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Why LangGraph?

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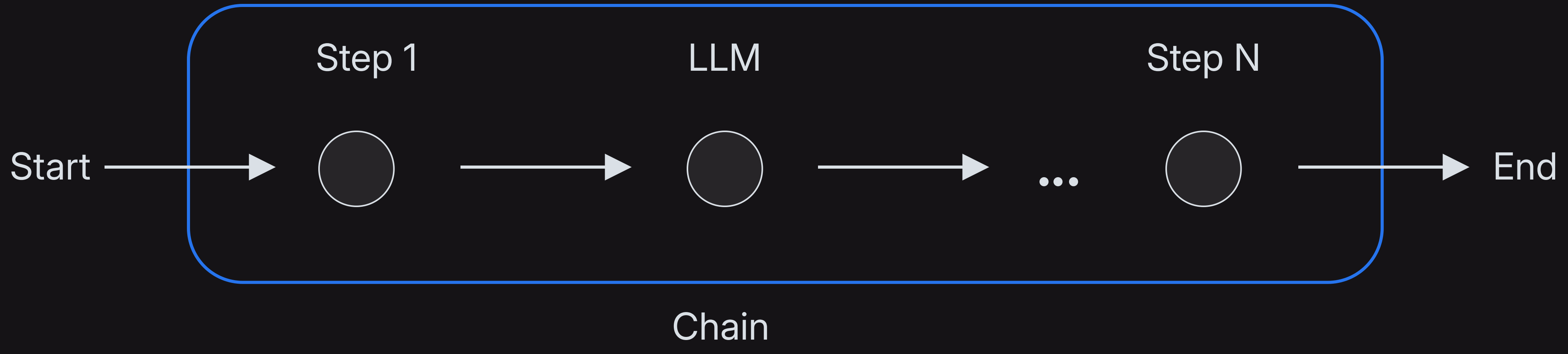
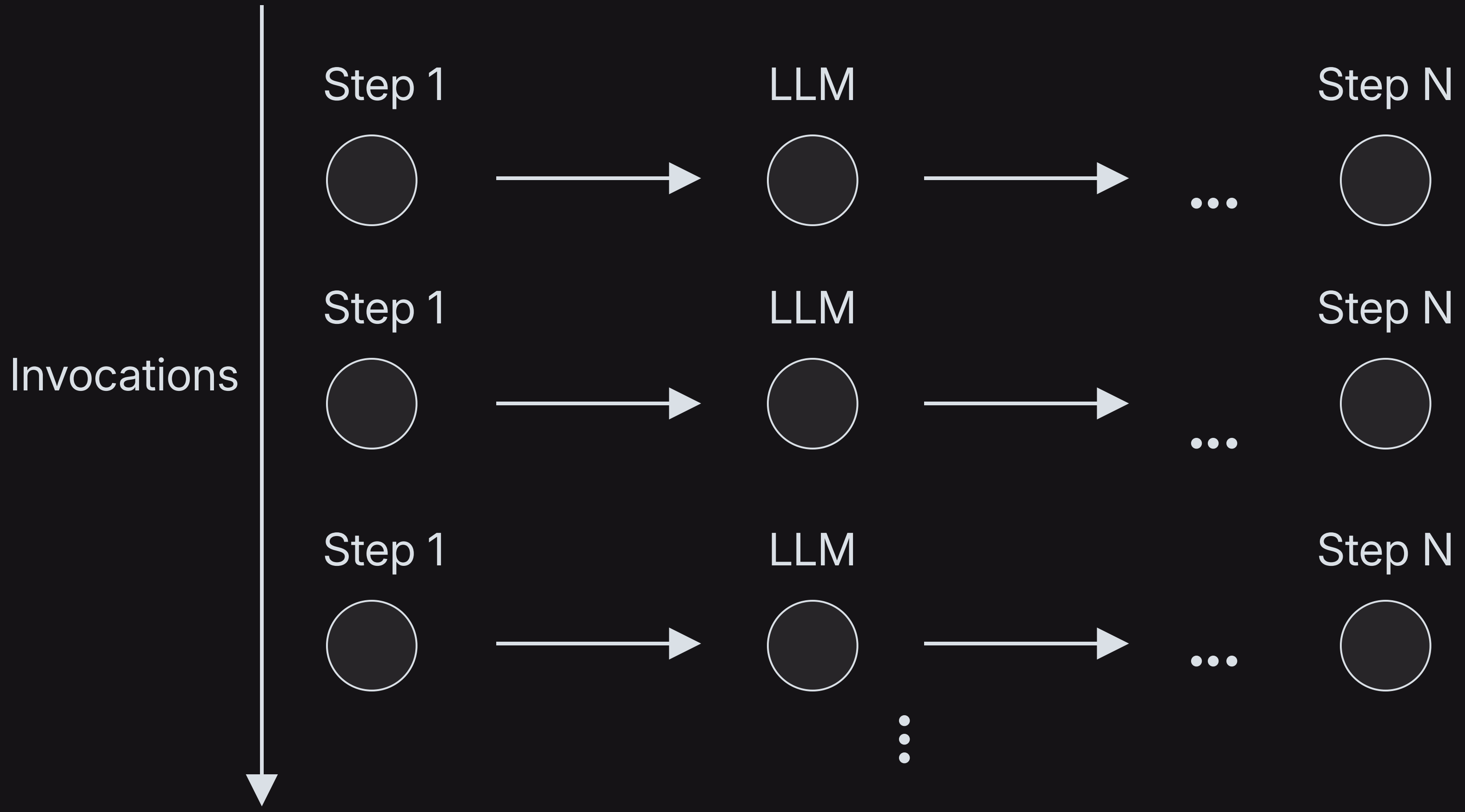
AI Workflows use Chains

Follows a sequential fixed order of steps



AI Workflows use Chains



Workflows are reliable as the same fixed steps are executed in order

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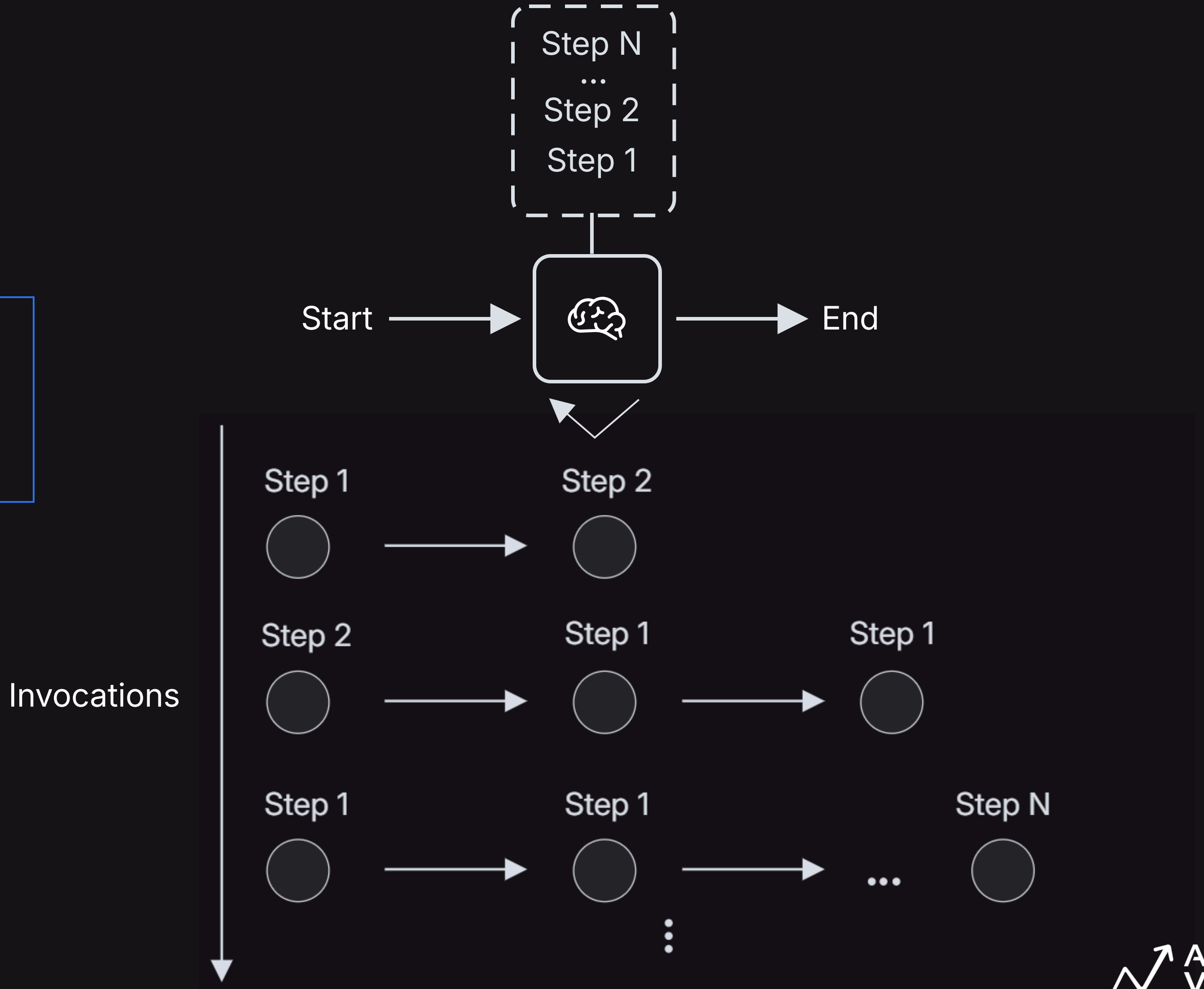
Agentic AI Systems Rely on the LLM to Control the Flow

Autonomous complex systems would rely on the LLM to reason and decide the execution flow of steps



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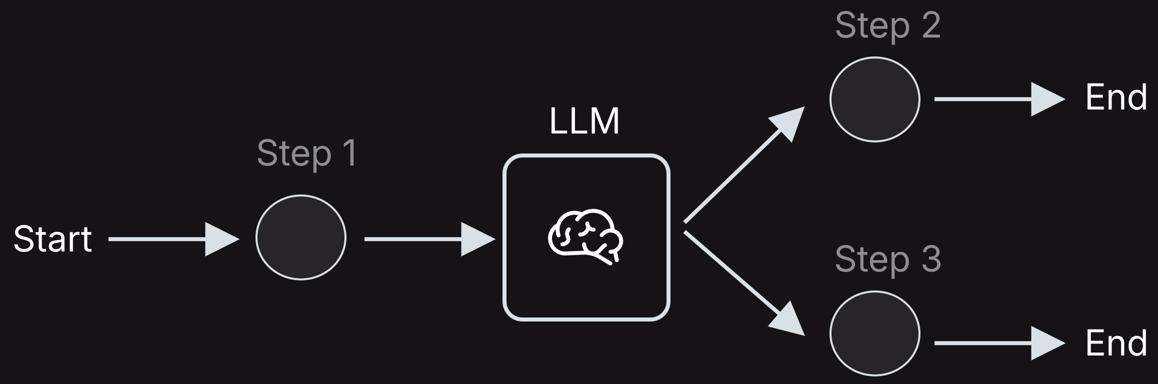
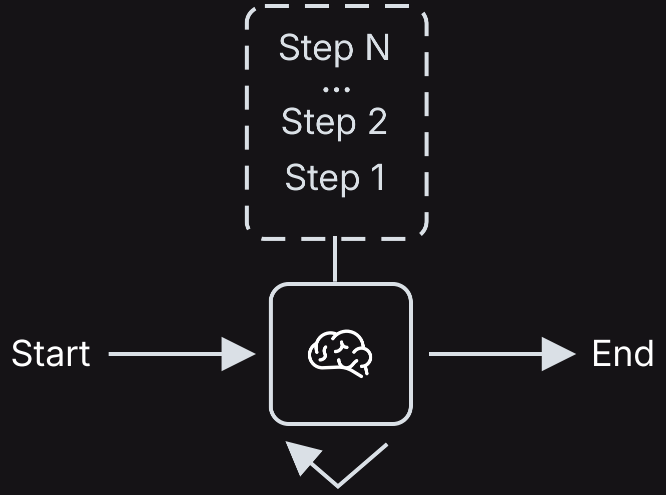
There are a Variety of Agentic AI Systems



Router

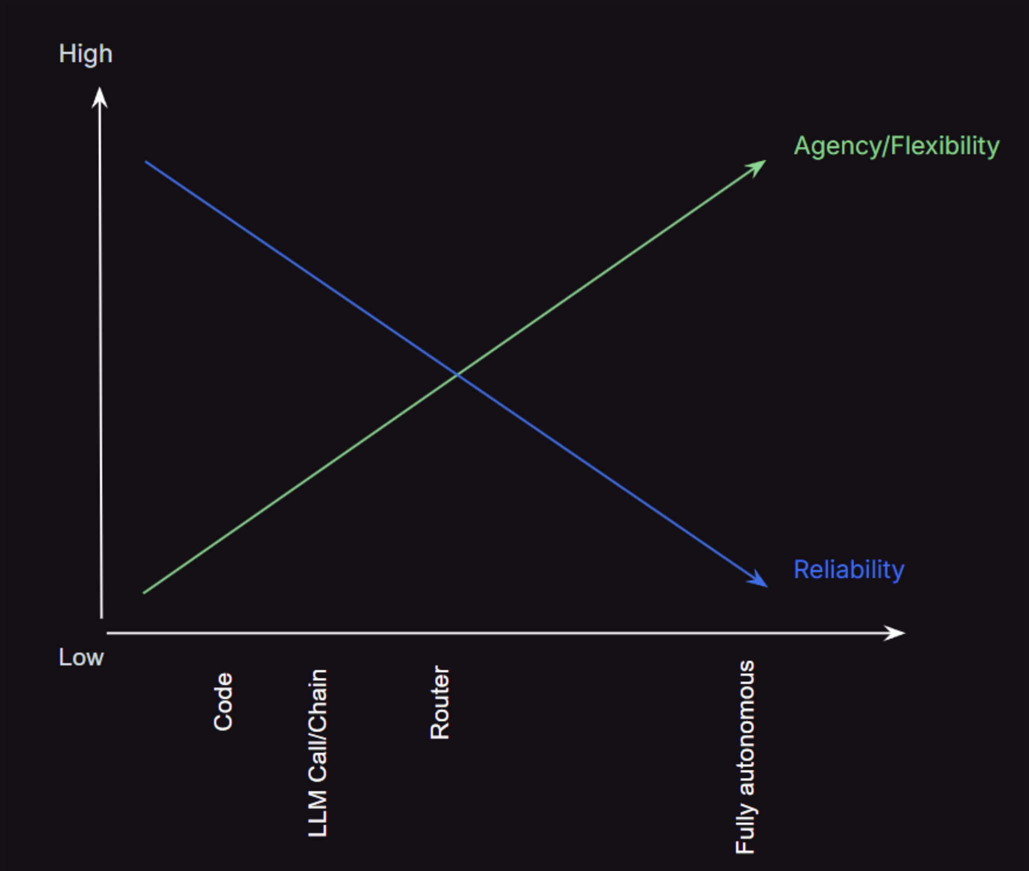


Fully Autonomous

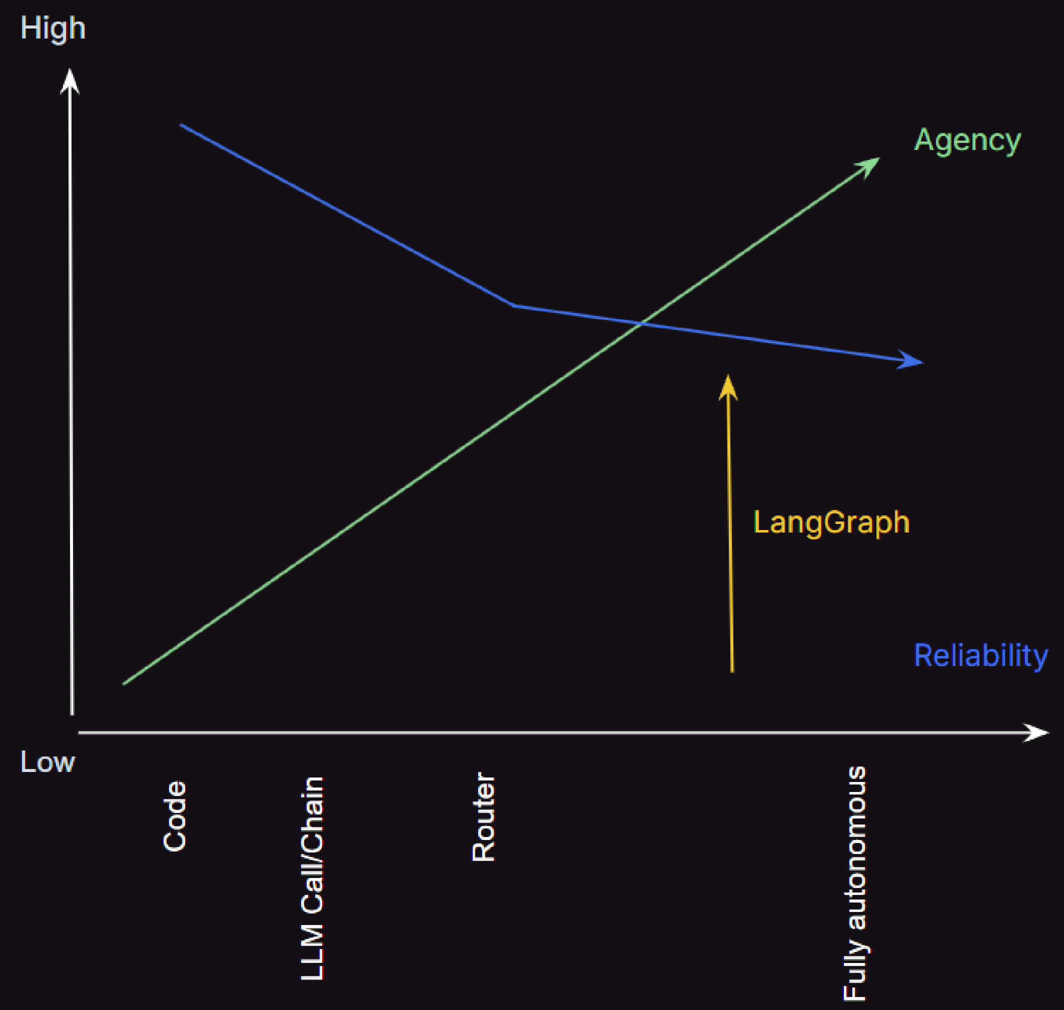
Practical Challenges with Agentic AI Systems

- More autonomy and reliance on LLMs leads to more flexibility but a drop in reliability

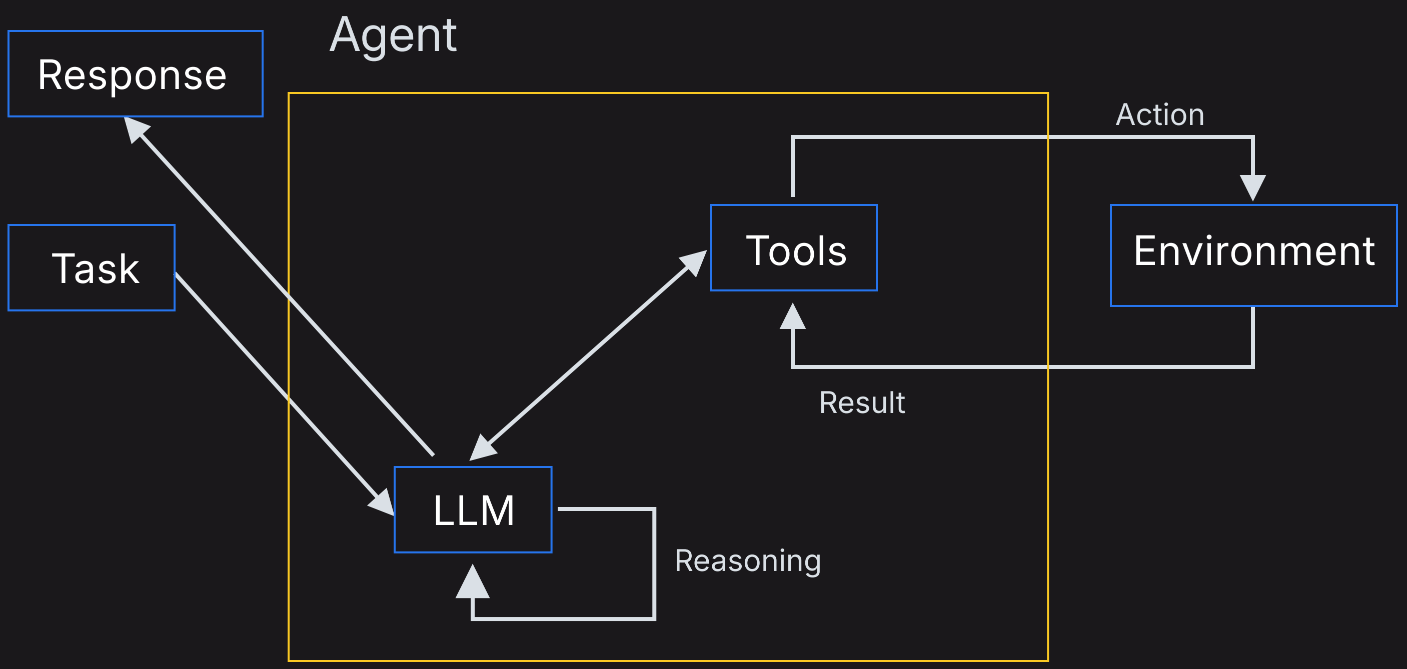
- Less autonomy and reliance on manual workflows leads to less flexibility but an increase in reliability



LangGraph Helps you Improve Reliability of Agentic Systems



Standard Agentic AI System Workflow



- This agentic workflow consists of a large language model (LLM) and tools
- The ReAct methodology is used to run the agent:
    - If the agent says to take an action (i.e. call tool), relevant tools are run and results are returned to the agent
    - If the agent did not ask to run tools, the response output is sent back to the user

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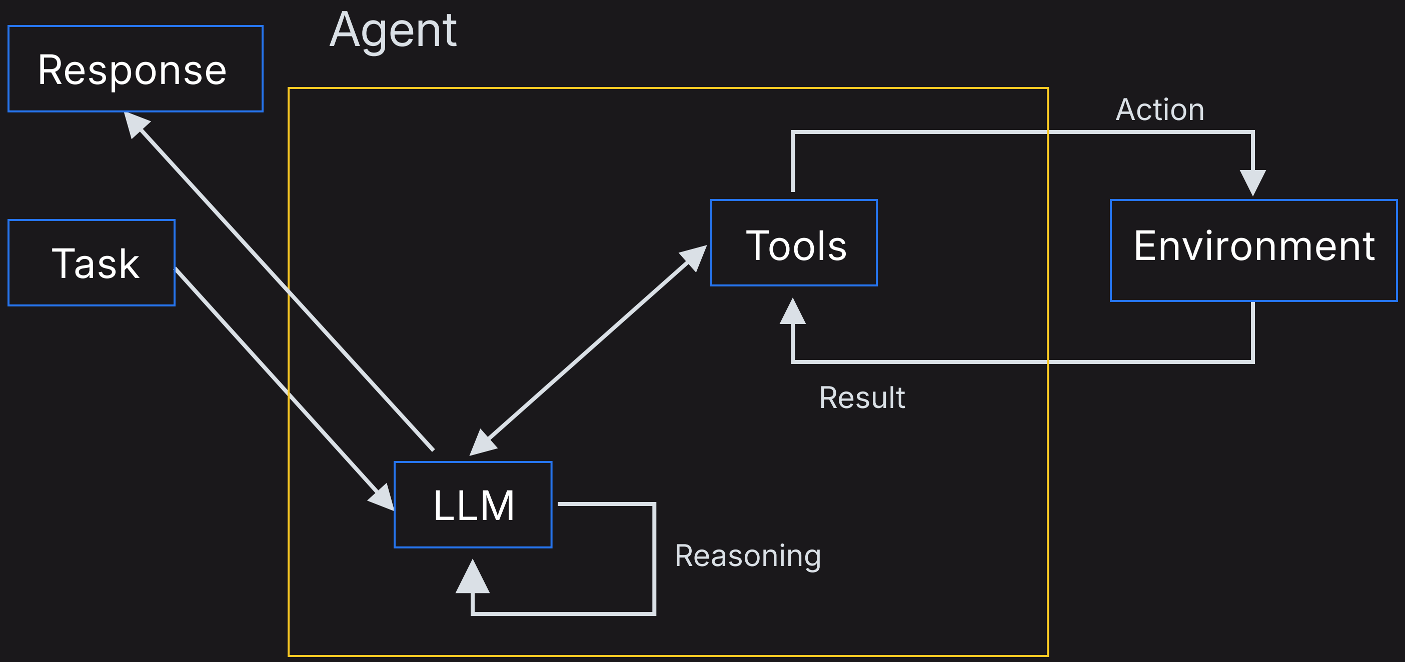
Why LangGraph?

LangGraph is designed for building agentic applications with some core principles:

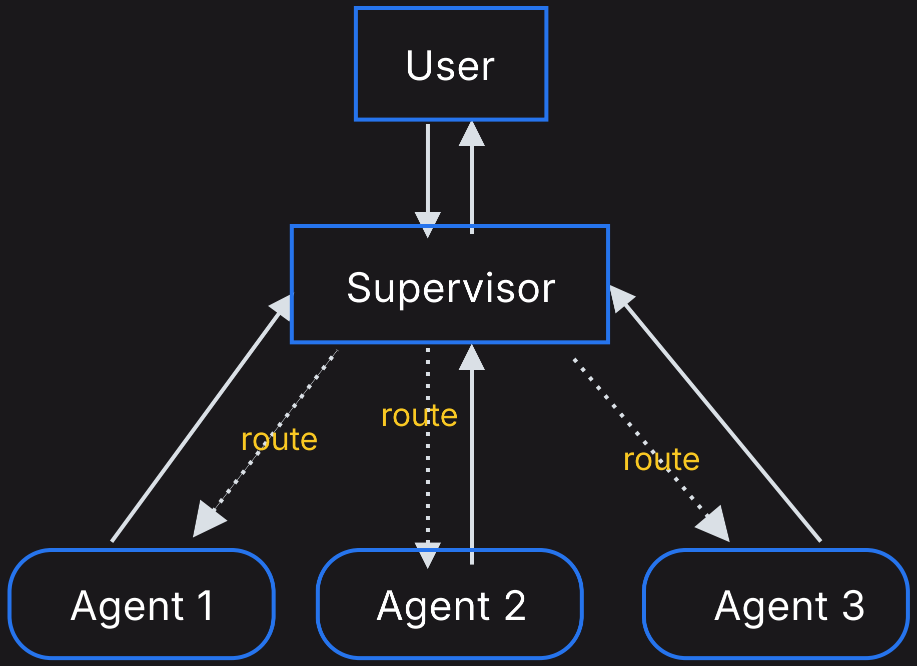
- **Controllability:**
  Offers low-level control which increases reliability in agentic systems.
- **Human-in-the-Loop:**
  Built-in persistence layer enhances human-agent interaction patterns.
- **Streaming First:**
  Supports streaming of events and tokens, providing real-time feedback to users.

Standard Agentic AI System Workflow



- Complex LLM applications often use cycles during execution.
- These cycles often use the LLM to reason about what to do next in the cycle, like Chain of Thought.
- This can essentially be thought of as running an LLM in a for-loop.
- These types of systems are commonly called AI agents.
- LangGraph is the perfect framework to model these agents as graphs, and LangChain recommends it.

Multi-Agent AI System Workflow



- Multi-Agent workflows involve multiple independent agents powered by LLMs connected in a specific way
- Each agent can have its prompt, LLM, tools, and other custom code to collaborate with the other agents if needed
- LangGraph makes each agent a node in the graph. The control flow is managed by edges, and they communicate by adding to the graph's state

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Thanks