What is AI vs Agentic AI?

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16 July 2025

1 Introduction

This is summarized and studied from a Medium article titled, *AI Agent vs Agentic AI: Understand The Actual Difference* by Harisudhan.S. published on July 6th, 2025. I will be using this document to show my understanding of the document.

AI agents these days can do anything, from booking meetings to generating code. However, in the last year or so, a new term named **Agentic AI**. These sound similar, but on the contrary, they are actually rather different! AI agents follow instructions, while Agentic AI makes its own decisions based upon its goals. In 2025 and beyond, knowing the difference is essential!

2 What are AI Agents?

Definition 2.1 (AI Agent)**.** *An **AI Agent** is a system that can perform the following:*

- ***Perceives** its environment (through input such as text, video, audio, etc.),*
- ***Thinks or Reasons** (uses AI models or logic to understand),*
- ***Acts** to achieve goals (responding, performing actions, generating results).*

While an LLM is able to generate code, we can also equip it with a code interpreter tool. This allows the LLM to not only write code, but also run it and respond with the computed result (reduces hallucination).

Example 2.1. So, consider the following. Say we ask the LLM to find the 345th Fibonacci Number, the AI agent will:

- Writes the code.
- Executes it using the interpreter.
- And returns the computed answer accurately.

From this example, we draw the conclusion that this makes an AI agent truly interactive, tool-augmented, and goal-oriented. Hence, the conclusion we draw from this example is that a single agent has access to multiple tools.

So here are the key takeaways from AI agents:

- Reactive, responding to predefined triggers or user requests.
- Limited autonomy and learning.
- Often powered by LLMs (as the brain) with tools (custom functions) or evolving toward Specialized Language Models (SLMs) for specific tasks.

3 What is Agentic AI?

Agentic AI is a more recent trend in artificial intelligence that operates automously. So let us coin the following definition:

Definition 3.1 (Agentic AI)**.** ***Agentic AI*** *can make decisions, set its own goals, and adapt to new situations with minimal or sometimes without human guidance.*

Now let us consider an example.

Example 3.1. In a multi-agent system powered by Agentic AI, small to medium SaaS applications can be developed by a coordinated crew of specialized AI agents. Each agent is designed for a specific role and equipped with appropriate tools.

- The **Coder** uses an LLM optimized for programming along with a code interpreter to write and execute code.
- The **Researcher** relies on a general-purpose LLM that is connected to internet search tools to gather relevant documentation, libraries, and best practices.
- The **Reviewer** uses an LLM fine-tuned for code review to catch bugs, ensure code quality, and flag security issues.
- The **Enhancer** integrates improvements, manages dependencies, and optimizes performance by accessing both the code base and the terminal.
- The **Feedback Handler** or **Tester** creates and runs test cases using testing frameworks to validate the system and report errors. These agents perceive their environment, reason across tasks, and act in a coordinated, proactive manner.

This structure demonstrates to us Agentic AI autonomous agents working together to acheive complex goals with minimal human intervention.

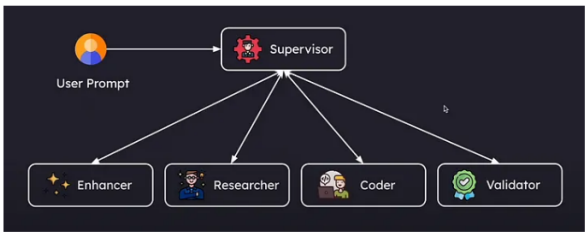

Figure 1: An image representation of the above agentic AI framework.

To summarize, Agentic AI is a group of agents that reason, perform actions in multiple steps, etc.

- High autonomy, with the ability to make decisions and set goals independently.
- Proactive, identifying needs or opportunities without too much explicit prompts.
- Capable of coordinating multiple systems or agents for complex tasks.

3.1 Reasoning

Reasoning is one of the most essential parts of a multi-agent system. We define **reasoning** as follows:

Definition 3.2 (Reasoning in LLMs)**.** *We define* ***reasoning*** *in a Large Language Model (LLM) as the capability to simulate logical or structured thinking patterns based on patterns it learned from massive amounts of text.*

Now, let us consider the following example:

Example 3.2. Example for Reasoning → Input: "We launched a new feature last month but user engagement dropped. Why might that happen?

- New feature was launched → expected engagement to rise
- But engagement dropped → unexpected outcome

Possible causes:

- The feature may be confusing or hard to use
- It might have introduced bugs or slowed down the app
- Users may not know about it (poor communication)

Inference:
Something about the feature rollout negatively affected user experience.
Suggestion:

- Check user feedback, app performance, and onboarding flow.
- Roll out a survey or track feature usage to validate the issue.

Final Answer: Even though a new feature was launched, engagement may have dropped due to usability issues, poor communication, or unintended side effects like bugs or slower performance. It's a good idea to review usage analytics, user feedback, and performance logs to identify what went wrong.

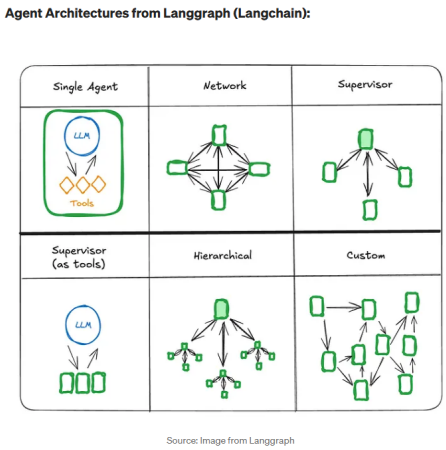

Figure 2: Agent Architectures from LangGraph (LangChain)

4 Characteristics Comparison

Now let us compare the characteristics of Agentic AI vs AI agents:

1. Autonomy
    - **AI Agents**: Usually operates within the strict boundaries defined by their programming. They respond to specific inputs or triggers, such as a user asking for a chatbot for help or a system that detects a predefined condition and suffers when number of tools increases. Their autonomy is controlled by programmed scope (or Low-Level Autonomy).
    - **Agentic AI**: Exhibits significant autonomy, which is capable of making decisions and taking actions without human explicit prompts. For

example, an Agentic AI system in cybersecurity may proactively detect and respond to a new threat pattern without being explicitly instructed.

2. Task Complexity

   - **AI Agents**: Designed for specific, repetitive tasks that have predictable outcomes. For example, consider an AI agent in HR might process leave request by following a set workflow.
   - **Agentic AI**: Used for usually complex, multi-step processes that require reasoning across domains. For example, an Agentic AI system in supply chain management might analyze demand trends, adjust inventory, and optimize logistics in real time.

3. Learning and Adaptation

   - **AI Agents**: Has limited learning capabilities, usually improving through developer updates/prompts or learning within a narrow domain. For example, a chatbot might improve its responses based on updated training data but cannot adapt to entirely new tasks.
   - **Agentic AI**: Learns from a wide range of interactions and experiences, adapting to new situations and even setting new goals. For instance, an Agentic AI in healthcare might learn from new medical research to refine treatment recommendations by modifying the prompts on its own up to a certain extent.

4. Proactiveness

   - **AI Agents**: Reactive by nature, they act only when triggered by user inputs or predefined conditions.
   - **Agentic AI**: Proactive, capable of identifying opportunities or issues.

5. Integration and Scale

   - **AI Agents**: Often standalone tools or components within a larger system, focused on specific functions.
   - **Agentic AI**: Usually acts as an umbrella technology, integrating multiple AI agents or tools to acheive broader objectives.

5 Why does the difference matter?

Here are the reasons why the difference between AI Agents and Agentic AI is.

- Effective AI Adoption

  - Choosing whether AI agents or Agentic AI ensures optimal performance and cost-effectiveness. AI Agents are useful for straightforward or repetitive tasks, while Agentic AI is better for complex, adaptive scenarios. If these technologies are misused, it could **lead to inefficiencies or suboptimal outcomes**.

- Risk Management
  - AI Agents are predictable and safer due to their limited scope, making them suitable for low-risk applications.
  - Agentic AI introduces risks such as unpredictable behavior, data exposure through agent connections, or increased coordination complexity. Businesses must implement **continuous monitoring and auditing to mitigate the risks**.

- Business Impact
  - AI Agents can significantly improve efficiency in specific areas, like reducing resolution times in IT Support.
  - Agentic AI has the potential to transform entire industries by enabling autonomous systems that drive productivity, innovation, and cost savings, especially in fields such as healthcare, logistics, etc.

- The Future
  - AI Agents are already widely adopted, with around 82% of companies planning to implement them in the next three years.
  - Agentic AI, while still in its infancy, is seen as the future of AI, with predictions that by 2028, around 15% of daily work decisions will be handled automatically.

6 Conclusion

The important thing to take from this rewrite of the article I have writtenm, is that AI Agents and Agentic AI represent two distinct approaches to AI, each with unique advantages and applications. **AI Agents are task-specific, rule-driven tools ideal for automating repetitive processes, while Agentic AI offers advanced autonomy, adaptability, and the ability to handle complex, dynamic tasks**.

Note this is just my mock-up of the article and all credit is due to the original author.