

# Overview of Agentic AI Systems

Miguel Otero Pedrido

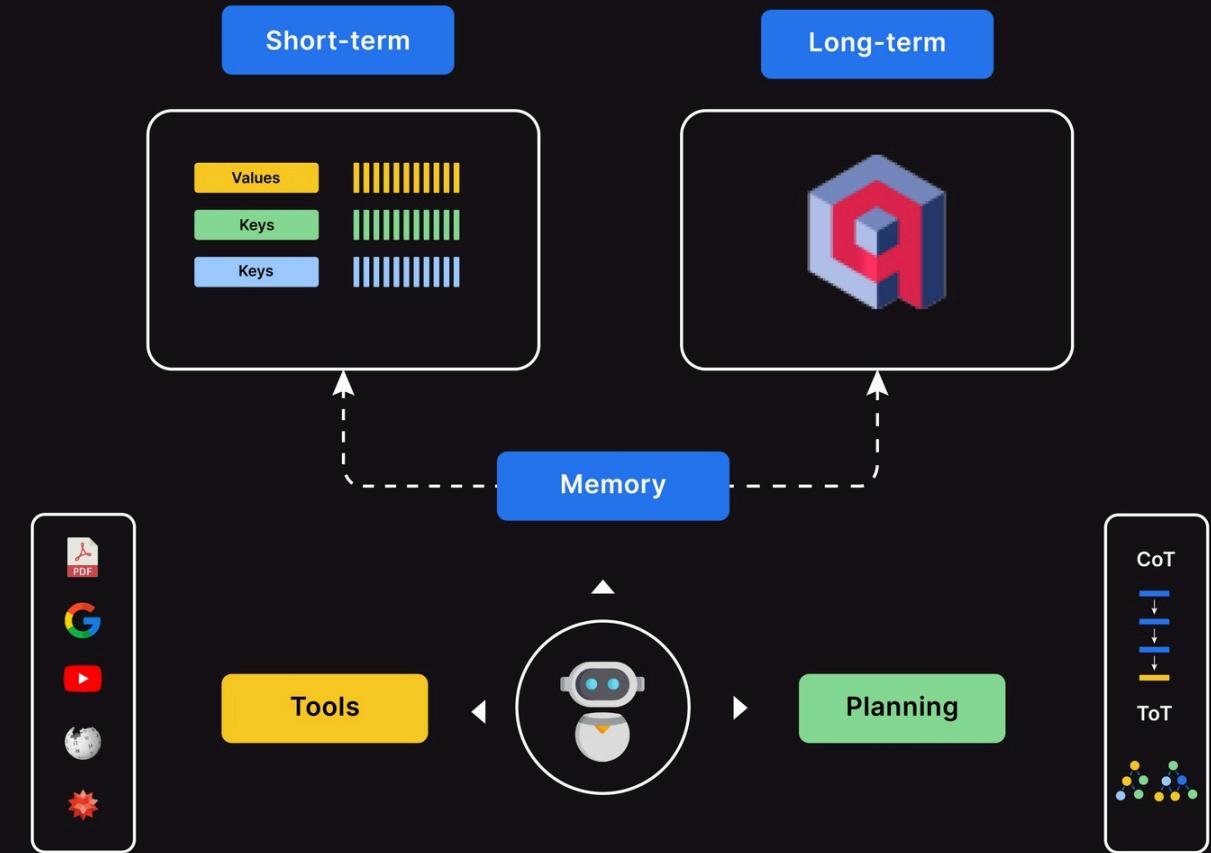
Senior ML / AI Engineer at Dressipi

Founder @ The Neural Maze



# What is an Agent?

- **LLM as the Brain**
  - The agent's core, enabling understanding, reasoning, and response generation.
- **Tooling**
  - Connects to external tools for enhanced functionality like retrieving data or automating actions.
- **Reasoning / Planning routines**
  - Executes tasks logically with a structured decision-making.
- **Memory Components**
  - Retains temporary task data (short-term) and persistent knowledge (long-term) for adaptability.

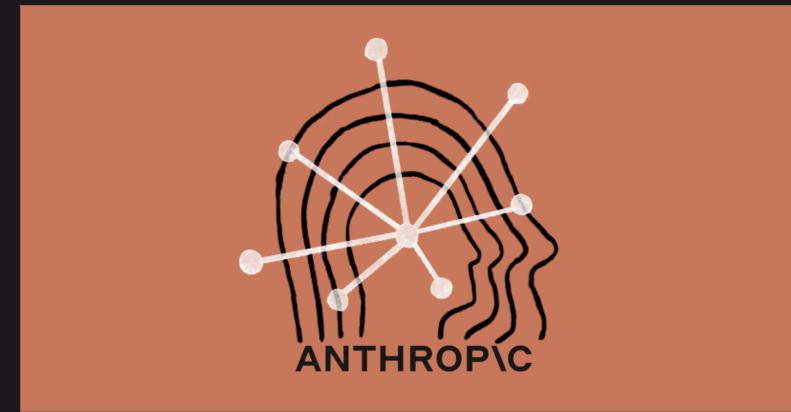
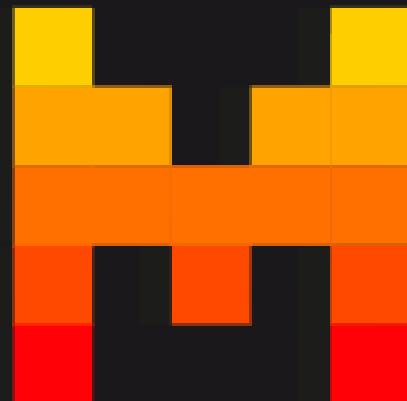


Source: <https://theneuralmaze.substack.com/>

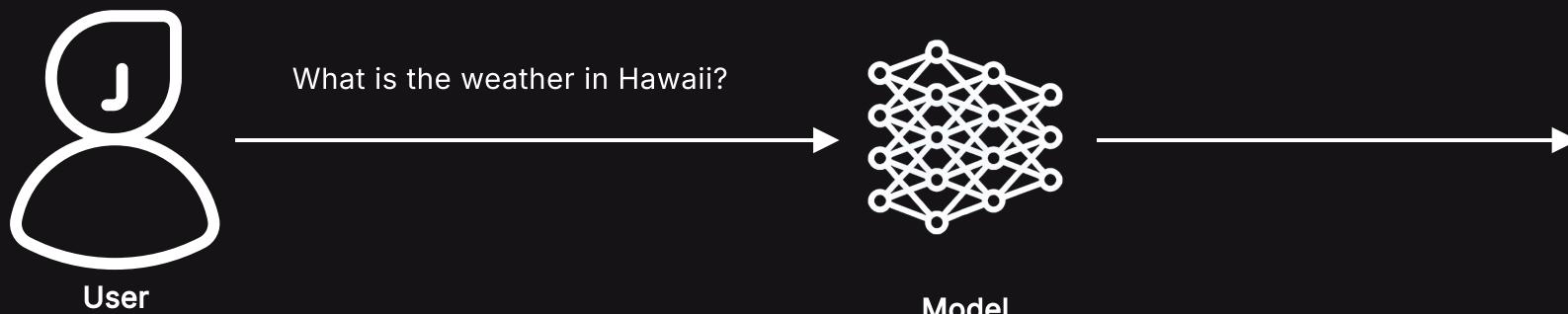
# LLM as the Agent's Brain



Gemini



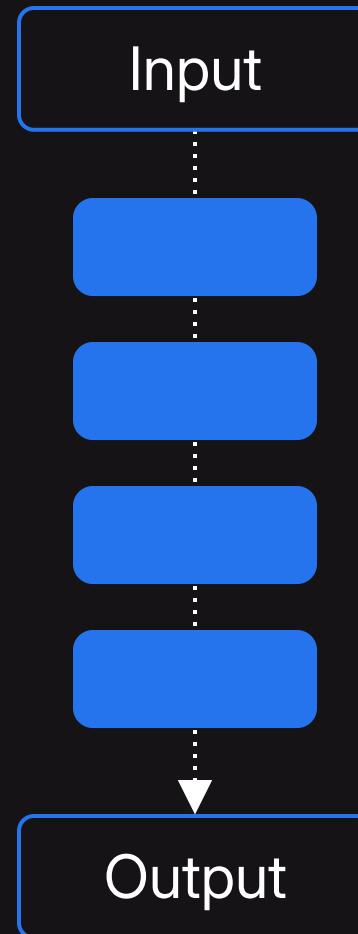
# Tools for Accessing the Outside World



```
AIMessage(  
    tool_calls=[{  
        name: "get_weather"  
        args: {  
            location:  
            "Hawaii",  
            },  
            id: "call_abc123",  
            type: "tool_call"  
        }]  
)
```

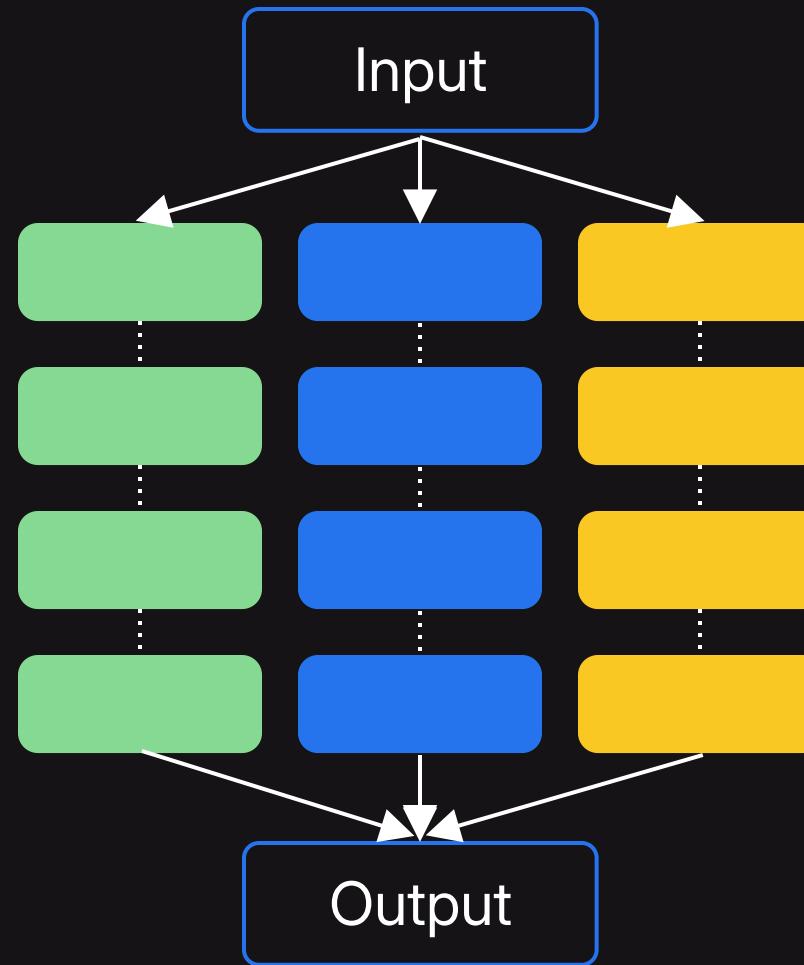
# Planning and Reasoning Heuristics

## CoT - Chain Of Thought



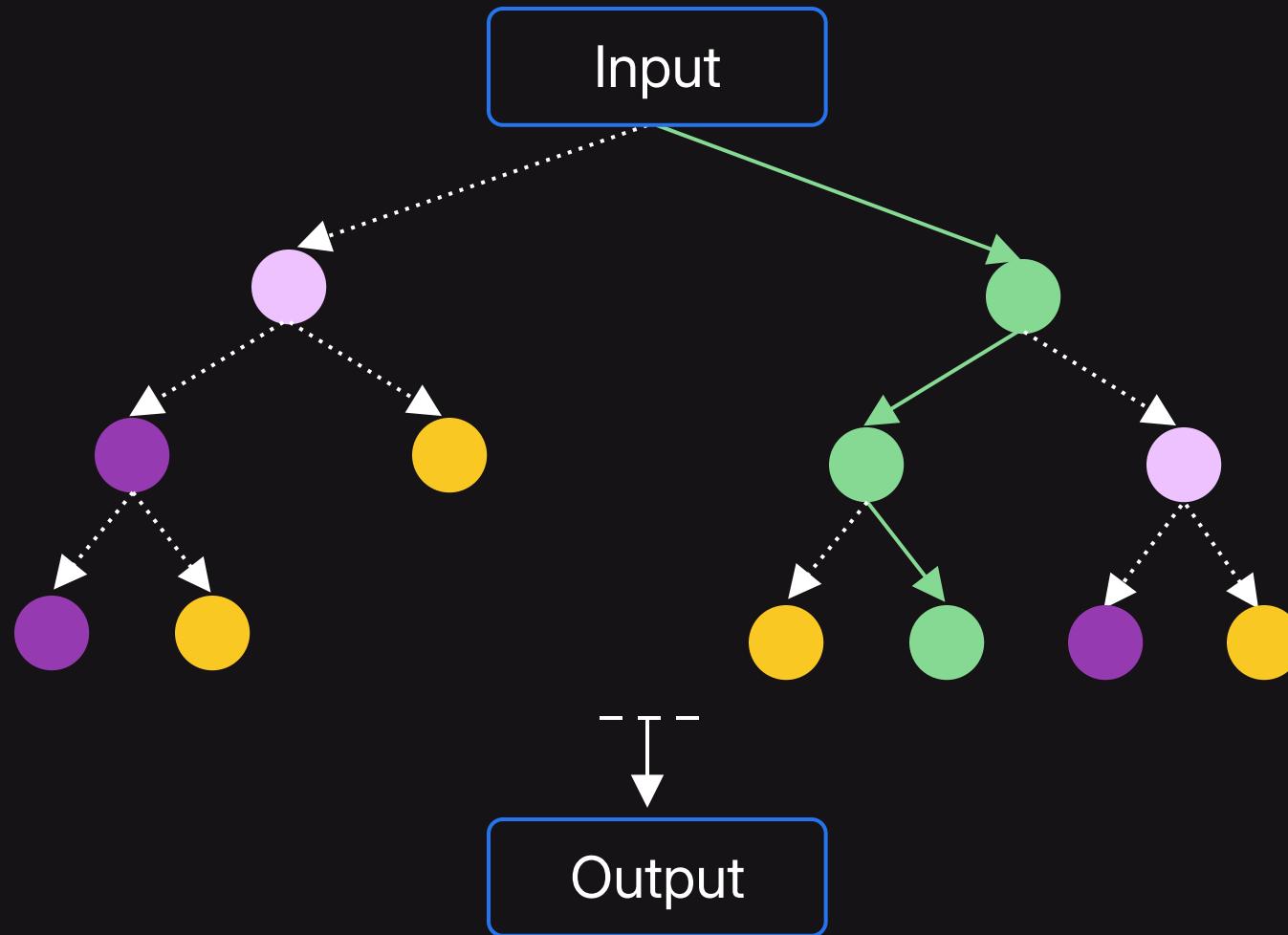
# Planning and Reasoning Heuristics

## COT-SC - Chain of Thought Self Consistency



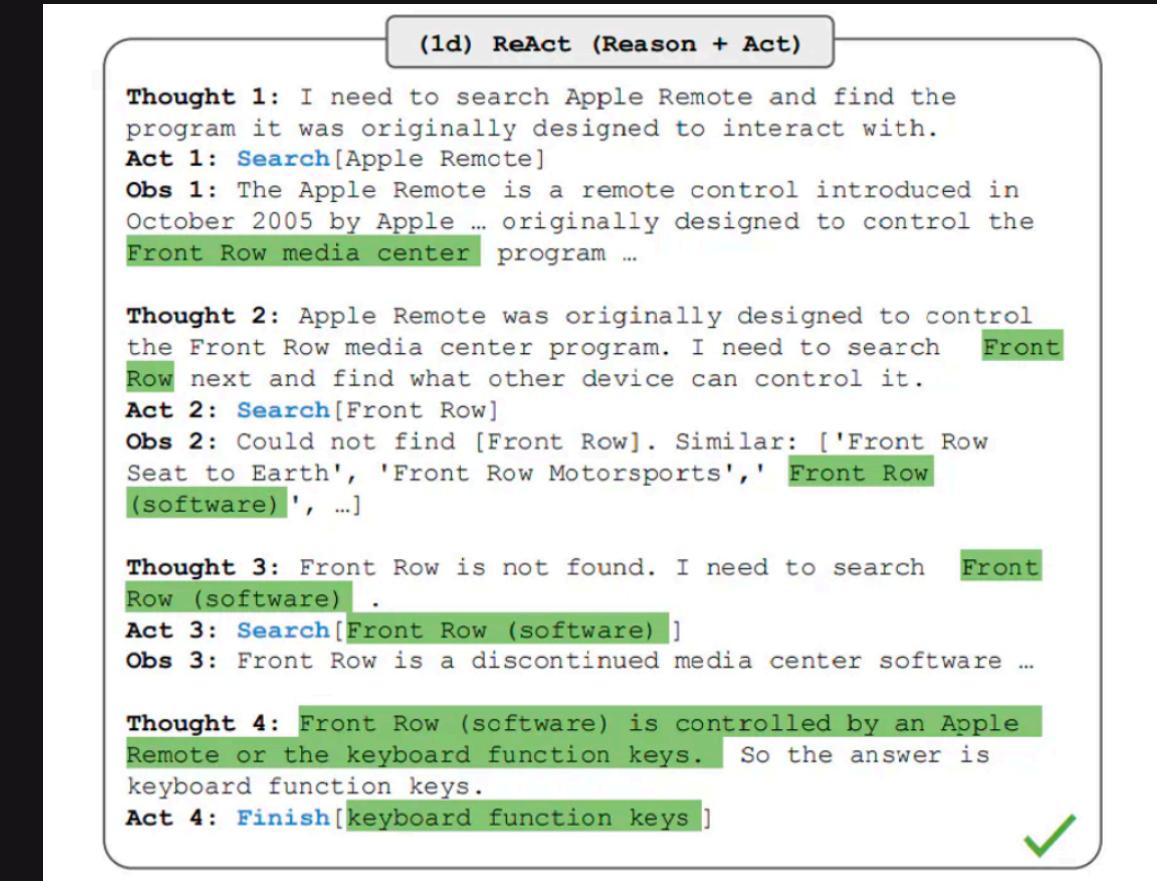
# Planning and Reasoning Heuristics

## ToT - Three of Thoughts



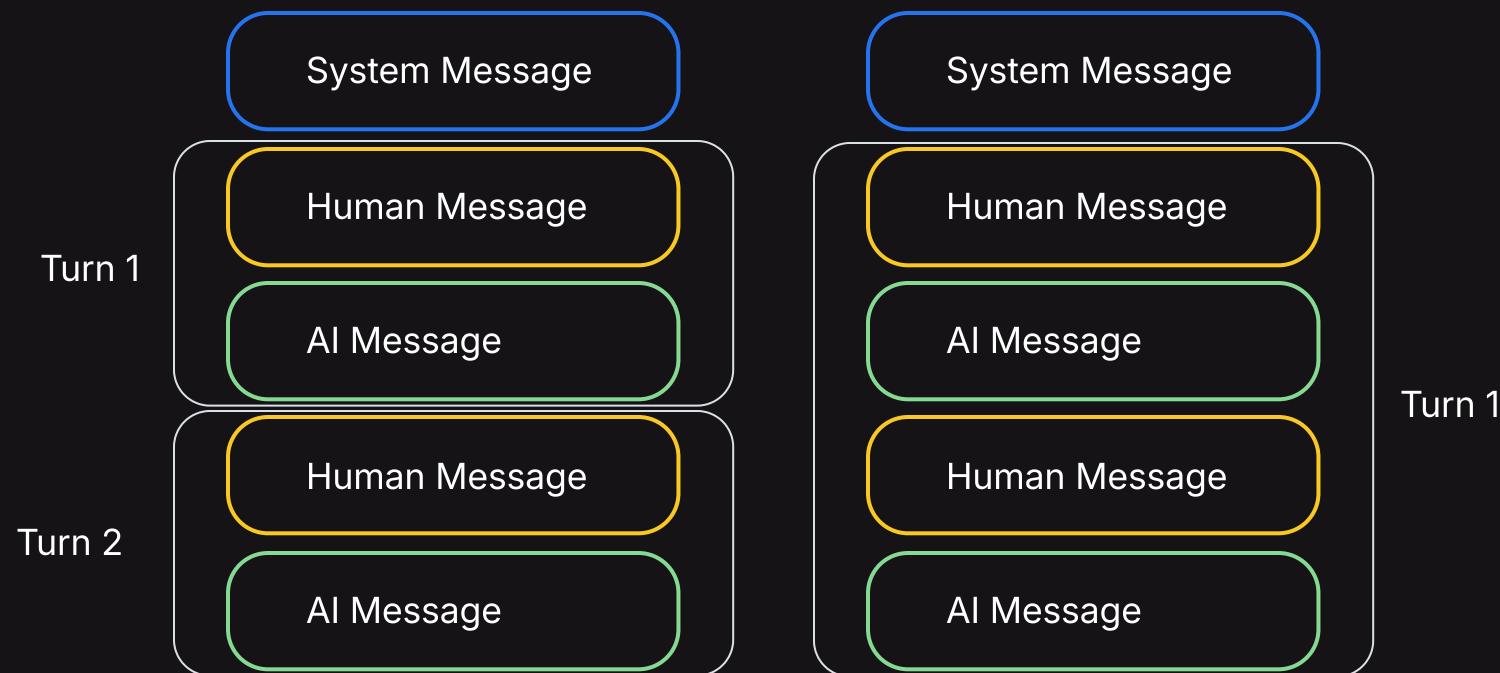
# Planning and Reasoning Heuristics - ReAct

- ReAct is the most famous Reasoning technique.
- Consists of a loop of Thought - Action - Observation
- Every framework, nowadays, uses ReAct under the hood.

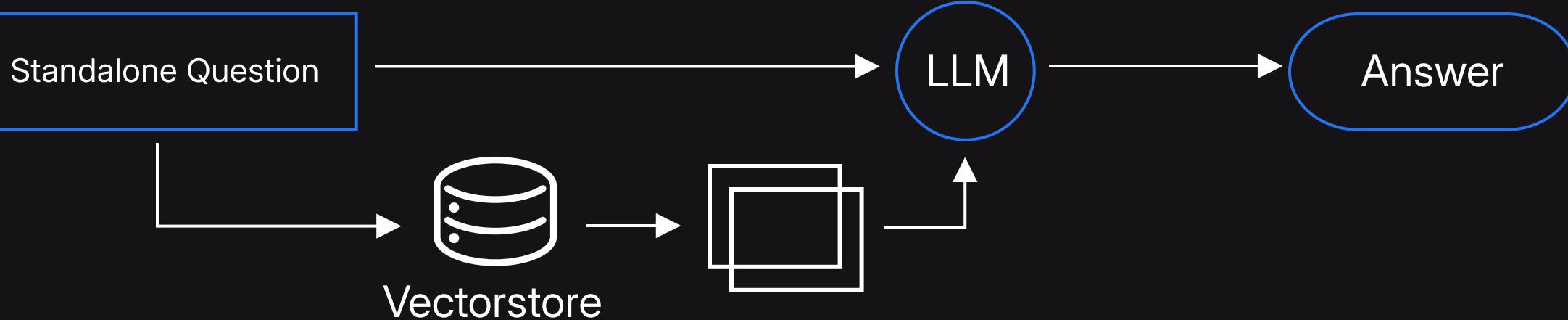
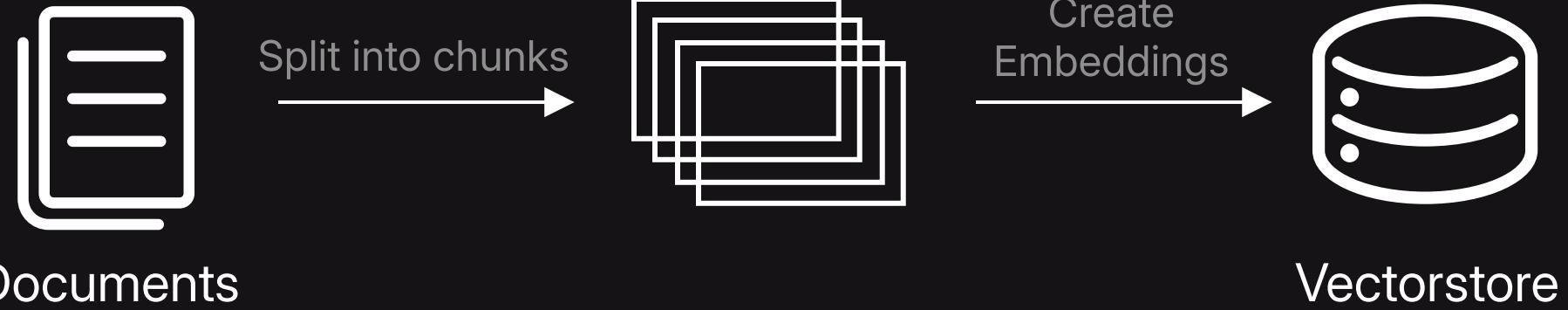


# Memory (short-term)

- Component necessary for applications with conversational interfaces.
- It allows access to a window of previous messages. We can think of it as short-term memory.
- Special caution must be taken with the size of this window to avoid exceeding the context limit of the LLM.



# Memory



# Thanks