

Section 7: AI Agents

7.1. Understanding AI Agents

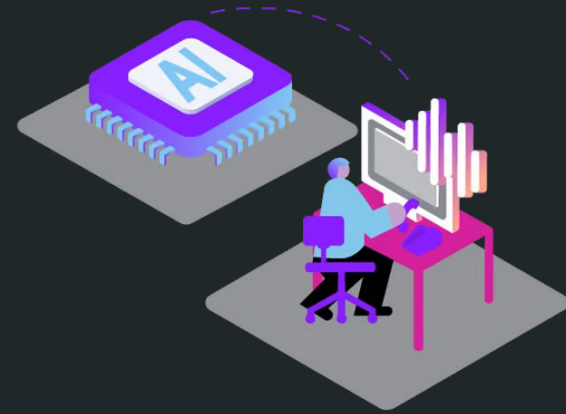
AI Agents

What are AI Agents?

AI agents are autonomous software systems that perceive their environment, make decisions, plan, and take actions to achieve specific user-defined goals.

Key Characteristics

- Autonomous – act without constant human input
- Goal-oriented – plan & execute multi-step tasks
- Adaptive – learn from new info & adjust
- Collaborative – work with other agents or users



Core Components

Perception

Gather information(e.g., text, data, user input) to inform their actions.

Reasoning & Planning

Uses LLMs to think, plan, and break complex tasks into steps.

Action

Executes tasks by interacting with tools, APIs, or other systems.

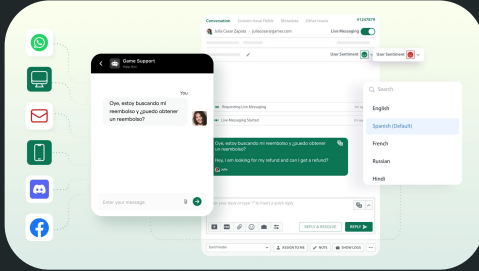
Tools

Extends capabilities by connecting to external apps and services.

Memory

Remembers past interactions to improve future performance.

Agents Applications



Customer Support

Automatically resolving customer queries by looking up information and providing solutions.

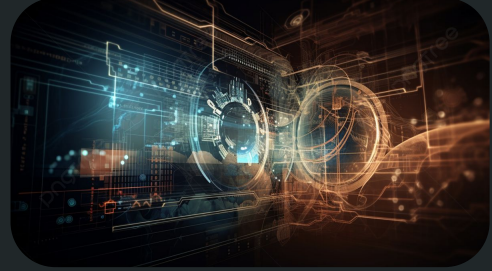
Software Development

Streamlining workflows by generating code, testing, and deploying updates.



Personal Assistants

Going beyond simple answers to execute tasks like booking appointments or managing schedules.



Agentic Frameworks



Pydantic AI



Microsoft
AutoGen



LangGraph