AI agents are autonomous software systems that use artificial intelligence, particularly large language models (LLMs), to perceive their environment, make decisions, and take actions to achieve goals with minimal human intervention. They can generate plans, use tools, and learn from their environment and interactions, allowing them to automate complex tasks and workflows across various applications, from enterprise software design to conversational assistance.

Key Characteristics

Autonomy:

AI agents operate independently to perform tasks and make decisions without constant human input.

Perception & Action:

They use sensors (or their equivalent in software) to perceive their environment and effectors to act upon it.

Reasoning & Planning:

Agents can reason about situations, plan sequences of actions, and adapt to changing conditions to achieve goals.

Learning & Memory:

Many agents can learn from experience and retain memory of past interactions, allowing them to improve over time.

Tool Use:

Advanced agents can utilize external tools and access external data sources to enhance their capabilities and knowledge.

Collaboration:

Multiple AI agents can work together, exchanging data and coordinating to complete more complex tasks.

How They Work

Perception: An AI agent perceives its environment, which could be a computer system, a dataset, or user input.

Decision Making: Based on its perception, the agent uses its internal reasoning and knowledge (often derived from LLMs) to decide on the best course of action.

Action: The agent performs actions by executing tasks, using tools, or communicating with users or other agents.

Adaptation: The agent learns from the outcome of its actions and updates its strategy to better achieve its goals in the future.

Examples and Applications

Enterprise Software:

Automating software design, IT operations, and complex business processes.

Customer Service:

Handling customer queries, looking up information in internal documents, and providing solutions.

Code Generation:

Assisting developers by generating code and optimizing workflows.

Conversational AI:

Providing advanced conversational assistance by understanding user intent and taking proactive steps.