



What is an AI Agent?

Definition and Process Overview

What is an AI Agent?

An AI agent is a computer program which can think, make decisions, and take actions autonomously to achieve specific goals

AI agents are systems designed to reason, act, and adapt dynamically to user queries.



What is an AI Agent?

- Shift from isolated models to Compound Systems (e.g., RAG).
- Advantages:
 - Modular and flexible design.
 - Easier to adapt to evolving tasks and knowledge.
- Challenges in Traditional Models:
 - Limited knowledge base.
 - Hard to adapt to unforeseen scenarios.



Components of an LLM Agent

- Core Functions:


1. Reason: Logical planning and analysis.

2. Act: Execute tasks using tools.

3. Access Memory: Retrieve stored or historical data.

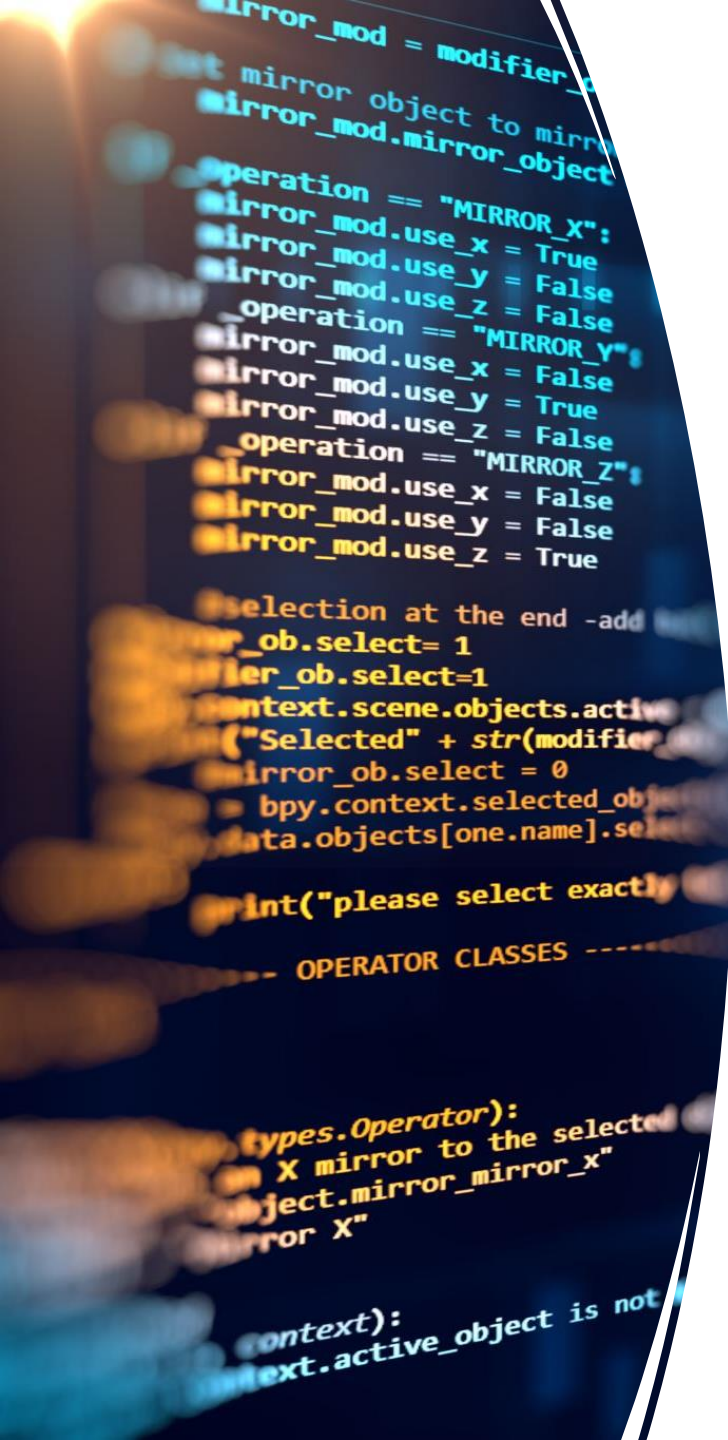
- ReAct Framework:

- Combines reasoning and action for decision-making.



Steps in the AI Agent Process

- User Query Workflow:
 1. User sends a query.
 2. Agent plans/thinks through the query.
 3. Executes actions using tools:
 - Search Engines
 - Calculators
 - Wikipedia
 - Code Tools
 - LLMs
 4. Observes the results.
 5. Generates a coherent response.



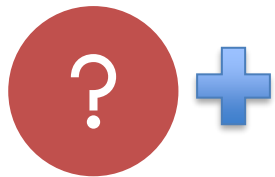
Tools Used by LLM Agents

- Search: Query search engines to find data.
- Calculate: Perform mathematical computations.
- Code: Write, debug, or execute code.
- LLMs: Generate textual or conversational answers.
- APIs and Databases: Retrieve domain-specific information.

Control Logic of AI Agents

- Human vs. LLM Thinking:
 - Human (Pragmatic): 'Think Fast' – Intuitive decision-making.
 - LLM Agent: 'Think Slow' – Logical, deliberate reasoning.
- Compound Approach(best):
 - Combines human intuition with LLM logic for optimal outcomes.

What is AI Agent?



PROGRAM

GOAL

PLANNING

PERCEPTION

TOOLS

LLM

Summary

- AI Agent: A dynamic system that combines reasoning, acting, and memory retrieval.
 - Integrates tools like search engines, calculators, and LLMs for tasks.
- Benefits:
 - Adaptability, modular design, and improved decision-making.

PROCESS



QUERY



PLAN/THINK



ACT (VIA
TOOLS)



OBSERVE



ANSWER.

Cover Letter Project

