

Coordinator



GPT-4o

Determine coordination type



GPT-4o

Graph structure revision



GPT-4o

Attribute revision



GPT-4o

Adding temporary subtask

Graph structure revision

Put onion on the empty counter → 1 → Get onion from the empty counter

Pickup onion → 3 → Put onion on the pot

13

Put onion on the pot → 2 → Get onion from the empty counter

Pickup onion → 4 → Put onion on the pot

4

Put onion on the pot → 1 → Cook soup

Pickup Tomato → 5 → Put onion on the pot

5

Put onion on the pot → 1 → Cook soup

Cook soup → 1 → Pickup soup

1

Pickup soup → 6 → Serve soup

6

Serve soup

Attribute revision

Pick up dish

Notes: human prefers this subtask

7

Pickup soup

6

Serve soup

Yield to Human

Adding temporary subtask

Graph-Represented State

Subtask Allocation Manager

Available subtasks
Robot state
Human state

Chain of Thought

Analyze feasible subtasks given state

Analyze task priority

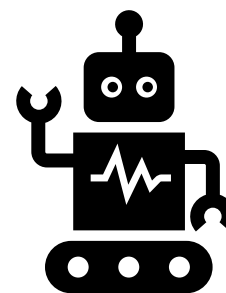
Analyze human preferences



GPT-4o

~0.5s

Subtask



Robot

Subtask Status Manager

Update Graph Status

Finished?



GPT-4o

~0.5s

Previous state
Current state

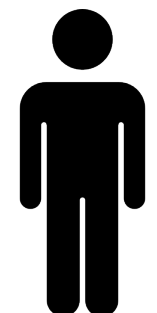
When Human/Robot execute interact action

Low-frequency Coordination conversation:

Robot: Given the layout, you should stay on the top area, and be responsible for picking up dishes and serve the soup!
Human: Ok!

High frequency Subtask Instruction

Robot: Can you pick up dishes?
Robot: Now pick up soup and serve!
Robot: ...



Human