

Agents Unleashed: Crafting AI Agents with Flowise

Forge Smart Agents, Flow by Flow



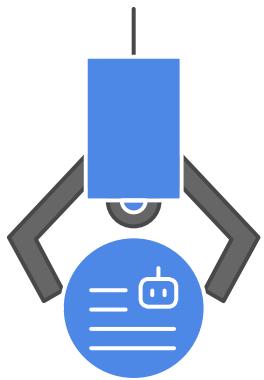
AI Agents

Your AI ally, effortlessly
supportive.

Definition of an AI Agent

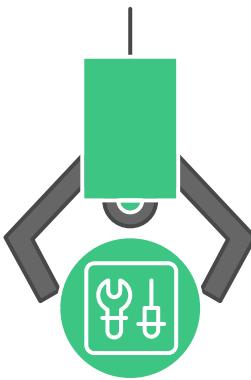


AI Agent Characteristics



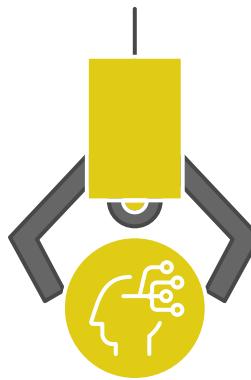
Autonomy

Operates without human oversight.



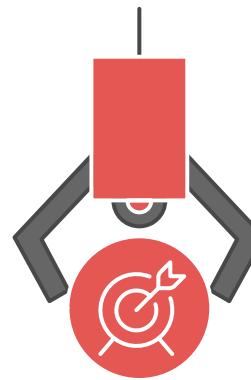
Tool Use

Accesses APIs, databases, and software.



Context Awareness

Interprets inputs from various sources.



Goal-Driven

Executes tasks toward defined outcomes.

An AI agent is a **digital entity** capable of autonomously performing tasks by understanding its environment, following instructions, using tools, and adapting its actions to achieve specific goals.

AI Agent Components



Core Thinking

Central processing unit. AI Brain. A Large Language Model that can think and make decisions.



Instructions *

The prompts that direct the AI's actions and responses.



Memory

The memory system that keeps track of previous interactions for continuity.



Knowledge *

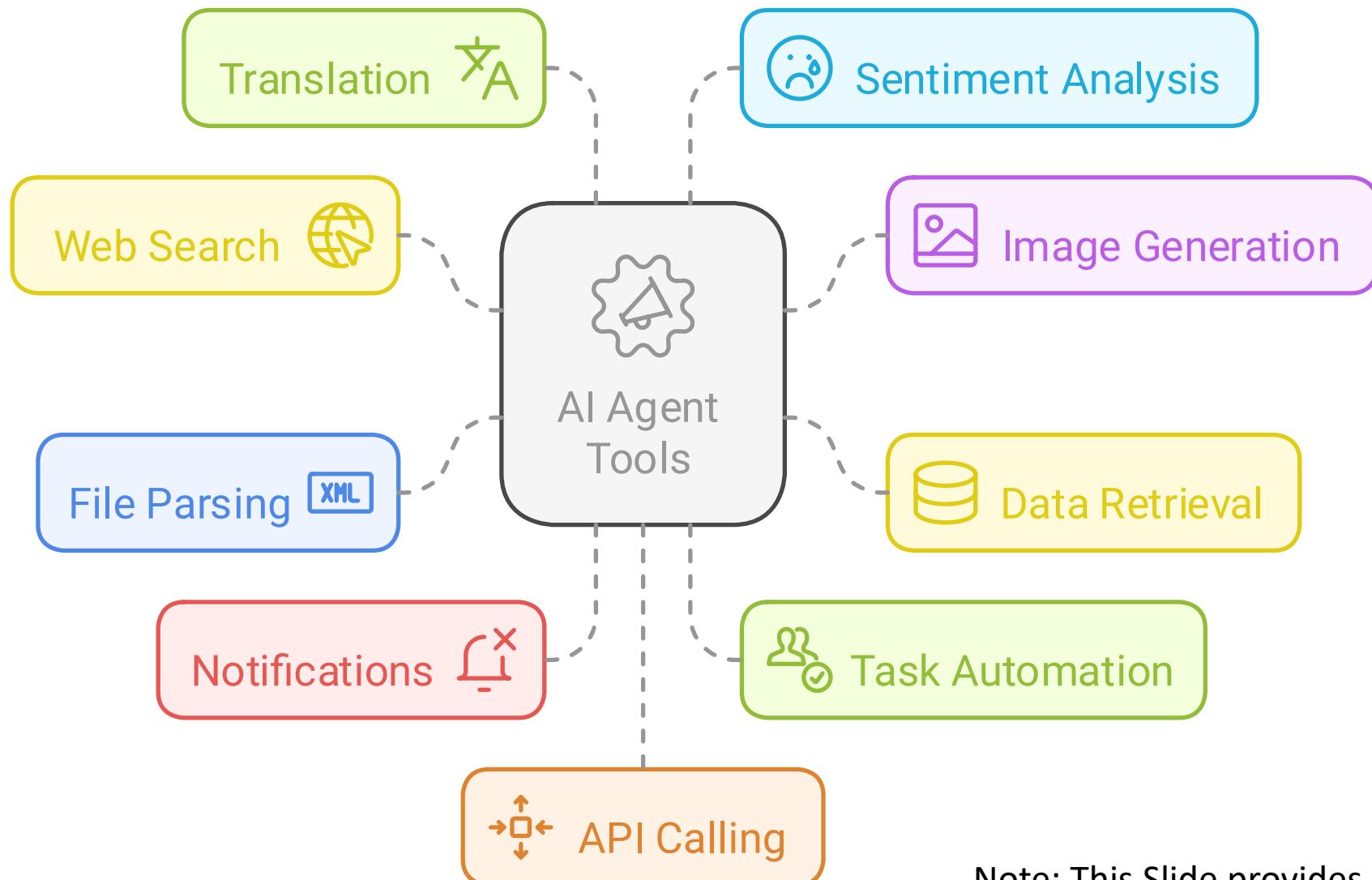
Optional additional resources that provide the AI with extra information. (e.g., A document)



Tools *

Tools that enhance the AI's functionality with specialized tasks.

AI Agent Tools



Note: This Slide provides examples of AI tools. The list is not exhaustive.



AI Agent Applications

1. Research Agents

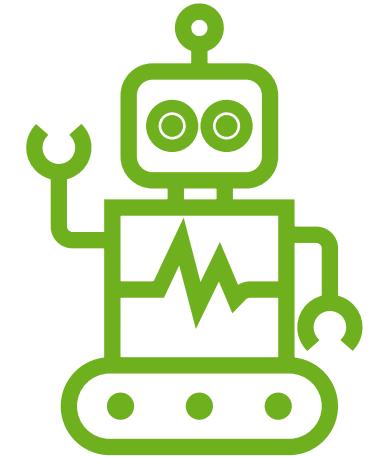
- *Examples:* Perplexity AI, Consensus, Scite
- *Functions:* Web scraping, data aggregation, summarising findings

2. Creative Agents

- *Examples:* Canva Magic Studio, Midjourney, Runway, Adobe Firefly
- *Functions:* Image and video generation, content creation, style transfer

3. Personal Assistants

- *Examples:* Google Assistant, Apple Siri, Amazon Alexa
- *Functions:* Scheduling, reminders, answering queries





AI Agent Applications (cont'd)

4. Copilots (Role-Specific Business Assistants)

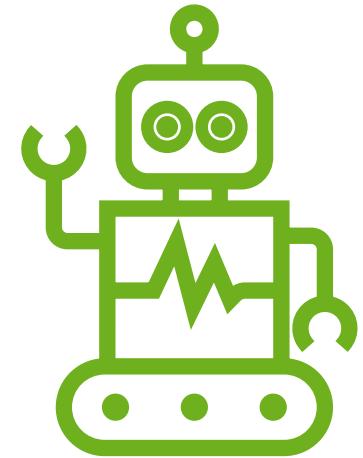
- *Examples:* GitHub Copilot, Microsoft Copilot
- *Functions:* Code assistance, document drafting, task automation

5. Customer Support Agents

- *Examples:* Zendesk AI, Octocom, Ada
- *Functions:* Code assistance, document drafting, task automation

6. Lead Generation & Appointment Setting Agents

- *Examples:* Saleshandy, Apollo.io, Clay
- *Functions:* Capturing leads, booking appointments, qualifying prospects



AI Agent vs. AI Chatbot

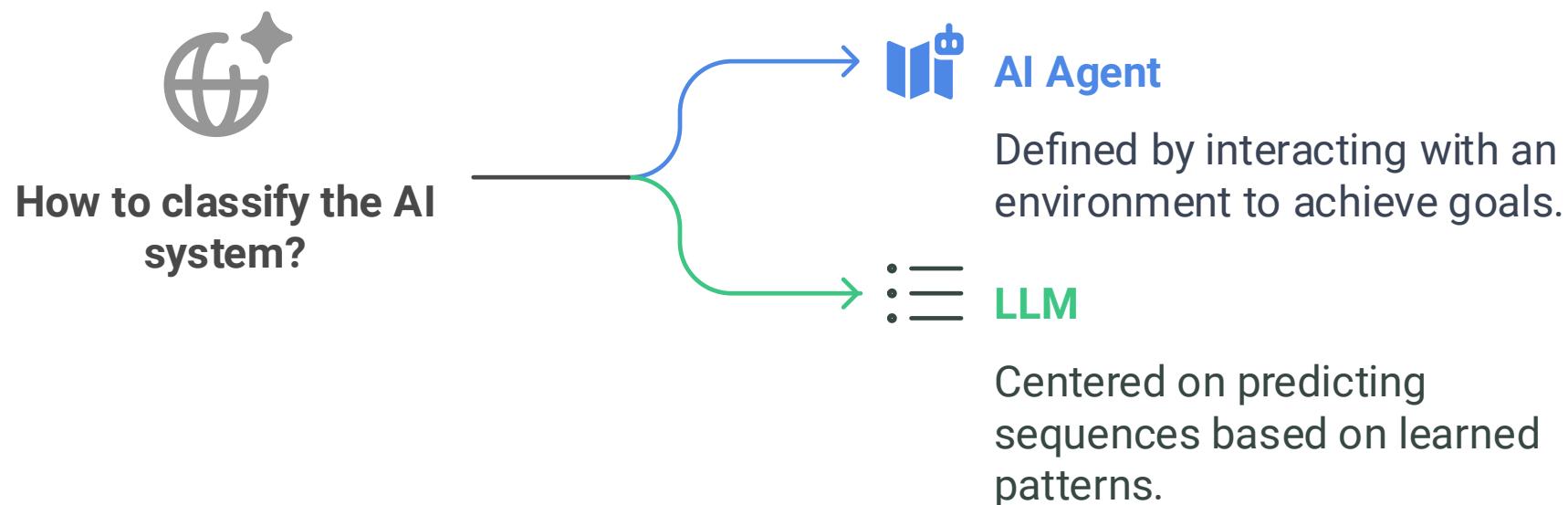


Aspect	AI Agent	AI Chatbot (ChatGPT, Gemini, Grok)
Definition	System that autonomously achieves goals	Model focused on conversational output.
Autonomy	AI Agent: High autonomy, initiates actions, uses tools.	Low autonomy, reacts to prompts, conversation-driven.
Scope	Full system (perception, decision, action)	Primarily language processing.
Functionality	Executes multi-step tasks.	Generates responses, follows scripts.
Example	Drift bot capturing leads, then booking appointments.	Zendesk bot answering support tickets



The Fundamental Difference.

- ❖ **Ai Chatbot:** Fundamentally defined by its ability to predict sequences (usually text) based on learned patterns, primarily conversational. While its generation process involves steps resembling sense-decide-act, its core architecture and purpose are centered on statistical language modeling, not direct environmental interaction in the traditional agent sense.
- ❖ **AI Agent:** Fundamentally defined by interacting with an environment via a **sense-decide-act** cycle. The focus is on achieving goals within that environment.





An AI Agent Analogy

- ❖ **LLM Chatbot:** You type into Grok, "Tell me about ecosystems." It responds with a clear explanation: "Ecosystems are communities of living organisms interacting with their environment, like forests or oceans." It stops there, waiting for you to ask more, such as "What's an example?" or "How do they work?" It's like a smart tutor who answers exactly what you ask and nothing extra unless you keep prodding.

Task Completion



AI Agent

100%

Proactive,
completes the
project

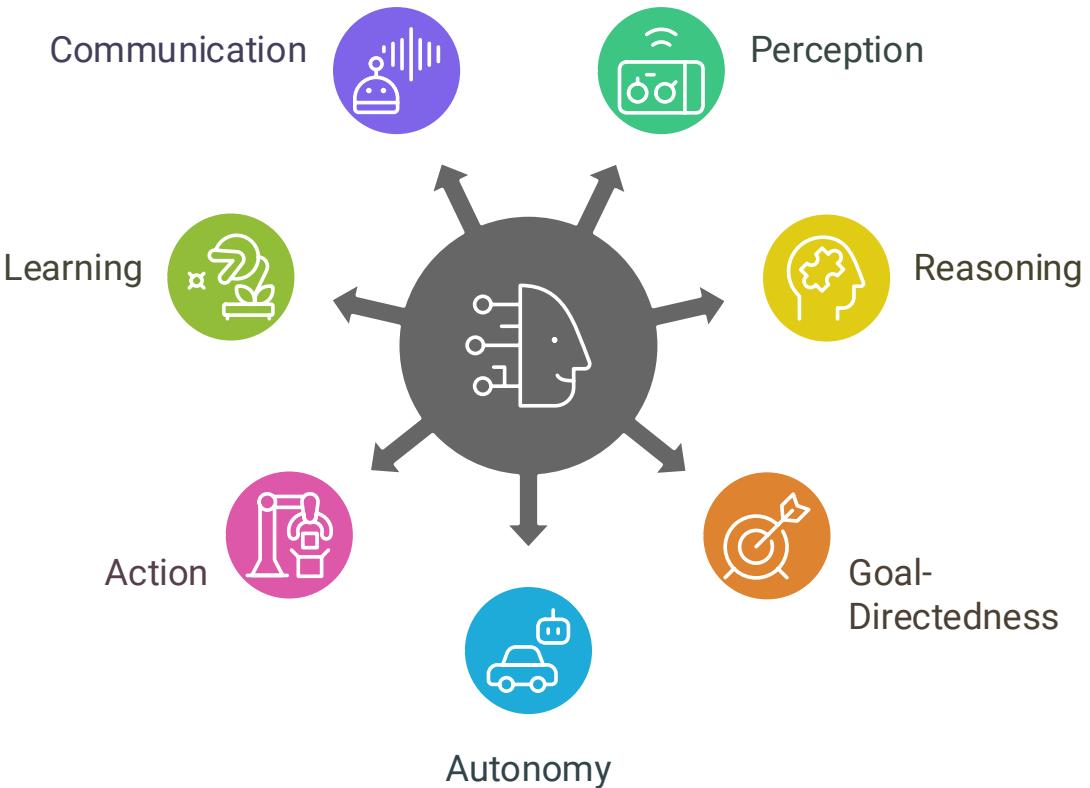
LLM Chatbot

25%

Reactive, answers
only direct
questions

- ❖ **AI Agent:** You send a message to your study assistant app saying, "I need help with my biology project on ecosystems." The app reads your request, searches the web for recent articles on ecosystems, pulls data from a science database, compiles a short report with examples like rainforests and deserts, and then creates a simple chart comparing them. It emails you the report and chart, all without you asking for each piece. It's like a classmate who takes initiative to cover all bases for you.

AI Agents: Core Attributes



1. **Perception:** Senses and interprets its environment using sensors or data inputs
2. **Reasoning and Decision-Making:** Analyzes data, plans, and selects actions to achieve its goals, often using logic, algorithms, or learned models
3. **Goal-Directedness:** Acts to achieve explicit or inferred objectives, often optimizing for a reward or utility function
4. **Autonomy:** Operates independently, making decisions and taking actions without constant human intervention
5. **Action:** Executes chosen actions via actuators or software outputs, thereby influencing the environment
6. **Learning and Adaptation:** Improves its behavior and decision-making over time through feedback and experience
7. **Communication (optional):** May interact and collaborate with humans or other agents



Flowise

Streamline AI development with
Flowise's intuitive, low-code
platform.



- Open-source**, NodeJS-based platform
- Built on LangChain**, supporting complex LLM orchestration
- Drag-and-drop UI** for building agent flows and RAG apps
- Modular building blocks** (LLMs, vector stores, tools, prompts, memory, I/O)
- Visual workflow design** for chaining components into custom pipelines
- Integrates** with OpenAI, Hugging Face, Pinecone, Chroma, and more
- Rapid prototyping** and scalable deployment, local or cloud
- Extensive documentation** and developer resources
- Self-hosting supported**, ideal for secure environments
- AgentFlows** enable autonomous AI agents with memory and tool use
- Embed widgets and APIs** into your apps for easy deployment



Using Flowise

You can use Flowise in three main ways:

1. FlowiseAI Cloud (<https://cloud.flowiseai.com>)

1. Easiest option. No setup needed. Ideal for beginners or quick prototyping.
2. Recommended for: Students, demos, and short-term projects.

2. Local Installation

1. Install via Node.js or Docker. Full control of environment.
2. Good for: Developers, tinkering, offline use.

3. Self-Hosted Deployment

1. Run on your own server or cloud (e.g., Hugging Face).
2. Best for: Production environments.

Free

\$0/month

- ② 2 Flows & Assistants
- ② 100 Predictions / month
- ② 5MB Storage ②
- ② Evaluations & Metrics
- ② Custom Embedded Chatbot Branding
- ② Community Support

Get Started

Recommended Approach for Using Flowise



🧪 Start with Flowise AI Cloud

Use <https://cloud.flowiseai.com> to explore Flowise and build your first agent easily. No setup needed.

☁️ Deploy to Hugging Face

Follow the installation guide in your lesson materials to set up Flowise on Hugging Face **after class**. Read the guide carefully.



Research Agent



Agent Name



</>

+

Buffer Window Memory

Inputs

Size * 20

Additional Parameters

Output

BufferWindowMemory

Custom Tool

Inputs

Select Tool * todays_date_time

Return Direct

Output

CustomTool

Serp API

Inputs

Connect Credential * Serpapi Key

Output

SerpAPI

Memory

ChatGoogleGenerativeAI

Inputs

Cache

Context Cache

Connect Credential * Google Generative AI

Model Name * gemini-2.0-flash

Temperature 0.5

Allow Image Uploads

Additional Parameters

Output

ChatGoogleGenerativeAI

LLM

+ - ⌂ 🔒

Tools

Agent

Tool Agent

Inputs

Tools *

Memory *

Tool Calling Chat Model * Chat Prompt Template

Input Moderation

Additional Parameters

Output

AgentExecutor

Hi there! How can I help?

What's the latest news in AI today, and how many days are left until the end of the year?

Here's a summary of the latest AI news:

- Google is using AI to combat scams.
- Google launched 'implicit caching' to make accessing its latest AI models cheaper.
- AI hallucinations are getting worse.
- Pope Leo XIV identifies AI as a main challenge for humanity.

Today is Sunday, 11 May 2025. There are 234 days left until the end of the year.

What's the cube root of 125?

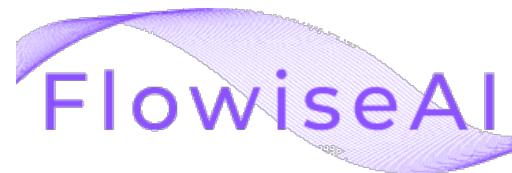
The cube root of 125 is 5.

Type your question...



Activity: Flowise

- ❖ Open the accompanying Flowise activity document
- ❖ Follow the detailed instructions included in the activity document.
- ❖ Don't forget to export your workflow to JSON.
- ❖ Don't forget to post to MST.



Ai



Lesson 10

Summary of Material Covered



Lesson 10 Review

- ❖ An AI agent is a **digital entity** capable of autonomously performing tasks by understanding its environment, following instructions, using tools, and adapting its actions to achieve specific goals.
- ❖ The **core attributes** of an AI Agent may include Perception, Reasoning and Decision-Making, Goal-Directedness, Autonomy, Action, Learning and Adaptation and optionally Communication.
- ❖ **Flowise** is an open-source, drag-and-drop UI. It is a modular, visual workflow tool integrating multiple LLMs, databases and other tools.



IMPORTANT

- ❖ **Railway Install:** As you develop your team project, you are likely to encounter inference limits on FlowiseAI on [FlowiseAI](#).
- ❖ To avoid issues, **you need to set up an additional install** on Railway.com. A short, beginner-friendly guide is provided in the lesson materials.
- ❖ Other deployment alternatives exist but will not be supported by your lecturers. You can investigate here: [Flowise Alternative Deployment](#)
- ❖ If you have no alternative to FlowiseAI and run into inference problems in your project or during your presentation, it will not be considered a valid and reasonable excuse. Your team grade will be **adversely** affected.

Thank you

School of Infocomm

C240 AI Essentials and Innovations

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