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Introduction to LangGraph

Instructor

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Understanding Agentic Systems

- ## Agentic Systems:

  Systems that utilize LLMs to manage the control flow of applications

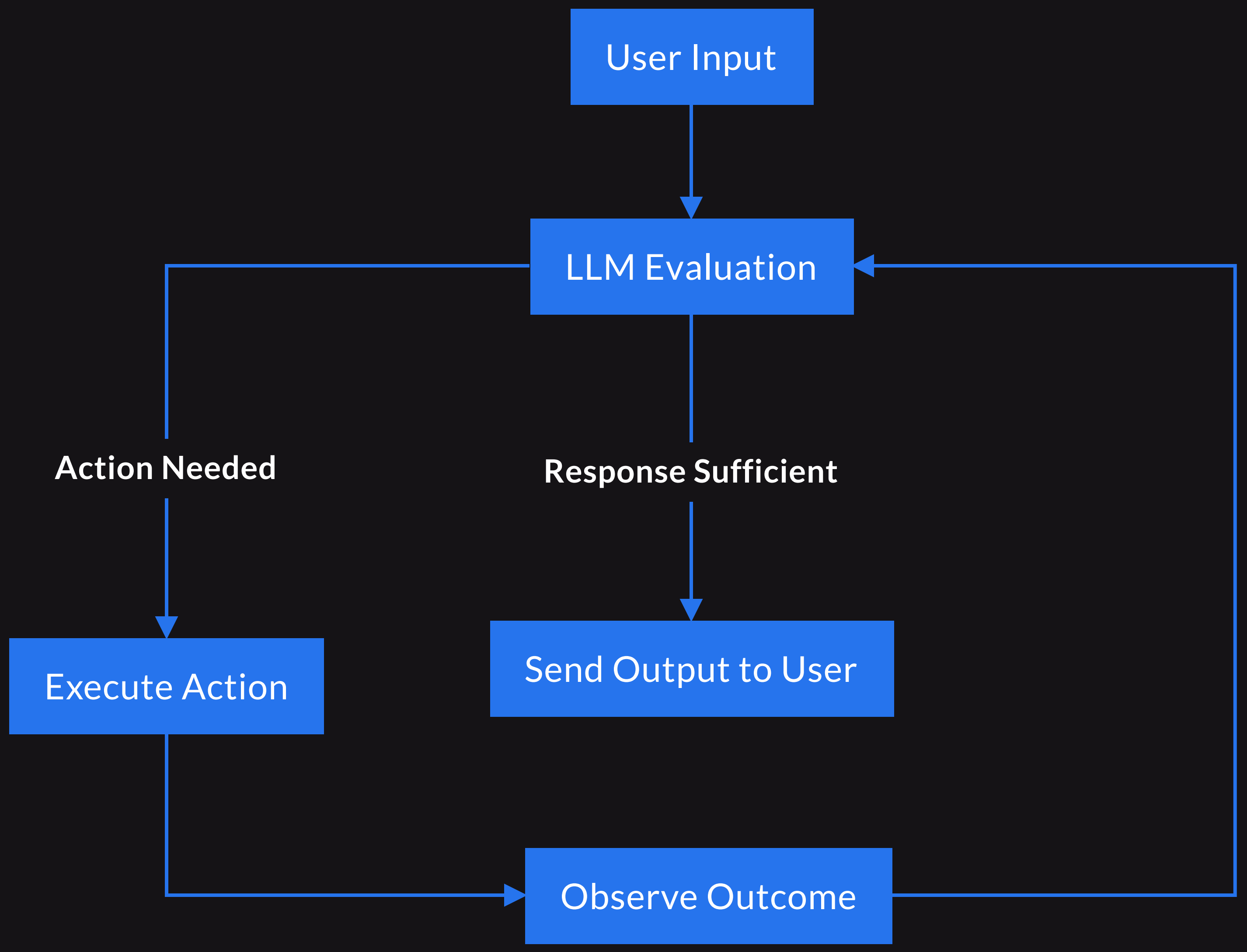
- ## Key Functions:

  Routing decisions, tool selection, and evaluating output sufficiency

- ## Agent Loop:

  Continuous decision-making process that enables agents to solve complex tasks

The Agent Loop



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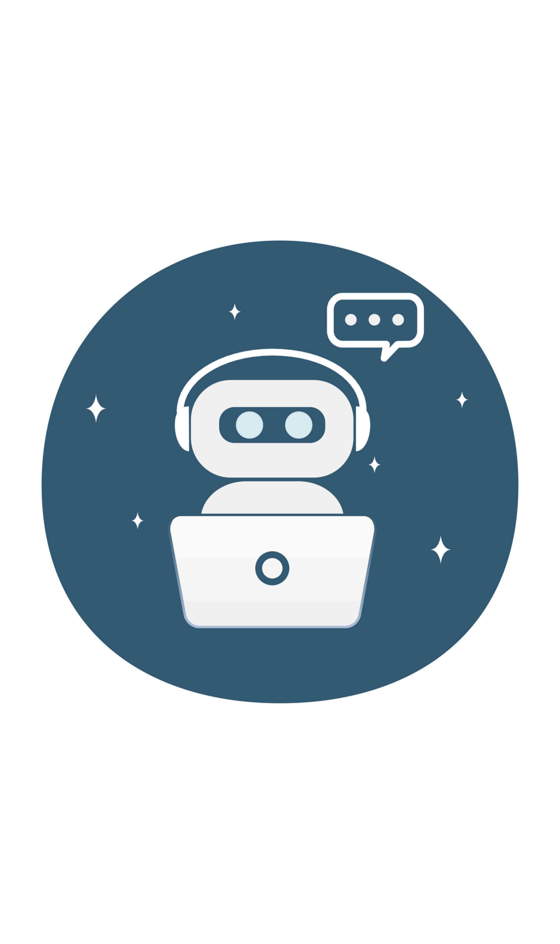
Practical Use Case: Customer Support Agent



Scenario:

An LLM-powered customer support agent.

User Input:

Customer asks about order status.

LLM Decision:

Determines if it can provide the status directly or if it needs to fetch data from the database.

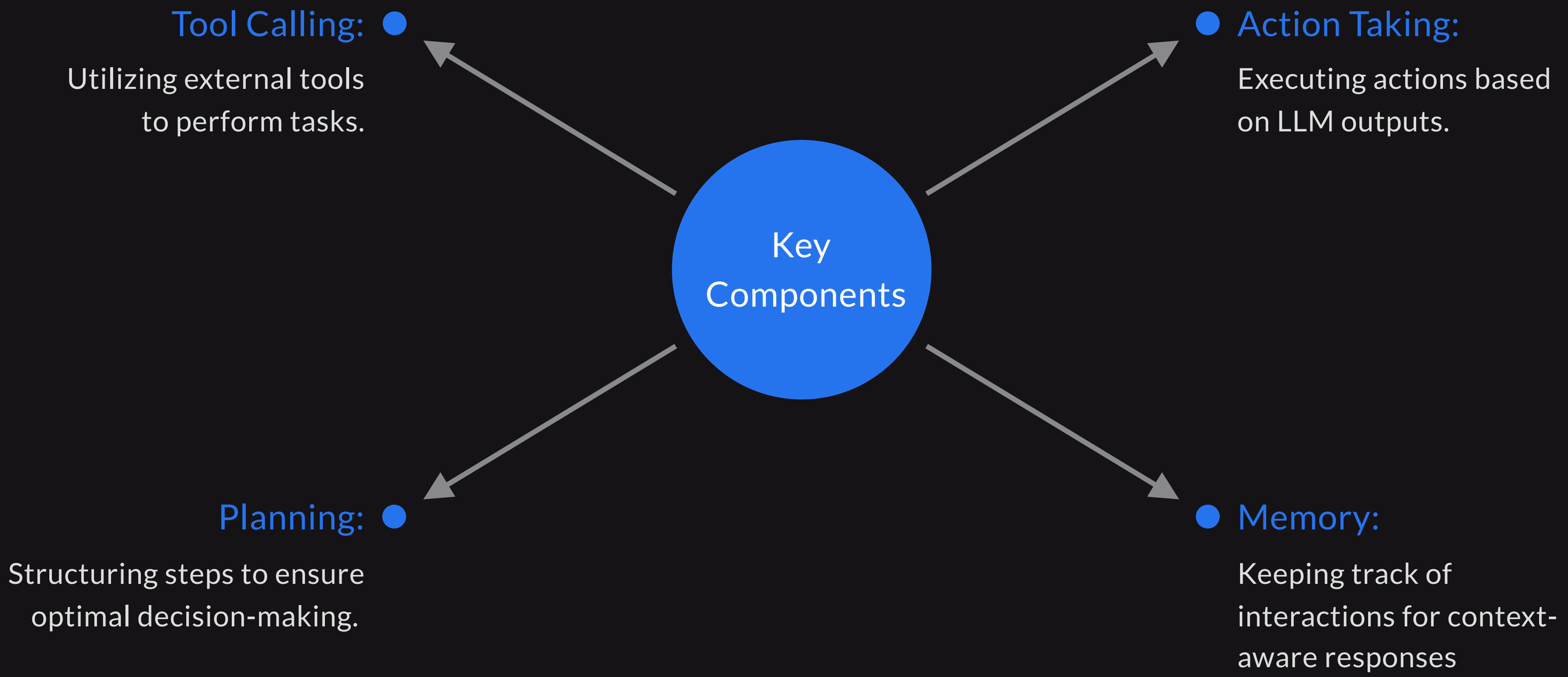
Action Taken:

If data fetch is needed, the agent queries the database and updates the user with the order status.

Advantages of LLM Agents

- Flexibility:
  - Agents can adapt to various tasks by determining the best action to take.
- Specialization:
  - LLM agents can be specialized with tools to perform niche tasks.
- Multi-Agent Collaboration:
  - Specialized LLM agents can collaborate to perform complex tasks.

Key Components of Agentic Systems



Key Components

Tool Calling: Utilizing external tools to perform tasks.

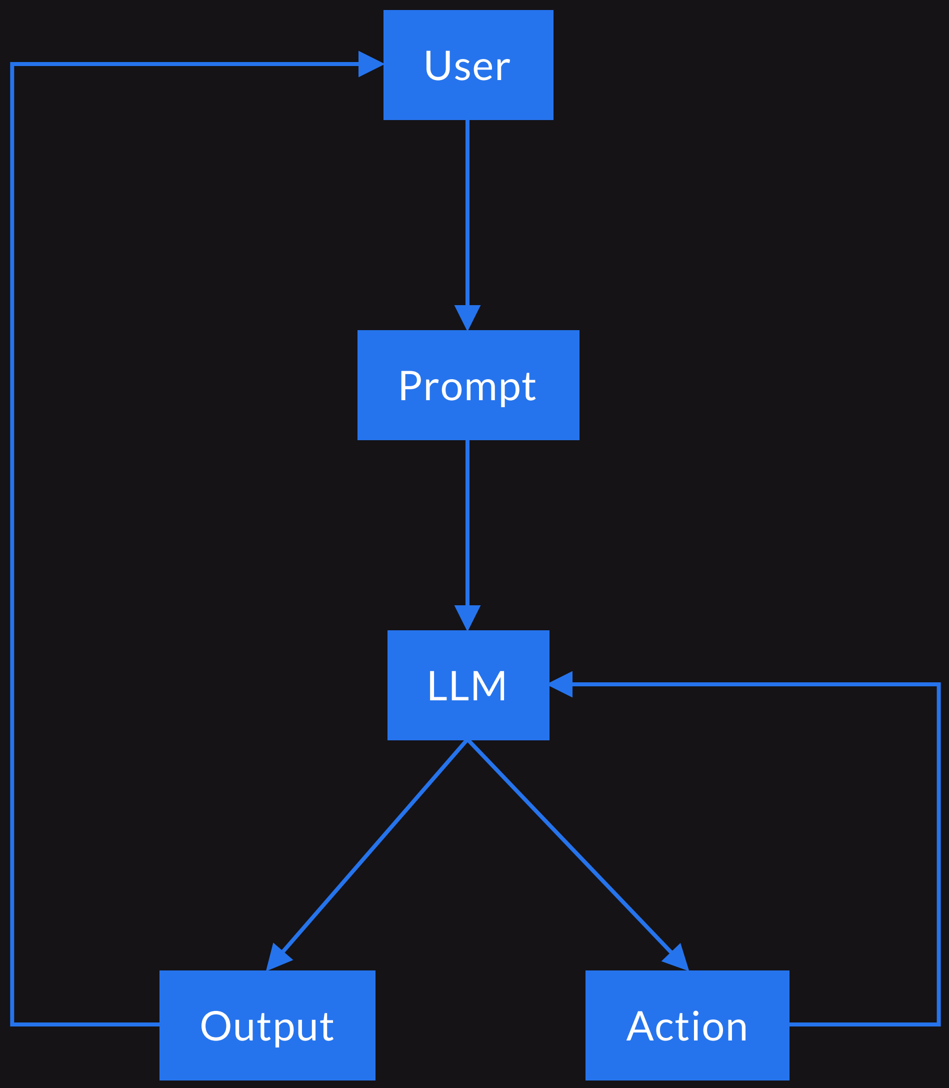
Action Taking: Executing actions based on LLM outputs.

Planning: Structuring steps to ensure optimal decision-making.

Memory: Keeping track of interactions for context-aware responses

Agent as Graphs

Workflows build with agents are usually structured as graphs



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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.

Thank You

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