

# Hierarchical multi-agent systems with LangGraph



LangChain  
134K subscribers

Subscribe

787



Share

Clip

Save



40,480 views Feb 12, 2025

Here, we introduce LangGraph Supervisor, a lightweight library for building hierarchical multi-agent systems with LangGraph:

- Create a supervisor agent to orchestrate multiple specialized agents
- Tool-based handoffs for agent communication
- Built with LangGraph: comes with built-in streaming, memory and human-in-the-loop support

The video covers structure of the library and the handoff mechanism between the supervisor and a team of agents. It also shows how to create hierarchical teams of agents with multiple supervisors.

Chapters:

- 00:00 Introduction to LangGraph Supervisor
- 00:45 Basic Multi-Agent System Demo
- 02:00 Supervisor Pattern Explained
- 03:00 Information Handoff Mechanism
- 04:00 Code Implementation
- 06:00 Trace Analysis & Flow Explanation
- 09:00 Hierarchical Supervisor Systems
- 10:00 Advanced Multi-Team Example
- 11:00 Recap and Conclusion

https://github.com/langchain-ai/langgraph-supervisor-py



langchain-ai / langgraph-supervisor-py

Type to search

Code Issues 22 Pull requests 2 Discussions Actions Projects Security Insights

langgraph-supervisor-py Public

Watch 16

Fork 170

Star 1.1k

main 5 Branches 24 Tags

Go to file

Add file

Code

vbarda	release 0.0.27 (#186) ✓	9dac15 · 2 months ago	106 Commits
.github	ci: fix "CI Success" job (#172)	2 months ago	
langgraph_supervisor	added pre_model_hook and post_model_model_hook for su...	2 months ago	
static/img	update README (#8)	5 months ago	
tests	Enforce mypy and fix typing issues (#145)	2 months ago	
.gitignore	add agent name processing (#45)	4 months ago	
LICENSE	rename	5 months ago	
Makefile	Enforce mypy and fix typing issues (#145)	2 months ago	
README.md	Update supervisor version (#137)	3 months ago	
pyproject.toml	release 0.0.27 (#186)	2 months ago	
uv.lock	release 0.0.27 (#186)	2 months ago	

About

No description, website, or topics provided.

Readme

MIT license

Activity

Custom properties

1.1k stars

16 watching

170 forks

Report repository

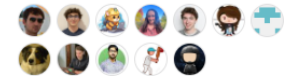
Releases 24

langgraph-supervisor==0.0.27 Latest  
on May 29

+ 23 releases

Packages

Contributors 25

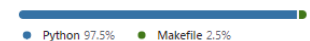


Deployments 26

Scheduled testing 2 months ago

+ 25 deployments

Languages



## LangGraph Multi-Agent Supervisor

A Python library for creating hierarchical multi-agent systems using [LangGraph](#). Hierarchical systems are a type of [multi-agent](#) architecture where specialized agents are coordinated by a central supervisor agent. The supervisor controls all communication flow and task delegation, making decisions about which agent to invoke based on the current context and task requirements.

### Features

- Create a supervisor agent to orchestrate multiple specialized agents
- Tool-based agent handoff mechanism for communication between agents
- Flexible message history management for conversation control

This library is built on top of [LangGraph](#), a powerful framework for building agent applications, and comes with out-of-box support for [streaming](#), [short-term and long-term memory](#) and [human-in-the-loop](#)

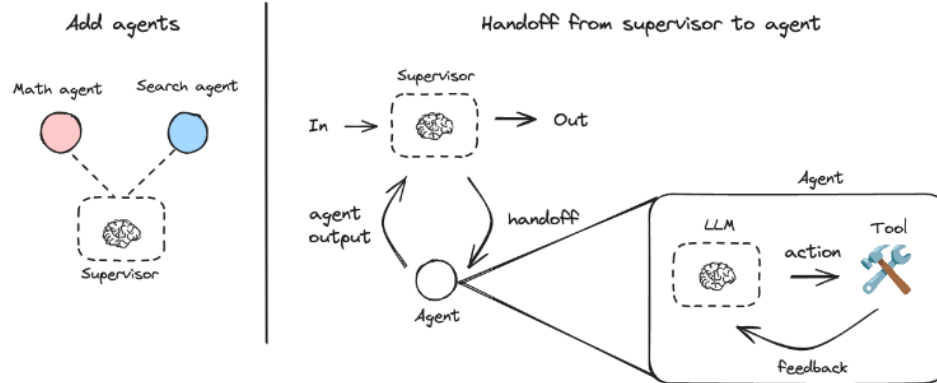
### Installation

```
pip install langgraph-supervisor
```



## Quickstart

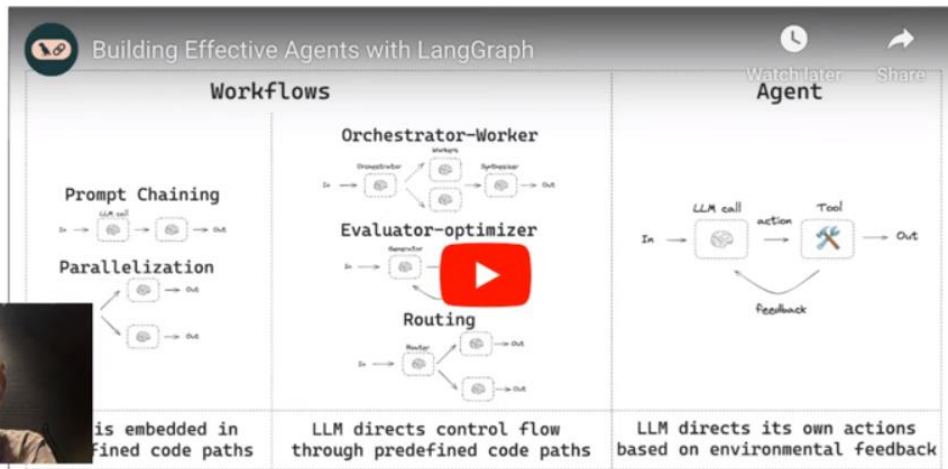
Here's a simple example of a supervisor managing two specialized agents:



## Multi-Agent Systems

### Agents

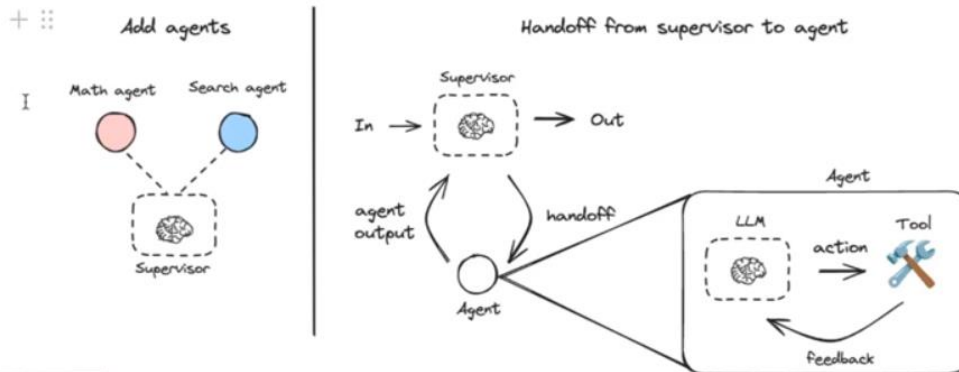
- System for autonomous task completion
- LLM + tool-calling (actions)
- Feedback (from actions)



- How to combine agents in to teams?

**langgraph-supervisor**  
langchain-ai • Updated 1 day ago

- Supervisor pattern
- How to combine agents



langchainplus-git-dqbd-studio-subgraph-collapse-fix-langchain.vercel.app/studio/thread/cbff28c7-8e88-40b2-a3bf-b4cd5dac3d7e?baseUrl=...

Studio

multi\_agent Memory Interrupts

The interface displays a graph with nodes: `__start__`, `supervisor`, `math_expert`, and `research_expert`. Arrows show the flow from `__start__` to `supervisor`, and from `supervisor` to both `math_expert` and `research_expert`. There are also feedback arrows from the experts back to the supervisor.

Thread cbff28c7-8e88-40b2-a3bf-b4cd5dac3d7e 24 minutes ago

24 minutes ago • View state

`__start__`

what's the combined headcount of the FAANG companies in 2024

24 minutes ago • View state • Re-run from here

`supervisor`

Messages

24 minutes ago • View state • Re-run from here

`research_expert`

AI The combined headcount of the FAANG companies in 2024 is...

AI transfer\_back\_to\_supervisor

Tool transfer\_back\_to\_supervisor

24 minutes ago • View state • Re-run from here

`supervisor`

Messages

24 minutes ago • View state • Re-run from here

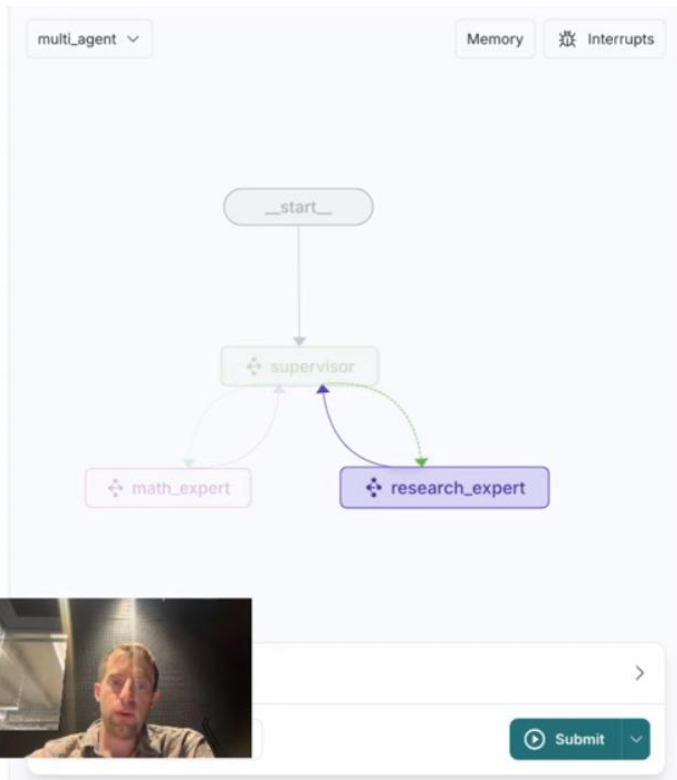
`math_expert`

AI The combined headcount of the FAANG companies in 2024 is...

AI transfer\_back\_to\_supervisor

Submit

OUTPUT



Thread cbff28c7-8e8... 25 minutes ago Pretty JSON Add To Dataset +

**\_\_start\_\_**

what's the combined headcount of the FAANG companies in 2024

25 minutes ago View state Re-run from here

**supervisor**

Messages

25 minutes ago View state Re-run from here

**research\_expert**

AI

The combined headcount of the FAANG companies in 2024 is:

1. **Facebook (Meta)**: 67,317 employees
2. **Apple**: 164,000 employees
3. **Amazon**: 1,551,000 employees
4. **Netflix**: 14,000 employees
5. **Google (Alphabet)**: 181,269 employees

To find the total headcount, you can add these numbers together.

AI transfer\_back\_to\_supervisor

Tool transfer\_back\_to\_supervisor

25 minutes ago View state Re-run from here

**supervisor**

Messages

OUTPUT

Thread cbff28c7-8e8... 25 minutes ago Pretty JSON Add To Dataset +

AI

The combined headcount of the FAANG companies in 2024 is:

1. **Facebook (Meta)**: 67,317 employees
2. **Apple**: 164,000 employees
3. **Amazon**: 1,551,000 employees
4. **Netflix**: 14,000 employees
5. **Google (Alphabet)**: 181,269 employees

To find the total headcount, you can add these numbers together.

AI transfer\_back\_to\_supervisor

Tool transfer\_back\_to\_supervisor

25 minutes ago View state Re-run from here

**supervisor**

Messages

25 minutes ago View state Re-run from here

**math\_expert**

AI ID

The combined headcount of the FAANG companies in 2024 is 1,777,586 employees.

AI transfer\_back\_to\_supervisor

Tool transfer\_back\_to\_supervisor

25 minutes ago View state Re-run from here

**supervisor**

OUTPUT

multi\_agent ▾

Memory Interrupts

Thread cbff28c7-8e8... 26 minutes ago ▾

Pretty JSON Add To Dataset +

**supervisor**

> Human what's the combined headcount of the FAANG companies in 2024

> AI transfer\_to\_research\_expert

> Tool transfer\_to\_research\_expert

> AI The combined headcount of the FAANG companies in 2024 is:...

> AI transfer\_back\_to\_supervisor

> Tool transfer\_back\_to\_supervisor

> AI transfer\_to\_math\_expert

> Tool transfer\_to\_math\_expert

> AI The combined headcount of the FAANG companies in 2024 is:...

> AI transfer\_back\_to\_supervisor

> Tool transfer\_back\_to\_supervisor

> AI

The combined headcount of the FAANG companies in 2024 is 1,977,586 employees.

25 minutes ago • View state • Re-run from here

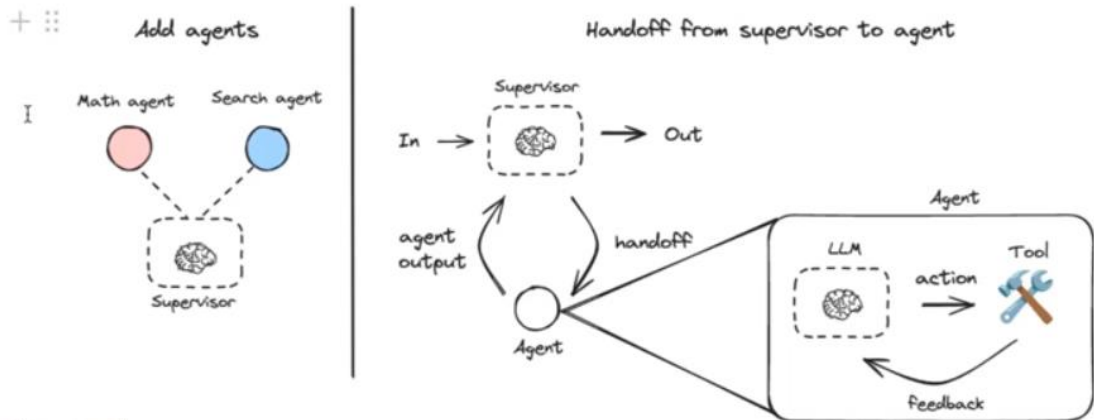
Submit ▾

OUTPUT

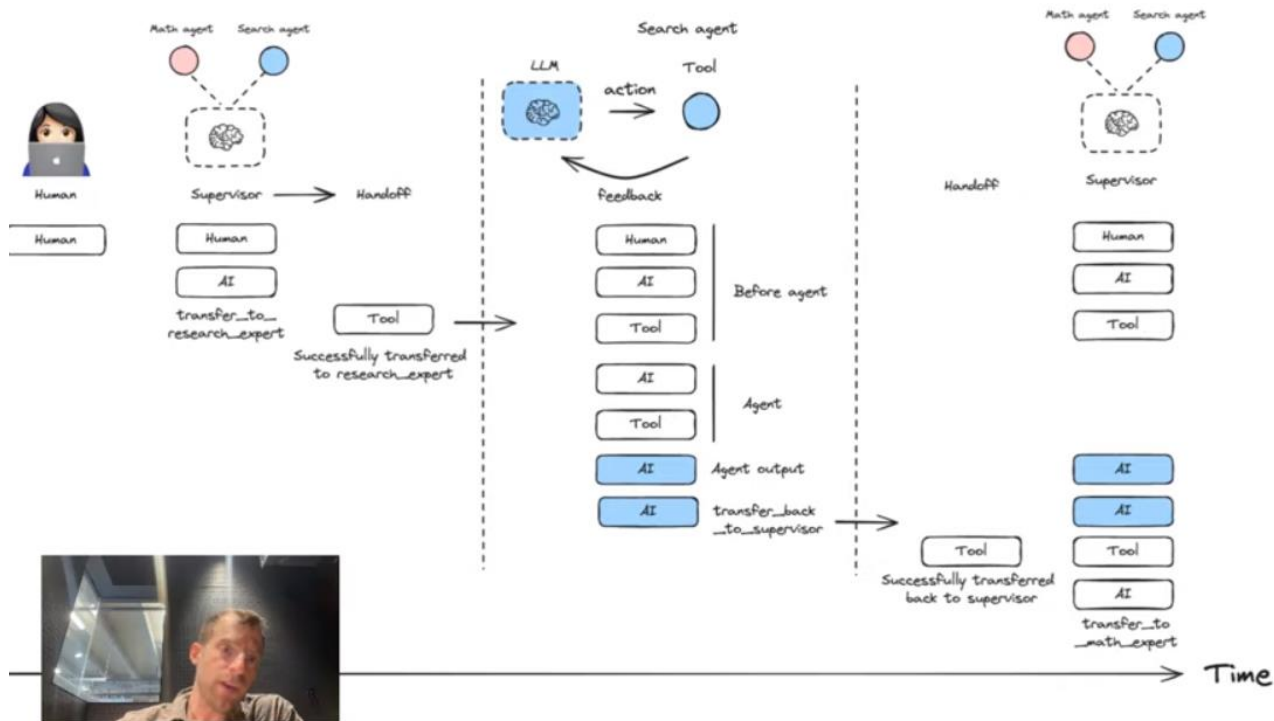
- How to combine agents in to teams?

langgraph-supervisor  
langchain-ai • Updated 1 day ago

- Supervisor pattern
- How to combine agents



## Supervisor → Agent → Supervisor



- Supervisor determines control flow

Each agent gets the complete history of the human and supervisor interaction as context to do its work. The agent can pass back the final agent output or the total internal interaction back to the supervisor.

```
127.0.0.1:8888/notebooks/multi-agent.ipynb
Gmail RLM 2025 Adobe Video Edit All Book
jupyter multi-agent Last Checkpoint: 22 hours ago
File Edit View Run Kernel Settings Help Not Trusted
JupyterLab Python 3 (ipykernel)

[1]: ! pip install -U langgraph-supervisor langchain-openai

[2]: # LLM
from langchain_openai import ChatOpenAI
model = ChatOpenAI(model="gpt-4o")

[3]: # Tools
def add(a: float, b: float) -> float:
    """Add two numbers."""
    return a + b

def multiply(a: float, b: float) -> float:
    """Multiply two numbers."""
    return a * b

def web_search(query: str) -> str:
    """Search the web for information."""
    return (
        "Here are the headcounts for each of the FAANG companies in 2024:\n"
        "1. **Facebook (Meta)**: 67,317 employees.\n"
        "2. **Apple**: 164,000 employees.\n"
        "3. **Amazon**: 1,551,000 employees.\n"
        "4. **Netflix**: 14,000 employees.\n"
        "5. **Google (Alphabet)**: 181,269 employees."
    )
```



```

"""Search the web for information."""
return (
    "Here are the headcounts for each of the FAANG companies in 2024:\n"
    "1. **Facebook (Meta)**: 67,317 employees.\n"
    "2. **Apple**: 164,000 employees.\n"
    "3. **Amazon**: 1,551,000 employees.\n"
    "4. **Netflix**: 14,000 employees.\n"
    "5. **Google (Alphabet)**: 181,269 employees."
)

```

```

[4]: # Agents

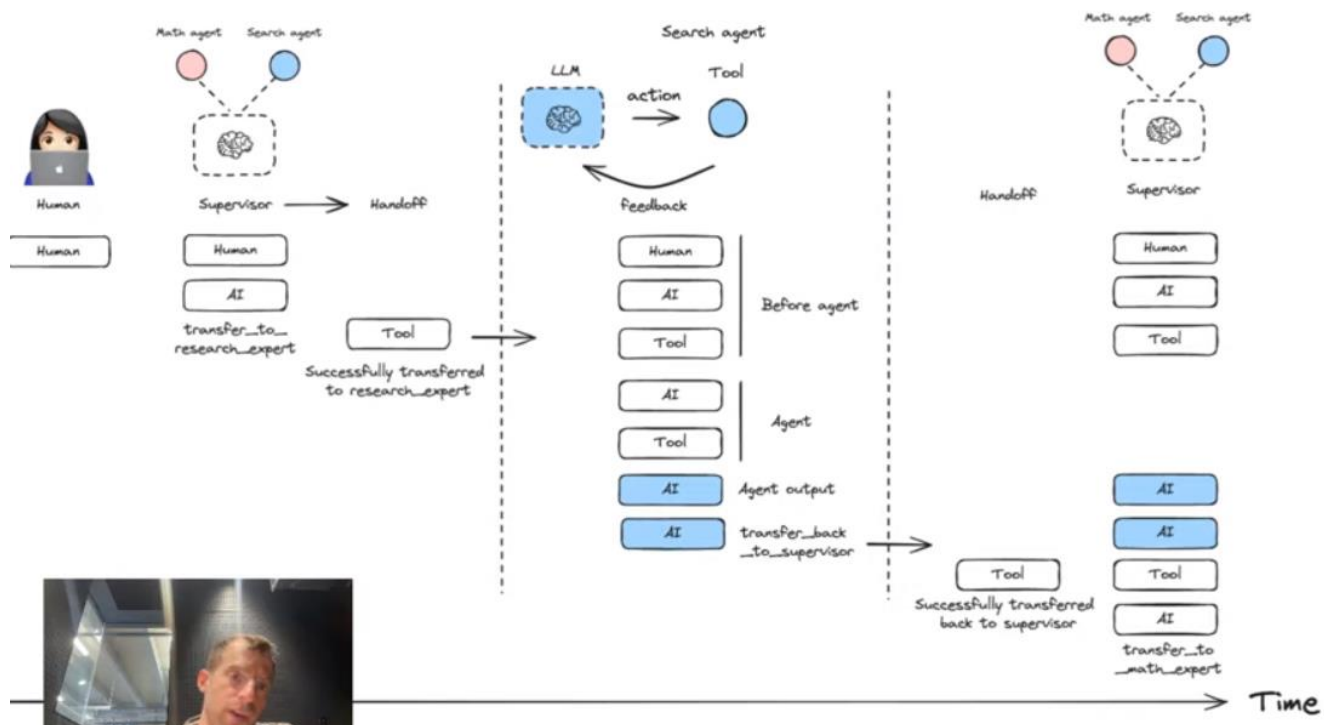
from langgraph.prebuilt import create_react_agent

math_agent = create_react_agent(
    model=model,
    tools=[add, multiply],
    name="math_expert", # descriptive name
    prompt="You are a math expert. Always use one tool at a time."
)

research_agent = create_react_agent(
    model=model,
    tools=[web_search],
    name="research_expert",
    prompt="You are a world class researcher with access to web search. Do not do any math."
)

```

## Supervisor → Agent → Supervisor



```

[5]: # Supervisor

from langgraph_supervisor import create_supervisor

prompt = (
    "You are a team supervisor managing a research expert and a math expert. "
    "For current events, use research_agent. "
    "For math problems, use math_agent."
)

math_search_workflow = create_supervisor(
    [research_agent, math_agent], # Nodes
    model=model, # Model
    output_mode="last_message", # What we pass back from agent to supervisor if using Orchestrator
    prompt=prompt,
)

```

The **output\_mode** determines what size of message the agent passes back to the supervisor

```
[*]: # Compile and run
app = math_search_workflow.compile()
result = app.invoke({
  "messages": [
    {
      "role": "user",
      "content": "what's the combined headcount of the FAANG companies in 2024?"
    }
  ]
})
```

smith.langchain.com/o/ebba2eb-769b-4505-aca2-d11de10372a4/projects/p/80f1ecb3-a16b-411e-97ae-1c89adbb5c49?columnVisibility...

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE

Waterfall Most relevant

LangGraph 17.18s 3,798

supervisor 1.15s

research\_expert 7.90s

supervisor 0.85s

math\_expert 5.76s

supervisor 1.39s

Some runs have been hidden. [Show 47 hidden runs](#)

LangGraph

Run Feedback Metadata

Run ID Trace ID

Input

HUMAN

what's the combined headcount of the FAANG companies in 2024?

Output

HUMAN

what's the combined headcount of the FAANG companies in 2024?

AI


supervisor

transfer\_to\_research\_expert call\_mi2lFqrPASOVQIiLzMXbDZT9

{}

JSON

TOOL





TRACE

Waterfall Most relevant

LangGraph 17.18s 3,798

- supervisor 1.15s
  - supervisor 1.06s
    - agent 1.05s
      - call\_model 1.05s
        - Prompt 0.00s
          - ChatOpenAI gpt-4o 1.04s
          - should\_continue 0.00s
          - tools 0.01s
            - transfer\_to\_research\_ex... 0.00s
  - research\_expert 7.90s
  - supervisor 0.85s
  - math\_expert 5.76s
  - supervisor 1.39s

low 47 hidden

ChatOpenAI

Run Feedback Metadata

Functions & Tools

  - transfer\_to\_research\_expert CALLED
  - transfer\_to\_math\_expert

Input

SYSTEM

You are a team supervisor managing a research expert and a math expert. For current events, use research\_agent. For math problems, use math\_agent.

HUMAN

what's the combined headcount of the FAANG companies in 2024?

Output

AI

transfer\_to\_research\_expert call\_mi2lFqrPASOVQIiLzMXbDZT9

{}

TRACE

Waterfall Most relevant

LangGraph 17.18s 3,798

- supervisor 1.15s
  - supervisor 1.06s
    - agent 1.05s
      - call\_model 1.05s
        - Prompt 0.00s
          - ChatOpenAI gpt-4o 1.04s
          - should\_continue 0.00s
          - tools 0.01s
            - transfer\_to\_research\_ex... 0.00s
    - research\_expert 7.90s
    - supervisor 0.85s
    - math\_expert 5.76s
    - supervisor 1.39s

low 47 hidden

ChatOpenAI

Run Feedback Metadata

transfer\_to\_math\_expert

Ask another agent for help.

Input

SYSTEM

You are a team supervisor managing a research expert and a math expert. For current events, use research\_agent. For math problems, use math\_agent.

HUMAN

what's the combined headcount of the FAANG companies in 2024?

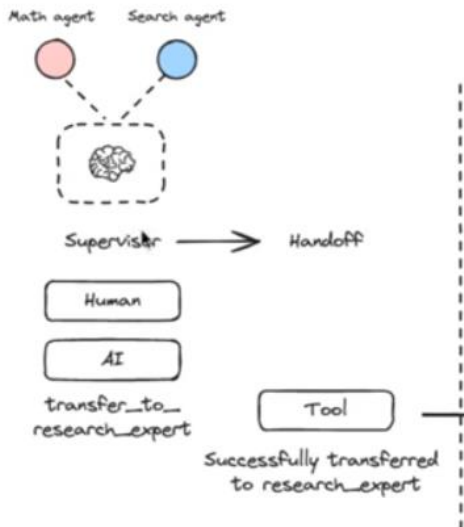
Output

AI

transfer\_to\_research\_expert call\_mi2lFqrPASOVQIiLzMXbDZT9

{}

JSON



TRACE

Waterfall Most relevant

LangGraph 1718s 3,798

- supervisor 1.15s
  - supervisor 1.06s
    - agent 1.05s
      - call\_model 1.05s
        - Prompt 0.00s
          - ChatOpenAI gpt-4o 1.04s
            - should\_continue 0.00s
              - tools 0.01s
                - transfer\_to\_research\_ex... 0.00s
- research\_expert 7.90s
- supervisor 0.85s
- math\_expert 5.76s
- supervisor 1.39s

transfer\_to\_research\_expert

Run Feedback Metadata

Input

Input

Output

Output

- Goto
- research\_expert
- Graph
  - \_parent\_
  - Resume null
  - Update [...]

Gmail RLM 2025 Adobe Video Edit All Bookmarks

Compare

TRACE

Waterfall Most relevant

LangGraph 17.18s 3,798

- supervisor 1.15s
- research\_expert 7.90s
- research\_expert 7.90s
- agent 3.97s
- call\_model 3.96s
- Prompt 0.00s
- ChatOpenAI gpt-4o 3.96s
- should\_continue 0.00s
- tools 0.01s
  - web\_search 0.00s
  - web\_search 0.00s
  - web\_search 0.00s
  - web\_search 0.00s

Some runs have been hidden. Show 47 hidden

ChatOpenAI

Run Feedback Metadata

Functions & Tools

web\_search CALLED

Input

SYSTEM

You are a world class researcher with access to web search. Do not do any math.

HUMAN

what's the combined headcount of the FAANG companies in 2024?

AI

supervisor

transfer\_to\_research\_expert call\_mi2lFqrPASOVQIiLzMXbDZT9

{}

JSON

Gmail RLM 2025 Adobe Video Edit All Bookmarks

Compare

TRACE

Waterfall Most relevant

LangGraph 17.18s 3,798

- supervisor 1.15s
- research\_expert 7.90s
- research\_expert 7.90s
- agent 3.97s
- call\_model 3.96s
- Prompt 0.00s
- ChatOpenAI gpt-4o 3.96s
- should\_continue 0.00s
- tools 0.01s
  - web\_search 0.00s
  - web\_search 0.00s
  - web\_search 0.00s
  - web\_search 0.00s

Some runs have been hidden. Show 47 hidden

ChatOpenAI

Run Feedback Metadata

AI

supervisor

transfer\_to\_research\_expert call\_mi2lFqrPASOVQIiLzMXbDZT9

{}

JSON

TOOL

transfer\_to\_research\_expert call\_mi2lFqrPASOVQIiLzMXbDZT9

"Successfully transferred to research\_expert"

JSON RAW

Output

AI

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE

Waterfall Most relevant

LangGraph 17.18s 3,798

- supervisor 1.15s
- research\_expert 7.90s
  - research\_expert 7.90s
    - agent 3.97s
      - call\_model 3.96s
        - Prompt 0.00s
        - ChatOpenAI gpt-4o 3.96s
        - should\_continue 0.00s
        - tools 0.01s
          - web\_search 0.00s
          - web\_search 0.00s
          - web\_search 0.00s
          - web\_search 0.00s

Some runs have been hidden. [Show 47 hidden runs](#)

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

Successfully transferred to research\_expert

JSON RAW

Output

AI

web\_search call\_wMM9spNfK5sJbUXlfxDQ4gcU

```
{  "query": "Facebook headcount 2024"}
```

web\_search call\_HNFoyGN6Wc0z3e04Bdee9ZCr

```
{  "query": "Apple headcount 2024"}
```

web\_search call\_AqxHNAP7N9ebMb08qGlXxvSF

```
{  "query": "Amazon headcount 2024"}
```

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE

Waterfall Most relevant

LangGraph 17.18s 3,798

- supervisor 1.15s
- research\_expert 7.90s
  - research\_expert 7.90s
    - agent 3.97s
      - call\_model 3.96s
        - Prompt 0.00s
        - ChatOpenAI gpt-4o 3.96s
        - should\_continue 0.00s
        - tools 0.01s
          - web\_search 0.00s
          - web\_search 0.00s
          - web\_search 0.00s
          - web\_search 0.00s

Some runs have been hidden. [Show 47 hidden runs](#)

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

AI

web\_search call\_wMM9spNfK5sJbUXlfxDQ4gcU

```
{  "query": "Facebook headcount 2024"}
```

web\_search call\_HNFoyGN6Wc0z3e04Bdee9ZCr

```
{  "query": "Apple headcount 2024"}
```

web\_search call\_AqxHNAP7N9ebMb08qGlXxvSF

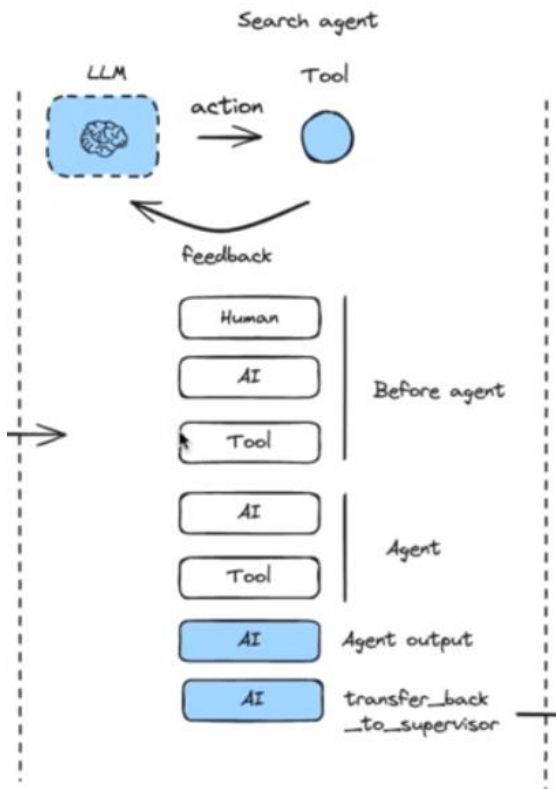
```
{  "query": "Amazon headcount 2024"}
```

web\_search call\_UHtDXBBUBsvzB5NBbY29Eu8L

```
{  "query": "Netflix headcount 2024"}
```







TRACE

Waterfall Most relevant

agent 3.97s

- call\_model 3.96s
  - Prompt 0.00s
  - ChatOpenAI gpt-4o 3.96s
- should\_continue 0.00s
- tools 0.01s
  - web\_search 0.00s
  - web\_search 0.00s
  - web\_search 0.00s
  - web\_search 0.00s
  - web\_search 0.00s
- agent 3.92s
  - call\_model 3.91s
    - Prompt 0.00s
    - ChatOpenAI gpt-4o 3.91s

Some runs have been hidden. Show 47 hidden

ChatOpenAI

Run Feedback Metadata

Functions & Tools

web\_search

Input

SYSTEM

You are a world class researcher with access to web search. Do not do any math.

HUMAN

what's the combined headcount of the FAANG companies in 2024?

AI

supervisor

transfer\_to\_research\_expert call\_mi2lFqrPASOVQIilzMXbDZT9

{}

JSON



TRACE

Waterfall

Most relevant

agent 3.97s

call\_model 3.96s

Prompt 0.00s

ChatOpenAI gpt-4o 3.96s

should\_continue 0.00s

tools 0.01s

web\_search 0.00s

web\_search 0.00s

web\_search 0.00s

web\_search 0.00s

web\_search 0.00s

agent 3.92s

call\_model 3.91s

Prompt 0.00s

ChatOpenAI gpt-4o 3.91s

0.00s

Some runs have been hidden. [Show 47 hidden](#)

ChatOpenAI

Run

Feedback

Metadata

Playground

Add to

Run ID

Trace ID

Run

Feedback

Metadata

Here are the headcounts for each of the FAANG companies in 2024:\n1. \*\*Facebook (Meta)\*\*:

JSON

RAW

TOOL

web\_search call\_u4iMwXx8iye07CC5S5TGxsnu

Here are the headcounts for each of the FAANG companies in 2024:\n1. \*\*Facebook (Meta)\*\*:

JSON

RAW

Output

AI

Here are the headcounts for each of the FAANG companies in 2024:

1. \*\*Facebook (Meta)\*\*: 67,317 employees

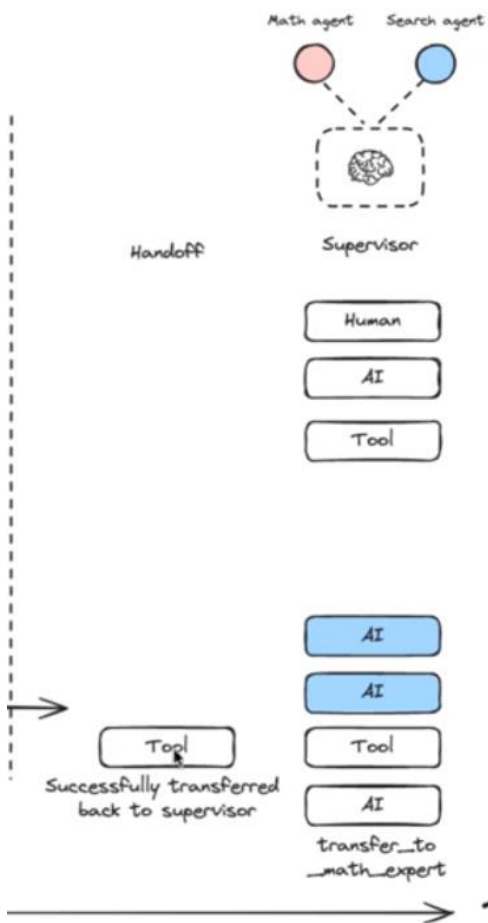
2. \*\*Apple\*\*: 164,000 employees

3. \*\*Amazon\*\*: 1,551,000 employees

4. \*\*Netflix\*\*: 14,000 employees

5. \*\*Google (Alphabet)\*\*: 181,269 employees

To find the combined headcount, simply add these figures together.



TRACE

Waterfall Most relevant

- web\_search 0.00s
- web\_search 0.00s
- web\_search 0.00s
- agent 3.92s
  - call\_model 3.91s
    - Prompt 0.00s
    - ChatOpenAI gpt-4o 3.91s
    - should\_continue 0.00s
- supervisor 0.85s
  - supervisor 0.84s
    - agent 0.84s
      - call\_model 0.83s
        - Prompt 0.00s
        - ChatOpenAI gpt-4o 0.83s
        - should\_continue 0.00s
      - expert 0.00s

Some runs have been hidden. [Show 47 hidden](#)

ChatOpenAI

Run Feedback Metadata

transfer\_back\_to\_supervisor ee31fe2e-feb2-4f13-af96-db067a6bc41d

```
{}
```

JSON

TOOL

transfer\_back\_to\_supervisor ee31fe2e-feb2-4f13-af96-db067a6bc41d

"Successfully transferred back to supervisor"

JSON RAW

Output

AI

transfer\_to\_math\_expert call\_fBA4TGSFx3NhgC35SqQX1tyT

```
{}
```

JSON

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE Waterfall Most relevant

- web\_search 0.00s
- web\_search 0.00s
- web\_search 0.00s
- agent 3.92s
- call\_model 3.91s
- Prompt 0.00s
- ChatOpenAI gpt-4o 3.91s
- should\_continue 0.00s
- supervisor 0.85s
- supervisor 0.84s
- agent 0.84s
- call\_model 0.83s
- Prompt 0.00s
- ChatOpenAI gpt-4o 0.83s
- should\_continue 0.00s

transfer\_to\_math\_expert

Run Feedback Metadata

Input

Input

Output

- Goto math\_expert
- Graph \_\_parent\_\_
- Resume null
- Update [...]

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE Waterfall Most relevant

- call\_model 0.83s
- Prompt 0.00s
- ChatOpenAI gpt-4o 0.83s
- should\_continue 0.00s
- tools 0.00s
- transfer\_to\_math\_expert 0.00s
- math\_expert 5.76s
- math\_expert 5.76s
- agent 2.27s
- call\_model 2.26s
- Prompt 0.00s
- ChatOpenAI gpt-4o 2.26s
- should\_continue 0.00s
- tools 0.00s
- add 0.00s

math\_expert

Run Feedback Metadata

Input

Is Last Step  
false

Remaining Steps  
21

MESSAGES messages 8

HUMAN

what's the combined headcount of the FAANG companies in 2024?

AI

supervisor

transfer\_to\_research\_expert call\_mi2lFqrPAS0VQIiLzMXbDZT9

{}

JSON

Gmail RLM 2025 Adobe Video Edit All Bookmarks

Compare

TRACE

Waterfall Most relevant

Prompt 0.00s

ChatOpenAI gpt-4o 0.83s

should\_continue 0.00s

tools 0.00s

transfer\_to\_math\_expert 0.00s

math\_expert 5.76s

math\_expert 5.76s

agent 2.27s

call\_model 2.26s

Prompt 0.00s

ChatOpenAI gpt-4o 2.26s

should\_continue 0.00s

tools 0.00s

add 0.00s

add 0.00s

Some runs have been hidden. [Show 47 hidden runs](#)

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

Functions & Tools

add CALLED

multiply

Input

SYSTEM

You are a math expert. Always use one tool at a time.

HUMAN

what's the combined headcount of the FAANG companies in 2024?

AI

supervisor

transfer\_to\_research\_expert call\_mi2lFqrPASOVQIiLzMXbDZT9

{}

Gmail RLM 2025 Adobe Video Edit All Bookmarks

Compare

TRACE

Waterfall Most relevant

Prompt 0.00s

ChatOpenAI gpt-4o 0.83s

should\_continue 0.00s

tools 0.00s

transfer\_to\_math\_expert 0.00s

math\_expert 5.76s

math\_expert 5.76s

agent 2.27s

call\_model 2.26s

Prompt 0.00s

ChatOpenAI gpt-4o 2.26s

should\_continue 0.00s

tools 0.00s

add 0.00s

add 0.00s

Some runs have been hidden. [Show 47 hidden runs](#)

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

Output

AI

add call\_ls80ht856e0Dt4Xzr2w50d2j

{

"a": 67317,

"b": 164000

}

add call\_RH8Lvn4j7uB7ehPnu189uzP2

{

"a": 1551000,

"b": 14000

}

add call\_e27MmpZH1VB8NEQbenq1SNiT

{

"a": 181269,

"b": 0

}

JSON

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE Waterfall Most relevant

- Prompt 0.00s
- ChatOpenAI gpt-4o 1.71s
- should\_continue 0.00s
- tools 0.01s
  - add 0.00s
  - add 0.00s
- agent 0.81s
  - call\_model 0.81s
    - Prompt 0.00s
    - ChatOpenAI gpt-4o 0.81s
    - should\_continue 0.00s
    - tools 0.00s
      - add 0.00s
  - agent 0.95s
    - call\_model 0.95s

gpt-4o 0.95s 0.00s

Some runs have been hidden. Show 47 hidden

ChatOpenAI

Run Feedback Metadata

math\_expert

add call\_u2z1Fh7KAVW6EQXARGtTeV7Z

```
{  "a": 1796317,  "b": 181269}
```

JSON

TOOL

add call\_u2z1Fh7KAVW6EQXARGtTeV7Z

1977586

JSON RAW

Output

AI

The combined headcount of the FAANG companies in 2024 is 1,977,586 employees.

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE Waterfall Most relevant

- Prompt 0.00s
- ChatOpenAI gpt-4o 1.71s
- should\_continue 0.00s
- tools 0.01s
  - add 0.00s
  - add 0.00s
- agent 0.81s
  - call\_model 0.81s
    - Prompt 0.00s
    - ChatOpenAI gpt-4o 0.81s
    - should\_continue 0.00s
    - tools 0.00s
      - add 0.00s
  - agent 0.95s
    - call\_model 0.95s

gpt-4o 0.95s 0.00s

Some runs have been hidden. Show 47 hidden

supervisor

Run Feedback Metadata

math\_expert

Transferring back to supervisor

transfer\_back\_to\_supervisor ef93188f-59ce-41a0-abb0-505999ffeb8a

```
{}
```

JSON

TOOL

transfer\_back\_to\_supervisor ef93188f-59ce-41a0-abb0-505999ffeb8a

"Successfully transferred back to supervisor"

JSON RAW

AI

supervisor

The combined headcount of the FAANG companies in 2024 is 1,977,586 employees.



## Library

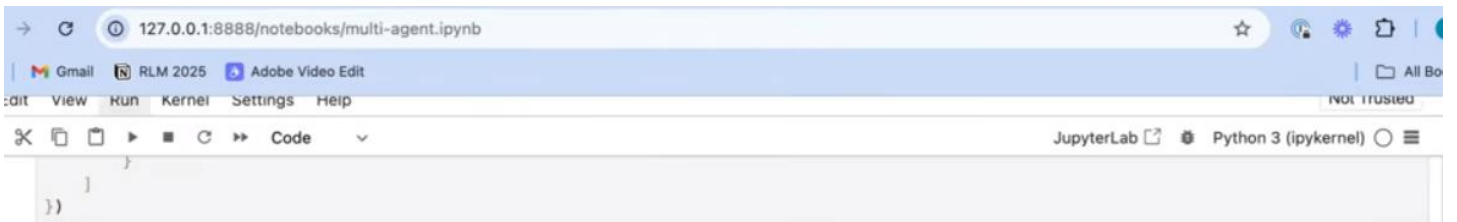
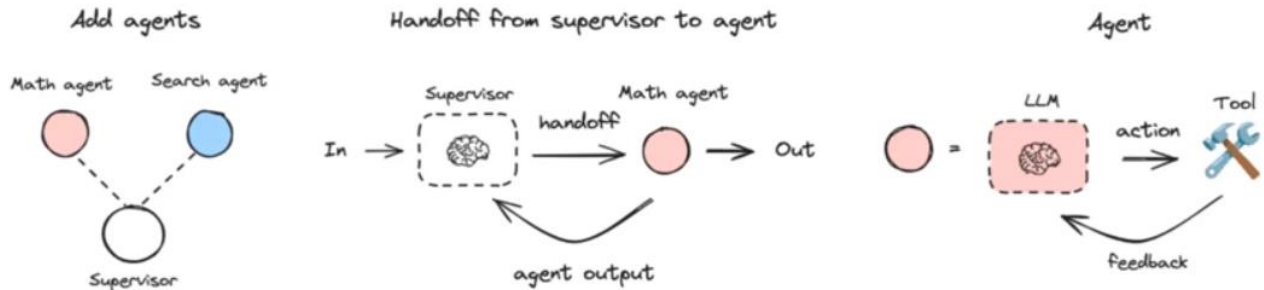
- How to combine agents in to teams?



langgraph-supervisor

langchain-ai • Updated 1 day ago

- Supervisor pattern
- How to combine agents



## Hierarchical Agents

```
from typing import Literal
def get_precipitation(location: Literal["sf", "nyc"]):
    """Get precipitation forecast for location"""
    if location == "sf":
        return "Will be raining"
    elif location == "nyc":
        return "Will be sunny"
    else:
        raise ValueError()

def get_temperature(location: Literal["sf", "nyc"]):
    """Get temperature forecast for location"""
    if location == "sf":
        return "Will be 60 degrees"
    elif location == "nyc":
        return "Will be 80 degrees"
    else:
        raise ValueError()

math_team = [
    create_react_agent(
```



```

]: math_team = [
    create_react_agent(
        name="addition_expert",
        model=model,
        tools=[add],
        prompt="You are an addition expert. Only work on addition, DO NOT attempt to solve the full problem if it requires other expertise",
    ),
    create_react_agent(
        name="multiplication_expert",
        model=model,
        tools=[multiply],
        prompt="You are a multiplication expert. Only work on multiplication, DO NOT attempt to solve the full problem if it requires other ex
    ]
]

```

```

]: weather_team = [
    create_react_agent(
        name="temperature_expert",
        model=model,
        tools=[get_temperature],
        prompt="You are a temperature expert. Only work on temperature forecast.",
    ),
    create_react_agent(
        name="precipitation_expert",
        model=model,
        tools=[get_precipitation],
        prompt="You are a precipitation expert. Only work on precipitation forecast",
    )
]

```

```

]: math_supervisor = create_supervisor(
    math_team.

```

```

9]: math_supervisor = create_supervisor(
    math_team,
    model=model,
    prompt="You are an team supervisor, tasked with managing a multiplication expert and an addition expert.",
    supervisor_name="math_supervisor",
).compile(name="math_team")

weather_supervisor = create_supervisor(
    weather_team,
    model=model,
    prompt=(
        "You are a weather forecast expert, tasked with managing a temperature forecast expert and a precipitation forecast expert. "
        "Don't ask for clarifications. "
        "Always respond to the user with the weather forecast according to your team experts. "
        "DO NOT make up answer -- ask experts! "
        "You MUST ALWAYS respond to the user with the final answer, do not respond with empty text."
    ),
    supervisor_name="weather_supervisor",
).compile(name="weather_team")

hieararchical_supervisor = create_supervisor(
    [math_supervisor, weather_supervisor],
    supervisor_name="top_level_supervisor",
    model=model,
    prompt="You are a team supervisor, tasked with managing a weather expert and a math expert. Once you have the answer to the user's questio
).compile()

```

```

]: message = hieararchical_supervisor.invoke({"messages": [{"role": "user", "content": "what's the weather in nyc?"}]}))
for m in messages['messages']:

```



```
1): messages = hierarchical_supervisor.invoke({"messages": [{"role": "user", "content": "what's the weather in nyc?"}]})
```

```
2): for m in messages['messages']:  
    m.pretty_print()
```

===== Human Message =====

what's the weather in nyc?

===== Ai Message =====

Name: top\_level\_supervisor

Tool Calls:

transfer\_to\_weather\_team (call\_EkoeGCvt7msKe6khyTnnXQna)

Call ID: call\_EkoeGCvt7msKe6khyTnnXQna

Args:

===== Tool Message =====

Name: transfer\_to\_weather\_team

Successfully transferred to weather\_team

===== Ai Message =====

Name: weather\_supervisor

The current weather forecast for NYC is 80 degrees with sunny skies.

===== Ai Message =====

Name: weather\_team

Transferring back to top\_level\_supervisor

Tool Calls:

transfer\_back\_to\_top\_level\_supervisor (f10b2b2d-e5e8-45d5-a6c6-6334921cd1de)

Call ID: f10b2b2d-e5e8-45d5-a6c6-6334921cd1de

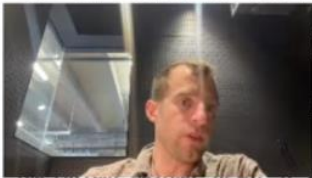
===== Tool Message =====

Name: transfer\_back\_to\_top\_level\_supervisor

Successfully transferred back to top\_level\_supervisor

===== Ai Message =====

The current weather in NYC is 80 degrees with sunny skies.



Gmail RLM 2025 Adobe Video Edit All Bookmarks

Compare

TRACE

Waterfall Most relevant

LangGraph 14.96s 2,379

- top\_level\_supervisor 1.61s
  - top\_level\_supervisor 1.61s
    - agent 1.60s
      - call\_model 1.60s
        - Prompt 0.00s
          - ChatOpenAI gpt-4o 1.59s
            - should\_continue 0.00s
              - tools 0.00s
                - transfer\_to\_weather\_team 0.00s
                  - weather\_team 7.40s
                    - top\_level\_supervisor 5.95s

Some runs have been hidden. [Show 58 hidden runs](#)

ChatOpenAI

Run Feedback Metadata

Functions & Tools

  - transfer\_to\_math\_team
  - transfer\_to\_weather\_team **CALLED**

Input

SYSTEM

You are a team supervisor, tasked with managing a weather expert and a math expert. Once you have the answer to the user's question, respond to the user.

HUMAN

what's the weather in nyc?

Output

AI

transfer\_to\_weather\_team call\_EkoeGCvt7msKe6khyTnnXQna

{}

TRACE

Waterfall

Most relevant

should\_continue 0.00s

tools 0.00s

transfer\_to\_weather\_team 0.00s

weather\_team 7.40s

weather\_team 7.40s

weather\_supervisor 2.71s

weather\_supervisor 2.71s

agent 2.70s

call\_model 2.69s

Prompt 0.00s

ChatOp... gpt... 2.69s

should\_continue 0.00s

tools 0.00s

transfer\_to\_temper... 0.00s

temperature\_expert 1.78s

art 1.78s

1.06s

0.00s

ChatOpenAI

Run Feedback Metadata

Functions & Tools

transfer\_to\_temperature\_expert

transfer\_to\_precipitation\_expert

Input

SYSTEM

You are a weather forecast expert, tasked with managing a temperature forecast expert and a precipitation forecast expert. Don't ask for clarifications. Always respond to the user with the weather forecast according to your team experts. DO NOT make up answer -- ask experts! You MUST ALWAYS respond to the user with the final answer, do not respond with empty text.

HUMAN

what's the weather in nyc?

AI

top\_level\_supervisor

transfer\_to\_weather\_team call\_EkoeGCvt7msKe6khyTnnXQna

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE

Waterfall Most relevant

tools 0.00s

transfer\_to\_temper... 0.00s

temperature\_expert 1.78s

temperature\_expert 1.78s

agent 1.06s

call\_model 1.06s

Prompt 0.00s

ChatOp... gpt... 1.05s

should\_continue 0.00s

tools 0.00s

get\_temperature 0.00s

agent 0.71s

call\_model 0.71s

Prompt 0.00s

ChatOp... gpt... 0.71s

get\_temperature

Run Feedback Metadata

Run ID Trace ID

Input

Input

{'location': 'nyc'}

Output

TOOL

get\_temperature call\_SFRkxkM52BG3qipnn6l0m9W5

"Will be 80 degrees"

JSON RAW

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE

Waterfall Most relevant

agent 1.06s

call\_model 1.06s

Prompt 0.00s

ChatOp... gpt... 1.05s

should\_continue 0.00s

tools 0.00s

get\_temperature 0.00s

agent 0.71s

call\_model 0.71s

Prompt 0.00s

ChatOp... gpt... 0.71s

should\_continue 0.00s

weather\_supervisor 0.57s

weather\_supervisor 0.57s

agent 0.56s

gpt... 0.56s

tinue 0.00s

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

temperature\_expert

get\_temperature call\_SFRkxkM52BG3qipnn6l0m9W5

{  
"location": "nyc"  
}

JSON

TOOL

get\_temperature call\_SFRkxkM52BG3qipnn6l0m9W5

"Will be 80 degrees"

JSON RAW

Output

AI

The temperature forecast for NYC is 80 degrees.

Some runs have been hidden. [Show 58 hidden](#)



Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE

Waterfall Most relevant

- agent 0.71s
  - call\_model 0.71s
    - Prompt 0.00s
    - ChatOp... gpt... 0.71s
    - should\_continue 0.00s
  - weather\_supervisor 0.57s
    - weather\_supervisor 0.57s
      - agent 0.56s
        - call\_model 0.56s
          - Prompt 0.00s
          - ChatOp... gpt... 0.56s
          - should\_continue 0.00s
        - tools 0.00s
        - transfer\_to\_precipi... 0.00s
      - precipitation\_expert 1.56s
        - art 1.55s
        - 0.91s
        - 0.00s

Some runs have been hidden. Show 58 hidden

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

transfer\_back\_to\_weather\_supervisor 9f84cab6-b7bb-4161-8f91-d44f15cf251d

{}

JSON

TOOL

transfer\_back\_to\_weather\_supervisor 9f84cab6-b7bb-4161-8f91-d44f15cf251d

"Successfully transferred back to weather\_supervisor"

JSON RAW

Output

AI

transfer\_to\_precipitation\_expert call\_2zjZyb2xtLkQz8HC19Up5QP4

{}

JSON

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE

Waterfall Most relevant

- agent 0.71s
  - call\_model 0.71s
    - Prompt 0.00s
    - ChatOp... gpt... 0.71s
    - should\_continue 0.00s
  - weather\_supervisor 0.57s
    - weather\_supervisor 0.57s
      - agent 0.56s
        - call\_model 0.56s
          - Prompt 0.00s
          - ChatOp... gpt... 0.56s
          - should\_continue 0.00s
        - tools 0.00s
        - transfer\_to\_precipi... 0.00s
      - precipitation\_expert 1.56s
        - art 1.55s
        - 0.91s
        - 0.00s

Some runs have been hidden. Show 58 hidden

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

transfer\_back\_to\_weather\_supervisor 9f84cab6-b7bb-4161-8f91-d44f15cf251d

{}

JSON

TOOL

transfer\_back\_to\_weather\_supervisor 9f84cab6-b7bb-4161-8f91-d44f15cf251d

"Successfully transferred back to weather\_supervisor"

JSON RAW

Output

AI

transfer\_to\_precipitation\_expert call\_2zjZyb2xtLkQz8HC19Up5QP4

{}

JSON

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE Waterfall Most relevant

- Prompt 0.00s
- ChatOp... gpt... 0.56s
- should\_continue 0.00s
- tools 0.00s
- transfer\_to\_precipi... 0.00s
- precipitation\_expert 1.56s
- precipitation\_expert 1.55s
- agent 0.91s
- call\_model 0.91s
- Prompt 0.00s
- ChatOp... gpt... 0.90s
- should\_continue 0.00s
- tools 0.00s
- get\_precipitation 0.00s
- agent 0.64s
- 0.64s
- 0.00s
- gpt... 0.63s
- tinue 0.00s

Some runs have been hidden. Show 58 hidden

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

```
{}
```

JSON

TOOL

transfer\_to\_precipitation\_expert call\_2zjZyb2xtLkQz8HC19Up5QP4

"Successfully transferred to precipitation\_expert"

JSON RAW

Output

AI

get\_precipitation call\_sGz31I1sVDuJxRGJpVageS8R

```
{  
  "location": "nyC"  
}
```

JSON

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE Waterfall Most relevant

- Prompt 0.00s
- ChatOp... gpt... 0.56s
- should\_continue 0.00s
- tools 0.00s
- transfer\_to\_precipi... 0.00s
- precipitation\_expert 1.56s
- precipitation\_expert 1.55s
- agent 0.91s
- call\_model 0.91s
- Prompt 0.00s
- ChatOp... gpt... 0.90s
- should\_continue 0.00s
- tools 0.00s
- get\_precipitation 0.00s
- agent 0.64s
- 0.64s
- 0.00s
- gpt... 0.63s
- tinue 0.00s

Some runs have been hidden. Show 58 hidden

ChatOpenAI

Run Feedback Metadata

Run ID Trace ID

```
{}
```

JSON

TOOL

transfer\_to\_precipitation\_expert call\_2zjZyb2xtLkQz8HC19Up5QP4

"Successfully transferred to precipitation\_expert"

JSON RAW

Output

AI

get\_precipitation call\_sGz31I1sVDuJxRGJpVageS8R

```
{  
  "location": "nyc"  
}
```

JSON



Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE Waterfall Most relevant

- transfer\_to\_precipi... 0.00s
- precipitation\_expert 1.56s
  - precipitation\_expert 1.55s
    - agent 0.91s
      - call\_model 0.91s
        - Prompt 0.00s
        - ChatOp... gpt... 0.90s
        - should\_continue 0.00s
        - tools 0.00s
          - get\_precipitation 0.00s
        - agent 0.64s
          - call\_model 0.64s
            - Prompt 0.00s
            - ChatOp... gpt... 0.63s
            - should\_continue 0.00s

get\_precipitation

Run Feedback Metadata

Input

Input

```
{'location': 'nyc'}
```

Output

TOOL

get\_precipitation call\_sGz3lI1sVDuJxRGJpVageS8R

"Will be sunny"

JSON RAW

Gmail RLM 2025 Adobe Video Edit All Bookmarks

TRACE Waterfall Most relevant

- call\_model 0.91s
  - Prompt 0.00s
  - ChatOp... gpt... 0.90s
  - should\_continue 0.00s
  - tools 0.00s
    - get\_precipitation 0.00s
  - agent 0.64s
    - call\_model 0.64s
      - Prompt 0.00s
      - ChatOp... gpt... 0.63s
      - should\_continue 0.00s
  - weather\_supervisor 0.77s
    - weather\_supervisor 0.77s
      - agent 0.77s
        - call\_model 0.77s
          - Prompt 0.00s
          - ChatOp... gpt... 0.76s
          - should\_continue 0.00s

ChatOpenAI

Run Feedback Metadata

precipitation\_expert

Transferring back to weather\_supervisor

transfer\_back\_to\_weather\_supervisor 47c5e664-a6ce-4dd9-8b89-1c8d0ad90326

{}

JSON

TOOL

transfer\_back\_to\_weather\_supervisor 47c5e664-a6ce-4dd9-8b89-1c8d0ad90326

"Successfully transferred back to weather\_supervisor"

JSON RAW

Output

AI

The current weather forecast for NYC is 80 degrees with sunny skies.

Some runs have been hidden. Show 58 hidden runs

TRACE

Waterfall Most relevant

- call\_model 0.91s
- Prompt 0.00s
- ChatOp... gpt... 0.90s
- should\_continue 0.00s
- tools 0.00s
- get\_precipitation 0.00s
- agent 0.64s
- call\_model 0.64s
- Prompt 0.00s
- ChatOp... gpt... 0.63s
- should\_continue 0.00s
- weather\_supervisor 0.77s
- weather\_supervisor 0.77s
- agent 0.77s
- call\_model 0.77s
- gpt... 0.76s
- tinue 0.00s

Some runs have been hidden. Show 58 hidden runs

### top\_level\_supervisor

Run Feedback Metadata

weather\_team

Transferring back to top\_level\_supervisor

transfer\_back\_to\_top\_level\_supervisor f10b2b2d-e5e8-45d5-a6c6-6334921cd1de

```
{}
```

JSON

TOOL

transfer\_back\_to\_top\_level\_supervisor f10b2b2d-e5e8-45d5-a6c6-6334921cd1de

"Successfully transferred back to top\_level\_supervisor"

JSON RAW

AI

top\_level\_supervisor

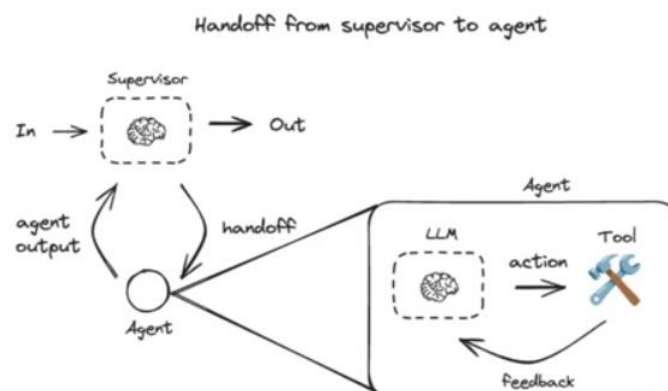
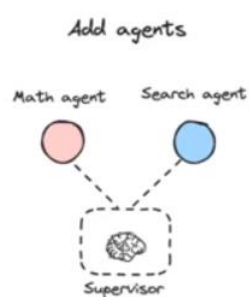
The current weather in NYC is 80 degrees with sunny skies.

## Library

- How to combine agents in to teams?

langgraph-supervisor  
langchain-ai • Updated 1 day ago

- Supervisor pattern
- How to combine agents



Supervisor → Agent → Supervisor