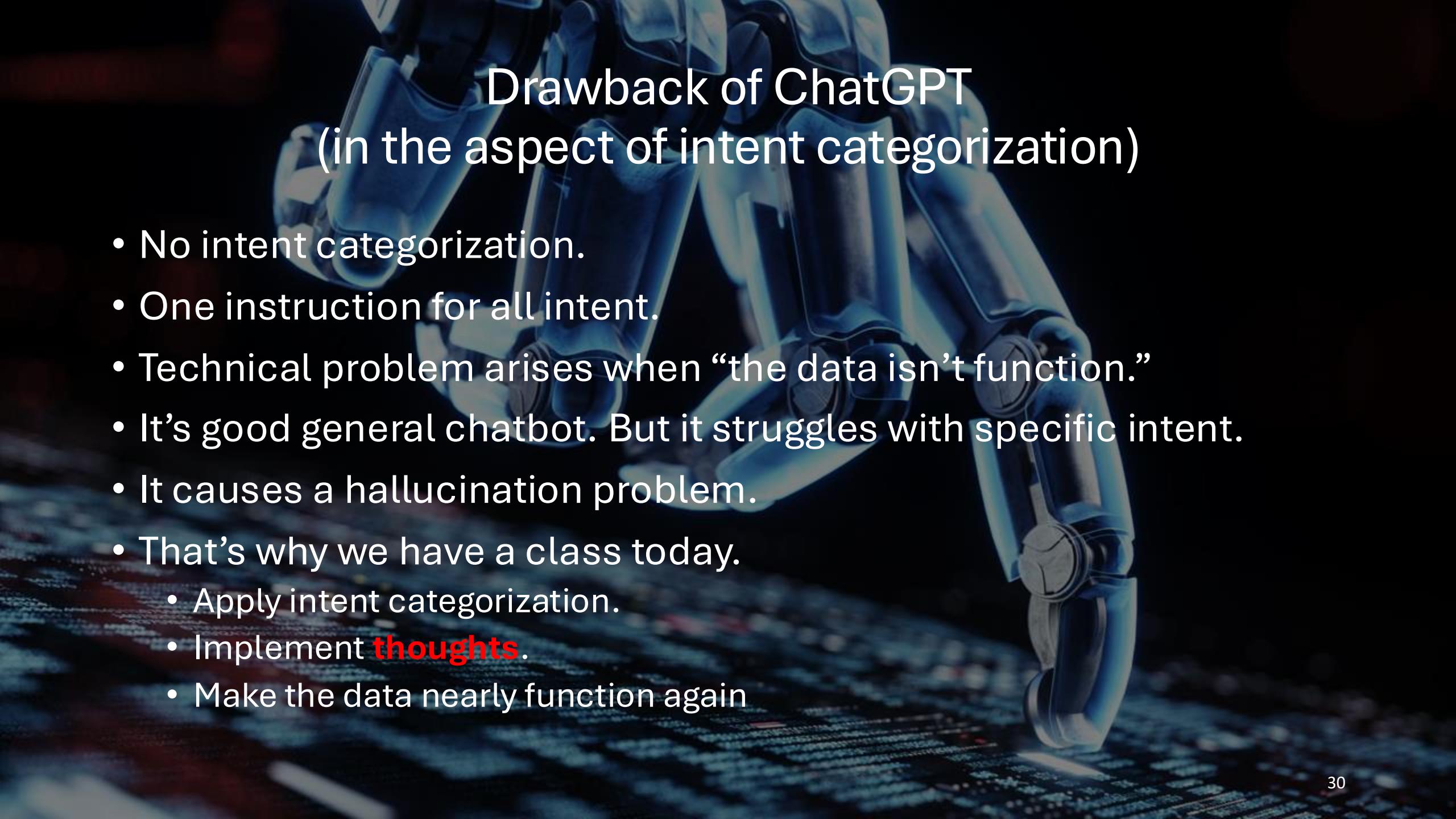
Q: Should we implement new AI chatbot to deal with new intent?

A: No, we shouldn't.
We implement new thought.



Q: Should we have new instruction
prompting for new thought?

A: Yes, we should.



Drawback of ChatGPT (in the aspect of intent categorization)

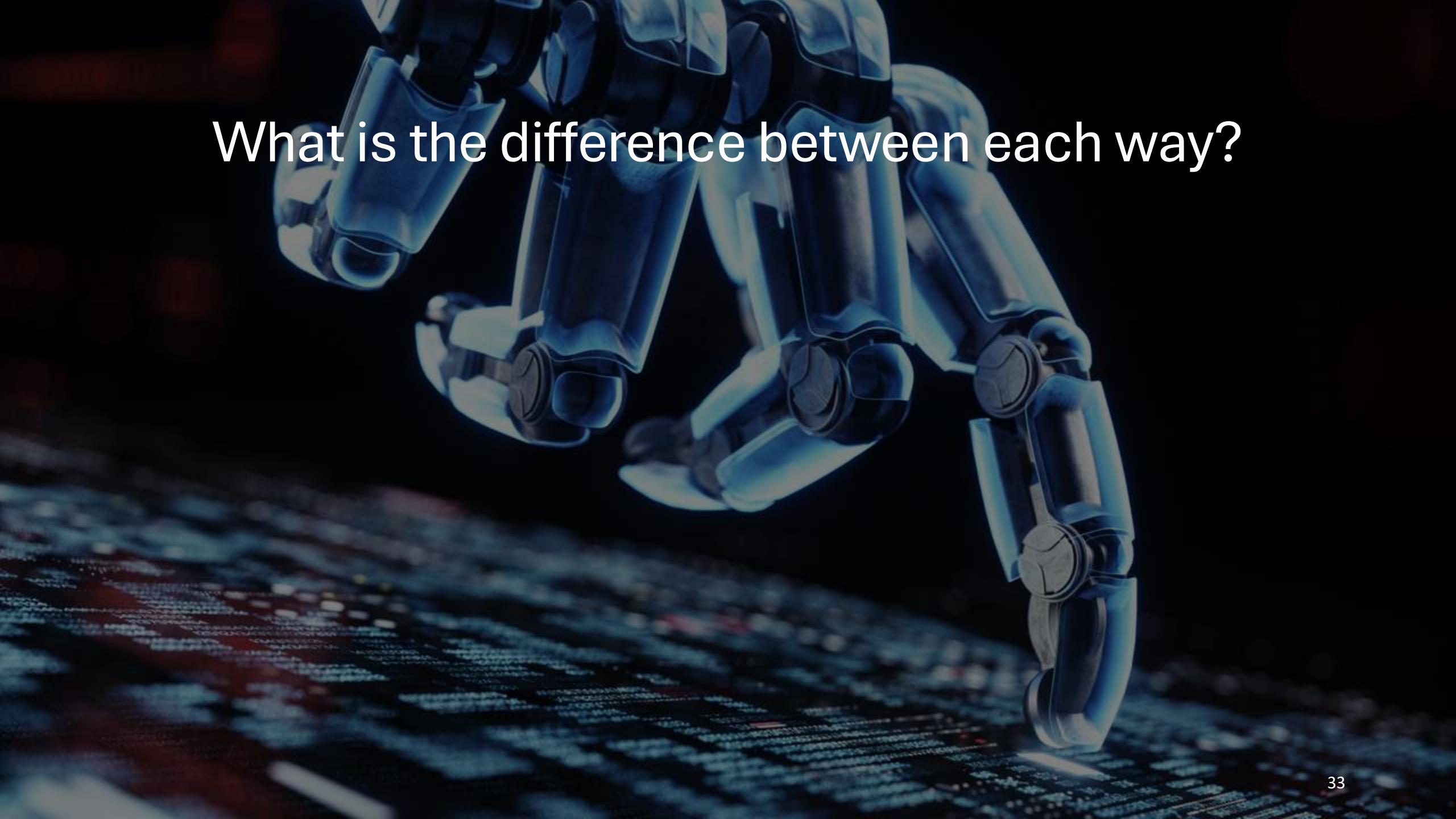
- No intent categorization.
- One instruction for all intent.
- Technical problem arises when “the data isn’t function.”
- It’s good general chatbot. But it struggles with specific intent.
- It causes a hallucination problem.
- That’s why we have a class today.
 - Apply intent categorization.
 - Implement **thoughts**.
 - Make the data nearly function again

Way to implement intent categorization

- Supervised Learning
- Natural Language Understanding (NLU)
 - create intent categorizer with thought and apply instruction prompting
- LLM + RAG

Way to implement intent categorization

- Intent_Categorization_NLU_ChatGPT.ipynb
- Intent_Categorization_NLU_Gemini.ipynb
- Intent_Categorization_NLU_Claude.ipynb



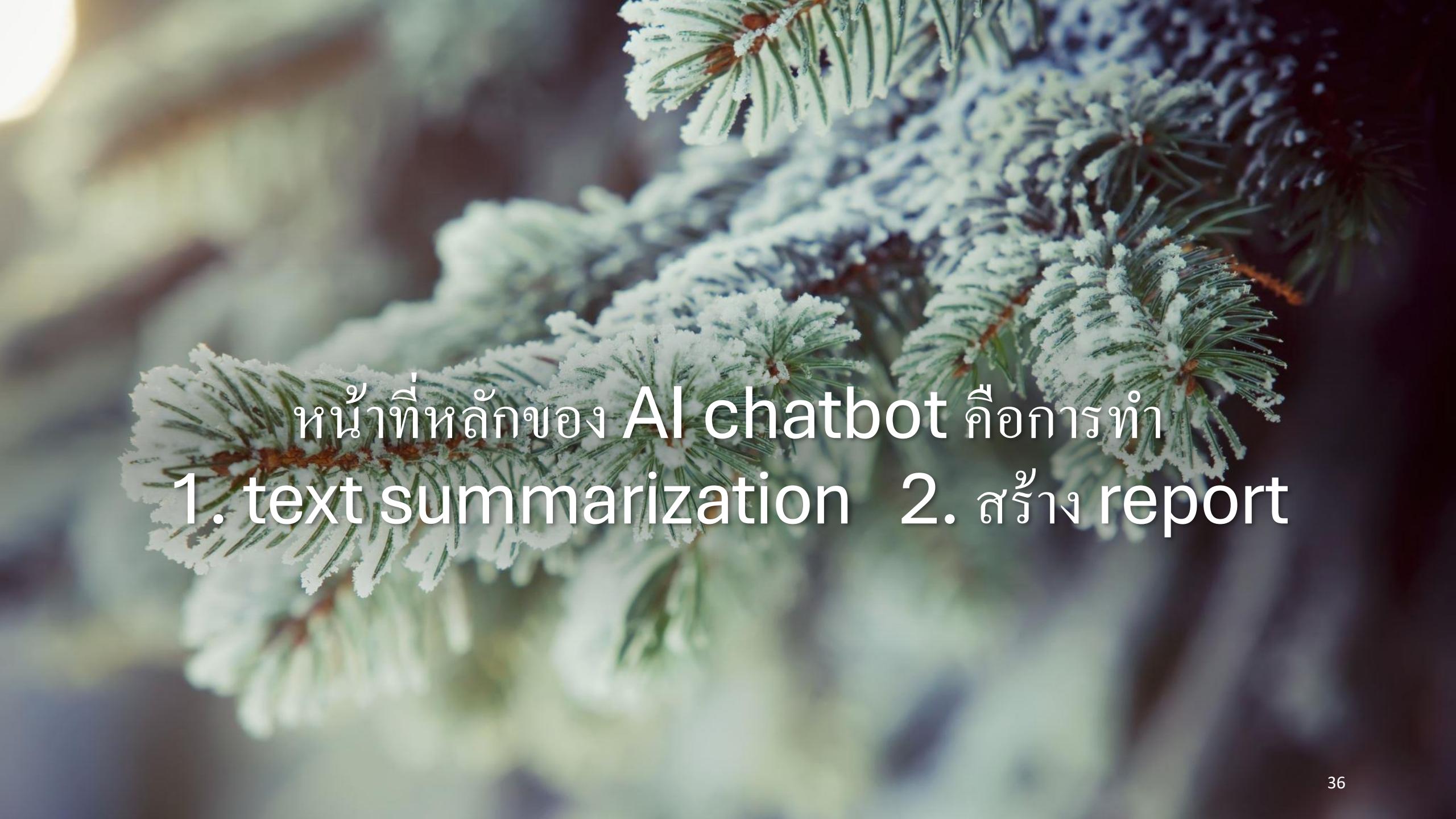
What is the difference between each way?



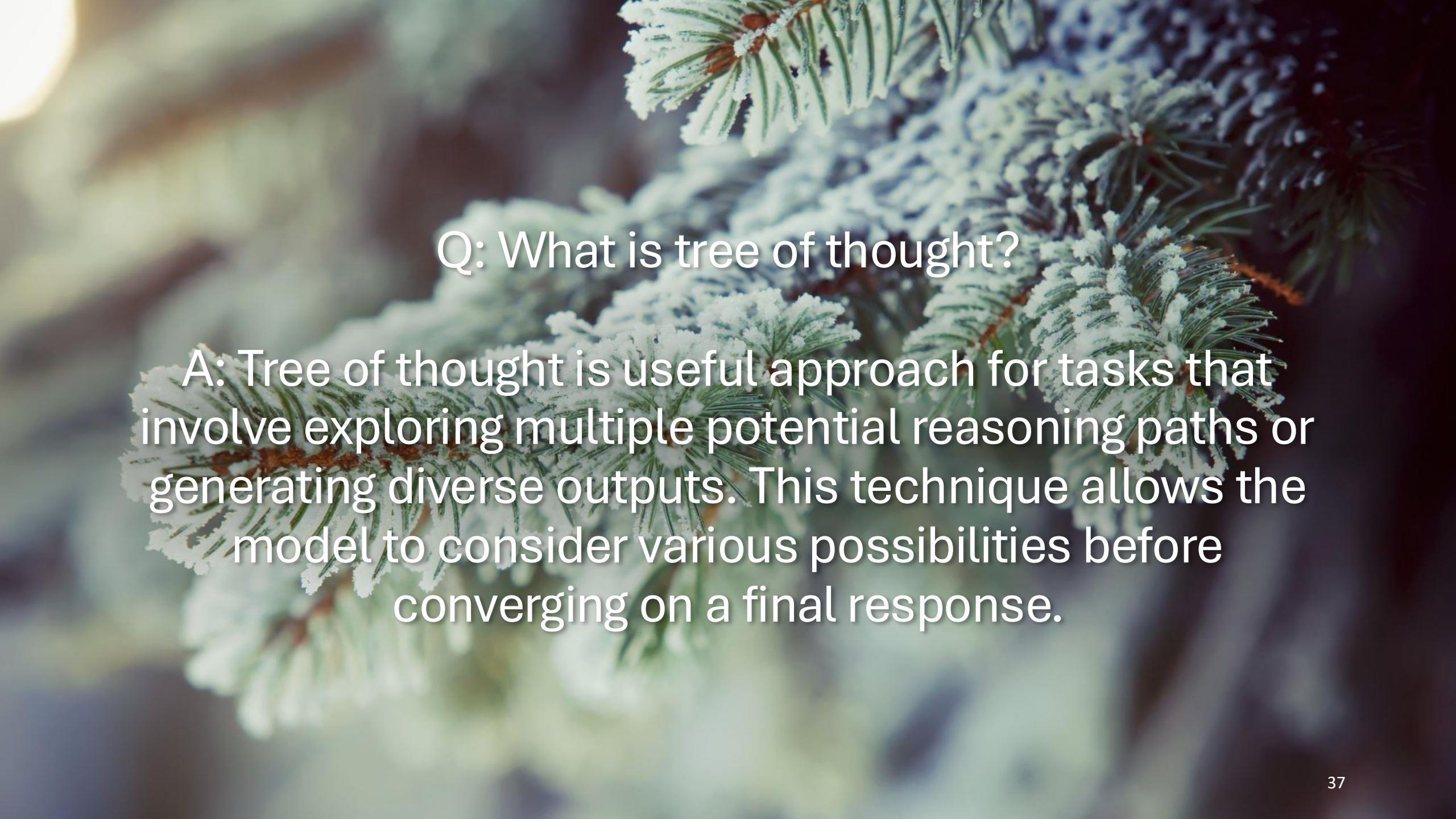
Tree of thought



ความรอบคอบถือเป็นส่วนหนึ่งของความฉลาดหรือไม่?



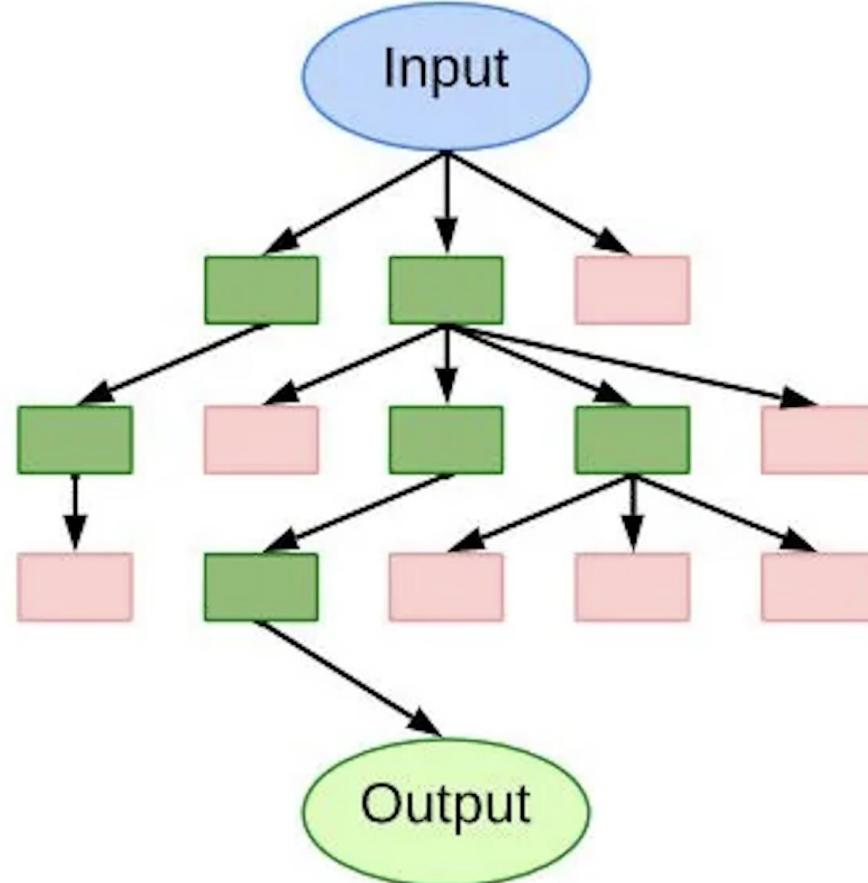
หน้าที่หลักของ AI chatbot คือการทำ
1. text summarization 2. สร้าง report



Q: What is tree of thought?

A: Tree of thought is useful approach for tasks that involve exploring multiple potential reasoning paths or generating diverse outputs. This technique allows the model to consider various possibilities before converging on a final response.

Tree of thought



Example of problem

What are the potential impacts of Chinese EV car on Japanese fuel car industry?

What are the potential impacts of Chinese price war on Thailand economy?

What are the potential impacts of climate change on global agriculture?

<https://chatgpt.com/share/f0a534bf-dcf5-4e23-b20f-e77e47648d3c>



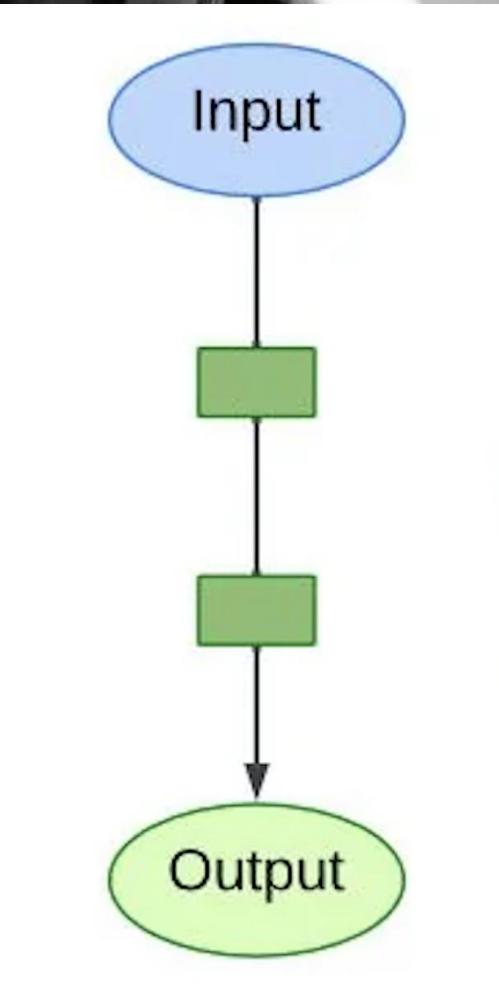
Tree of thought

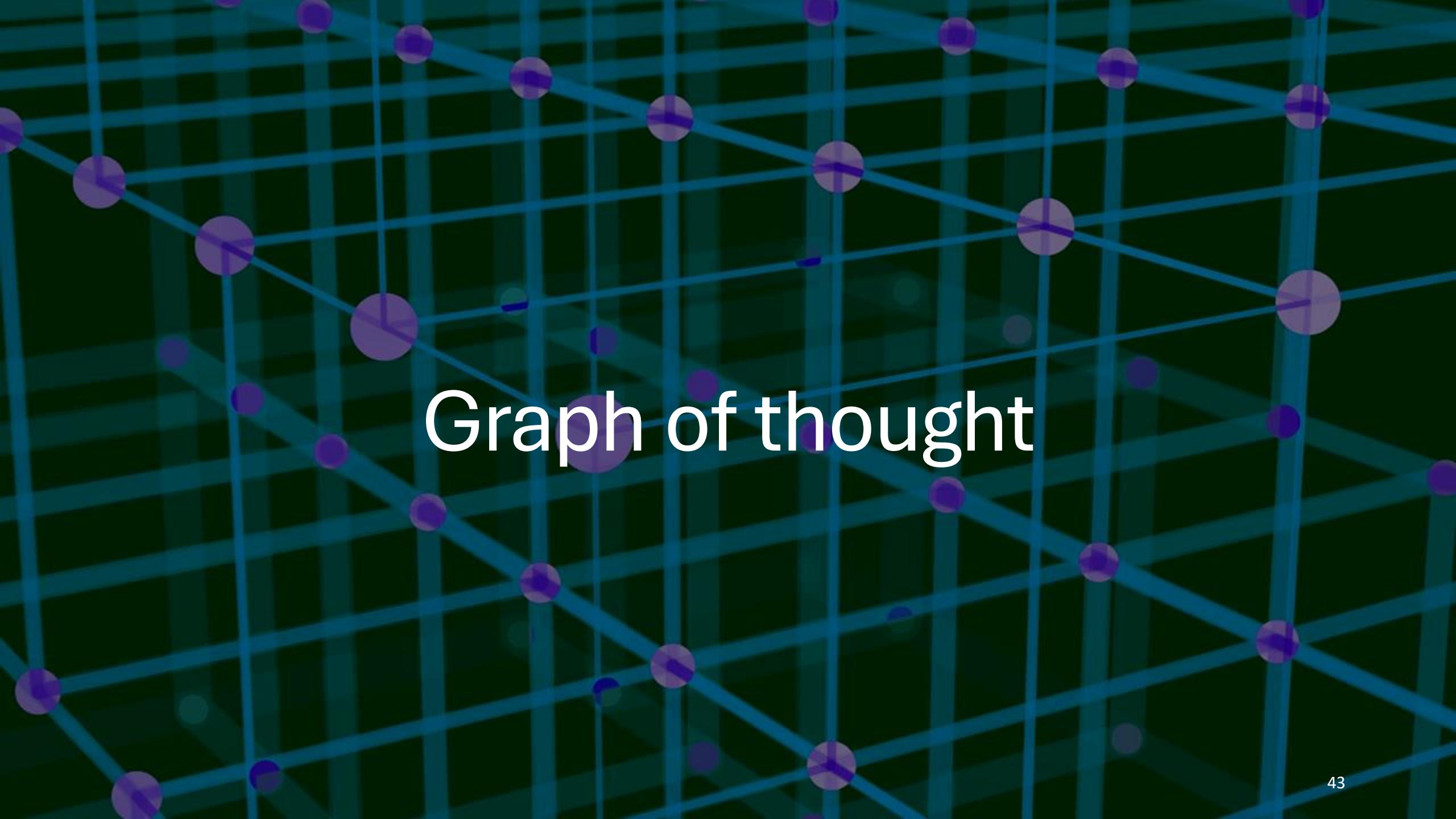
TOT_ChatGPT.ipynb
TOT_Gemini.ipynb
TOT_Claude.ipynb



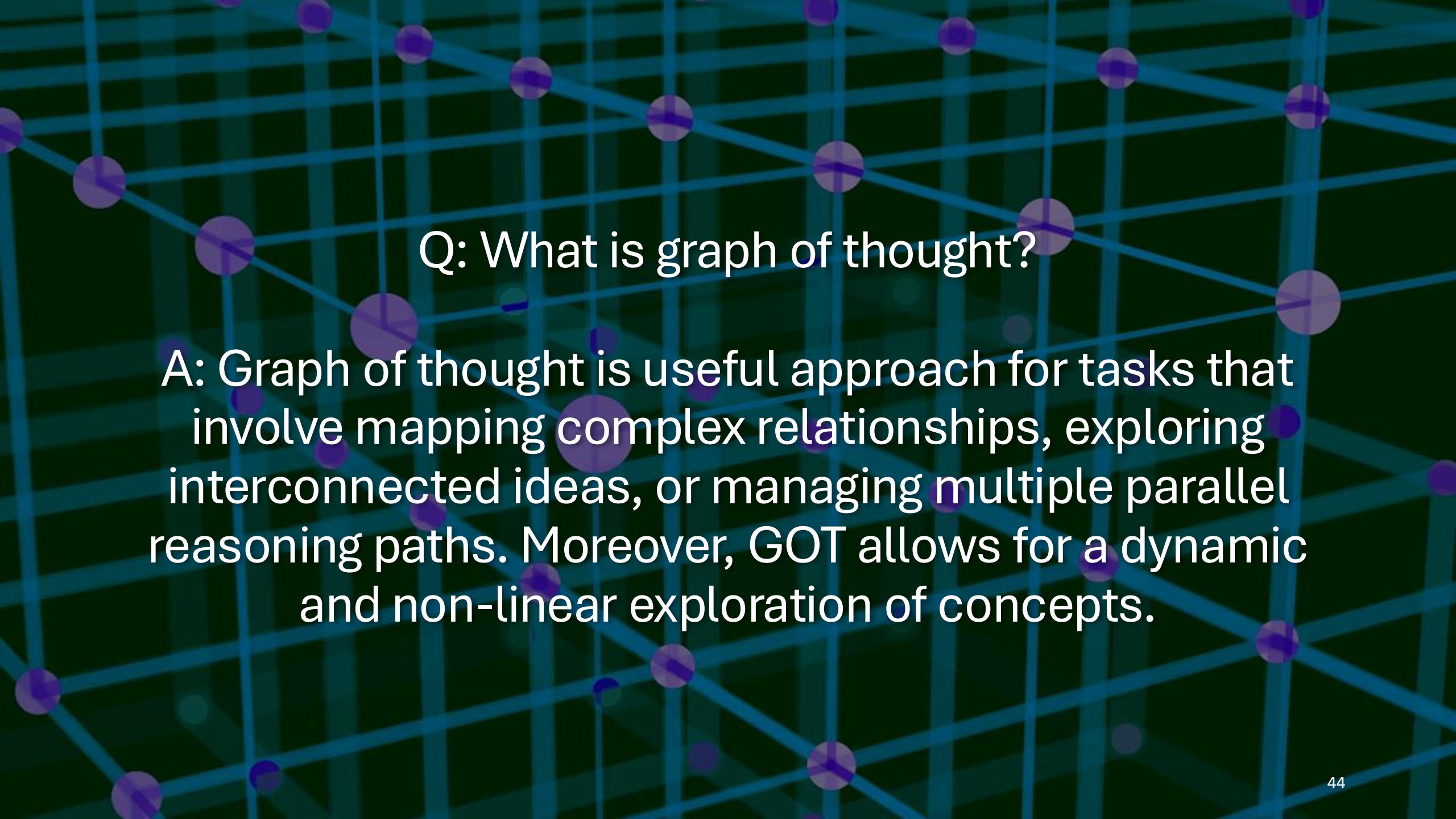
Chain of thought

Chain of thought





Graph of thought



Q: What is graph of thought?

A: Graph of thought is useful approach for tasks that involve mapping complex relationships, exploring interconnected ideas, or managing multiple parallel reasoning paths. Moreover, GOT allows for a dynamic and non-linear exploration of concepts.

Example of problem

What are the potential impacts of Chinese EV car on Japanese fuel car industry?

What are the potential impacts of Chinese price war on Thailand economy?

What are the potential impacts of climate change on global agriculture?

<https://chatgpt.com/share/c533d554-ad2e-4b8c-9000-6d8fb40f207d>

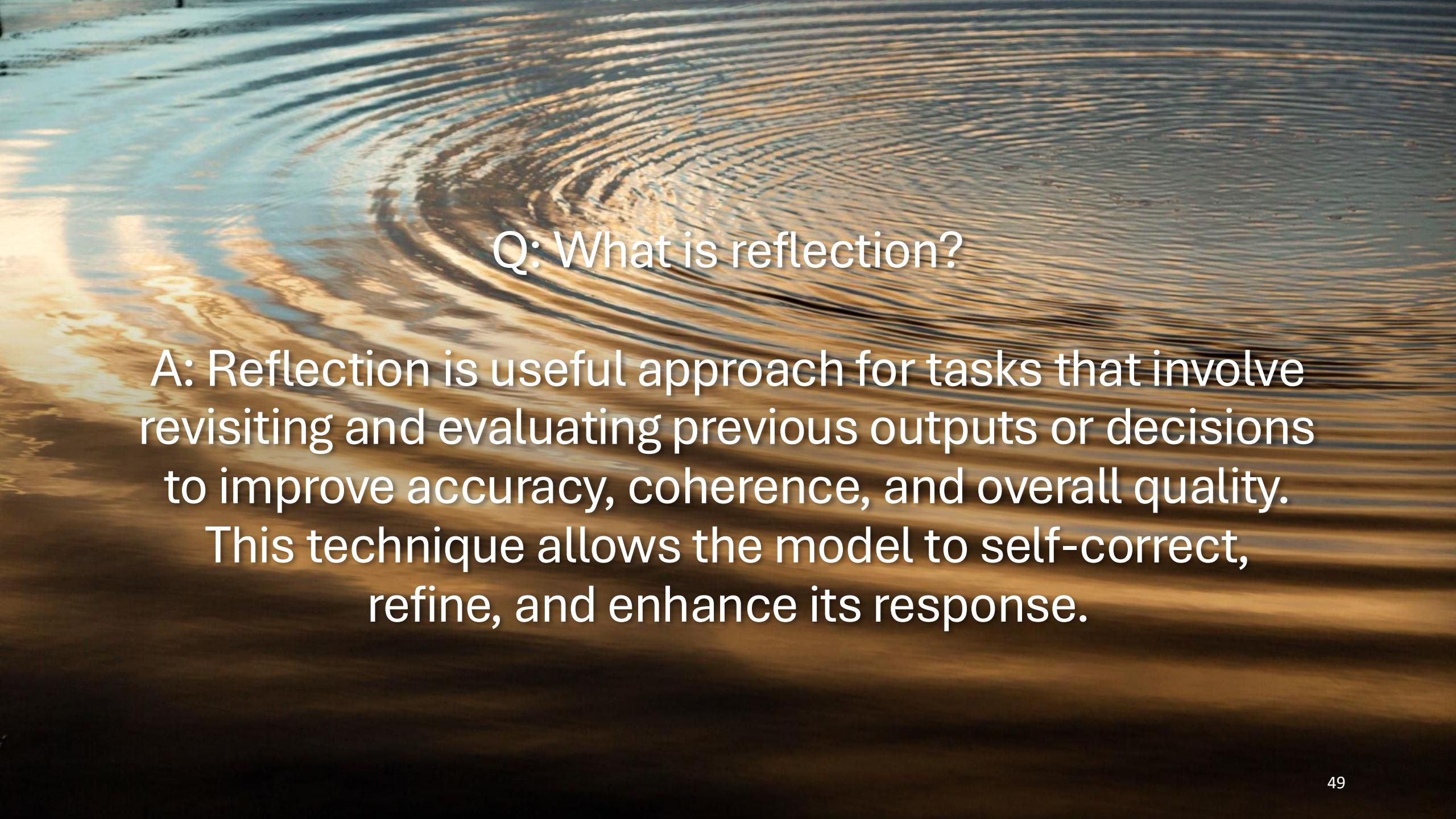
Graph of thought



Reflection

Reflection



The background of the slide is a close-up photograph of a body of water, likely a lake or river, at sunset. The water's surface is filled with concentric ripples and small waves. The light from the setting sun is reflected off the water, creating a warm, golden glow that transitions into cooler blues and purples in the deeper parts of the frame. The overall texture is slightly blurred, giving it a dreamlike or contemplative feel.

Q: What is reflection?

A: Reflection is useful approach for tasks that involve revisiting and evaluating previous outputs or decisions to improve accuracy, coherence, and overall quality. This technique allows the model to self-correct, refine, and enhance its response.

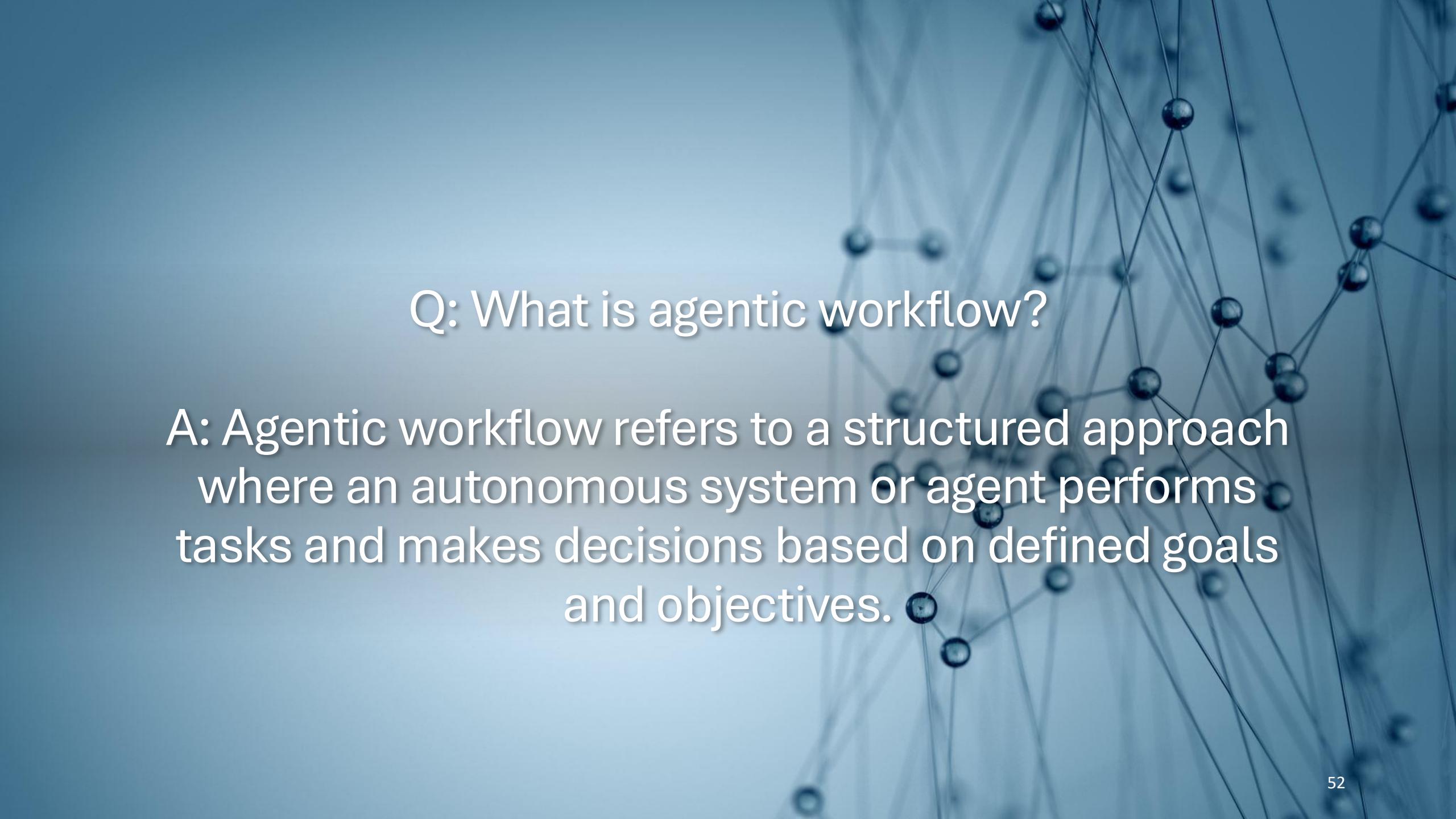
Reflection

Reflection_ChatGPT.ipynb

Reflection_Gemini.ipynb

Reflection_Claude.ipynb

Agentic workflow



Q: What is agentic workflow?

A: Agentic workflow refers to a structured approach where an autonomous system or agent performs tasks and makes decisions based on defined goals and objectives.

Agentic workflow

What's next for AI agentic workflows ft. Andrew Ng of AI Fund

Agentic Reasoning Design Patterns

1. Reflection
 - Self-Refine: Iterative Refinement with Self-Feedback, Madaan et al. (2023)
 - Reflexion: Language Agents with Verbal Reinforcement Learning, Shinn et al., (2023)
2. Tool use
 - Gorilla: Large Language Model Connected with Massive APIs, Patil et al. (2023)
 - MM-REACT: Prompting ChatGPT for Multimodal Reasoning and Action, Yang et al. (2023)
3. Planning
 - Chain-of-Thought Prompting Elicits Reasoning in Large Language Models, Wei et al., (2022)
 - HuggingGPT: Solving AI Tasks with ChatGPT and its Friends in Hugging Face, Shen et al. (2023)
4. Multi-agent collaboration
 - Communicative Agents for Software Development, Qian et al., (2023)
 - AutoGen: Enabling Next-Gen LLM Applications via Multi-Agent Conversation, Wu et al. (2023)

Ng

▶ ▶ 🔍 10:58 / 13:39

• II CC HD

Agentic workflow

Agentic_workflow_ChatGPT.ipynb

Agentic_workflow_Gemini.ipynb

Agentic_workflow_Claude.ipynb



THANK YOU