Introduction to AI Agents

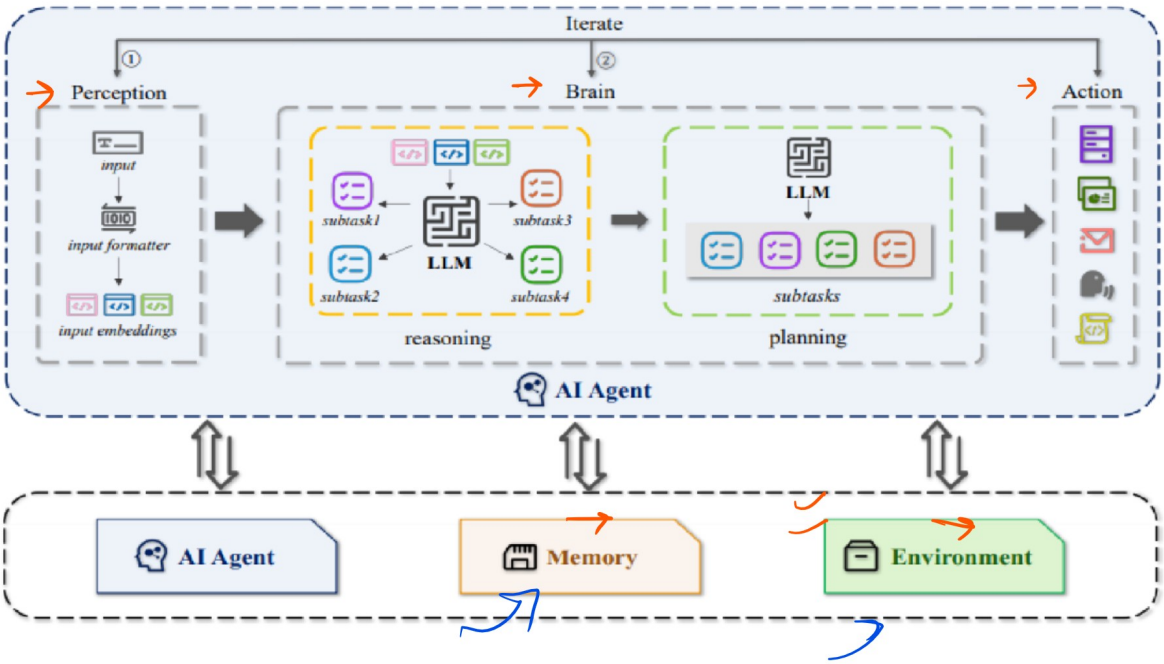
An AI Agents can be understood as a computer program that can perform tasks or make decisions on its own, based on its goals and the information it receives.

→ An AI Agent have three components –

1) Perception
2) Brain
3) Action

These three components work together: the perception gathers information, the brain figures out what to do, and the action carries out the plan. This process allows AI agents to perform a wide variety of tasks, from answering questions to controlling complex systems.

Workflow of AI Agents



The workflow of AI agents is divided into three major components:

A. Perception (Input Handling)

- The AI agent first receives input from the environment, which could be:
  - Text (user queries, documents)
  - Images (computer vision tasks)
  - Voice (speech-to-text)
  - Structured data (databases, APIs)
- This input is then formatted and preprocessed to ensure consistency.
- The data is converted into embeddings or structured representations, making it understandable for the AI model.

B. Brain (Reasoning & Planning)

- The AI agent uses a **Large Language Model (LLM)** or similar reasoning system to process the request.
- The reasoning phase involves:
  - Understanding relationships between different subtasks.
  - Verifying facts and analyzing context.
- The planning phase determines how to execute these subtasks efficiently.
- If the task requires multiple steps, the AI **breaks it into smaller sub-tasks** and organizes execution.

C. Action (Execution of Tasks)

- Once reasoning and planning are complete, the AI agent executes the required actions.
- These actions can include:
  - Sending messages or responses
  - Making API calls to external services
  - Interacting with databases and tools
  - Performing computations and generating outputs
- The AI agent continuously monitors execution and refines responses if needed.

Example: AI Assistant for Customer Support

Let's say we have an AI-powered customer support agent that helps users track their orders.

A. Perception (Input Handling)

- The user types: **"Where is my order #12345?"**
- The AI agent **formats** this input and extracts key details:
  - **Order ID**: 12345
  - **Intent**: Order tracking request
- It **converts** the text into embeddings for better understanding.

B. Brain (Reasoning & Planning)

- The AI agent **analyzes** the request.
- It **leverages Memory**:
  - Recalls past interactions with the user (e.g., previous inquiries about this order).
- It **uses Environment**:
  - Connects to the order tracking system to fetch real-time data.
- It **plans the next steps**:
  1. Query the database for order status.
  2. Retrieve the latest tracking information.
  3. Format a response.

C. Action (Execution of Tasks)

- The AI agent **executes** the plan:
  - Queries the **order tracking system (Environment)**.
  - Finds that order #12345 is **out for delivery**.
  - **Uses Memory** to personalize the response:
    - "Since you asked about this order earlier, here's an update!"
- It sends a response:

  "Your order #12345 is out for delivery and should arrive by 5 PM today!"

Role of Memory & Environment

- **Memory**: Remembers past user interactions to make responses more personalized.
- **Environment**: Connects to external systems (e.g., order tracking database) for real-time data.

Final Outcome:

✅ The AI agent efficiently **understood, reasoned, used memory & environment, and responded** to the user's query. 🚀