

AI Agent Dictionary

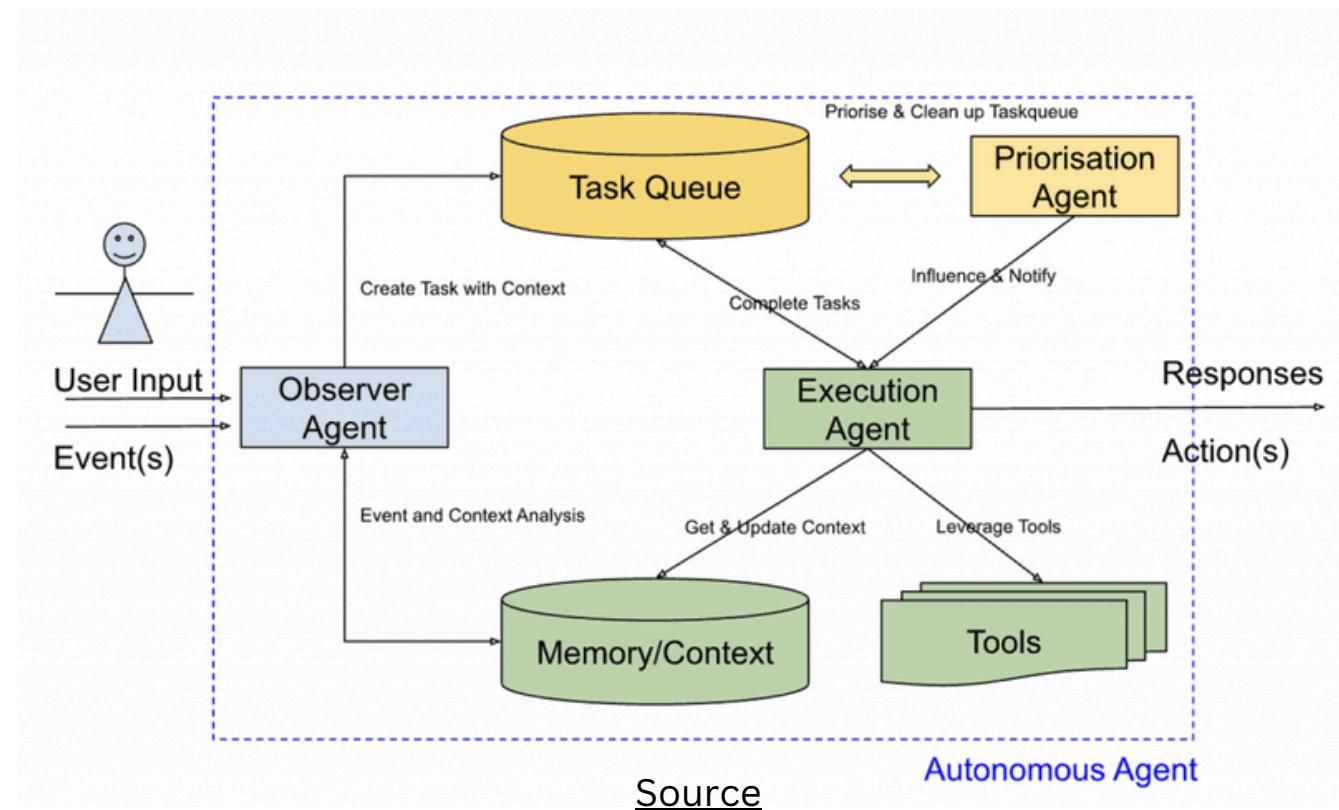
Your A-to-Z Guide to Mastering AI Agents



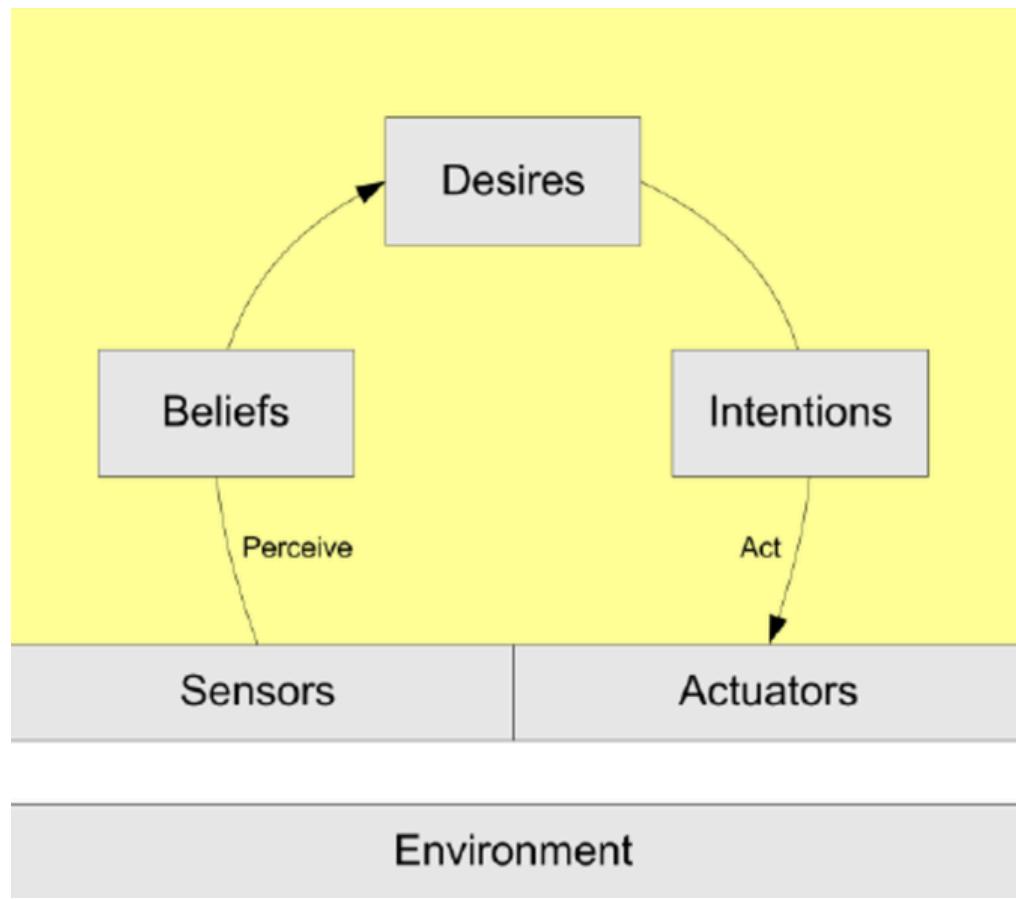
A - Autonomous Agent

An AI system that operates independently without human intervention.

- Observes the environment and takes actions.
- Can adapt based on experiences.
- Used in robotics, gaming, and automation.



B - Belief-Desire-Intention (BDI) Model



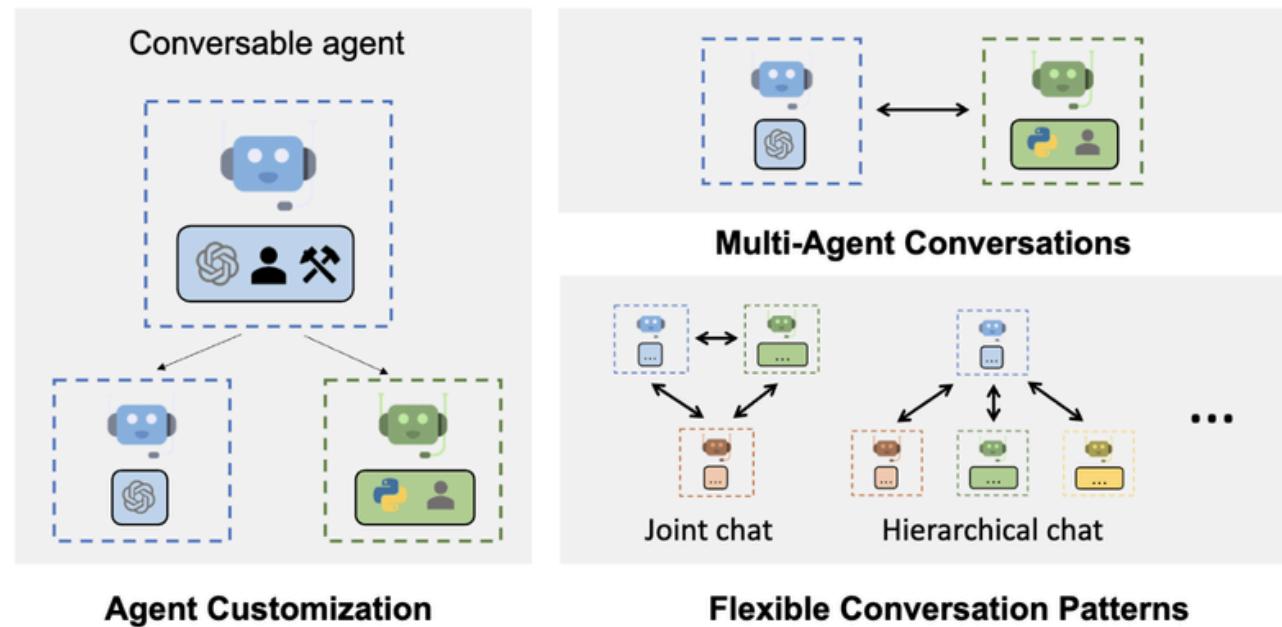
A decision-making framework for AI agents.

- Belief: What the agent knows.
- Desire: Goals it wants to achieve.
- Intention: Actions to fulfill desires.

C - Conversational Agent

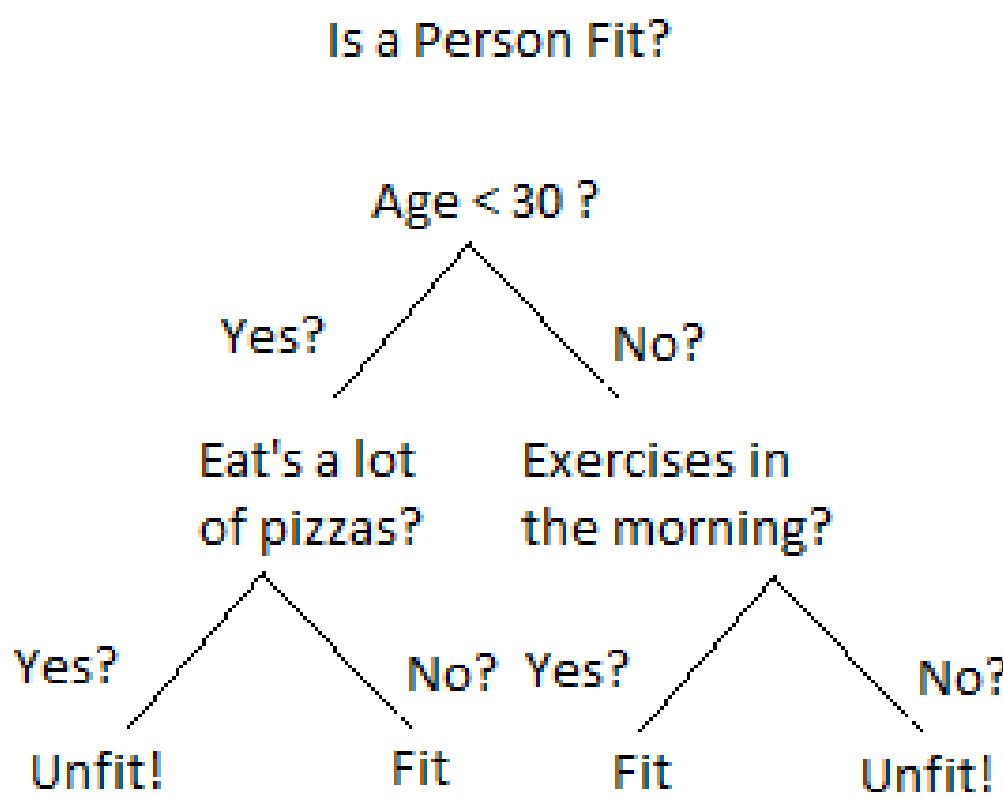
AI-powered chatbots or voice assistants.

- Understands natural language.
- Responds to user queries.
- Examples: ChatGPT, Siri, Alexa.



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D - Decision Tree



A flowchart-like model for decision-making.

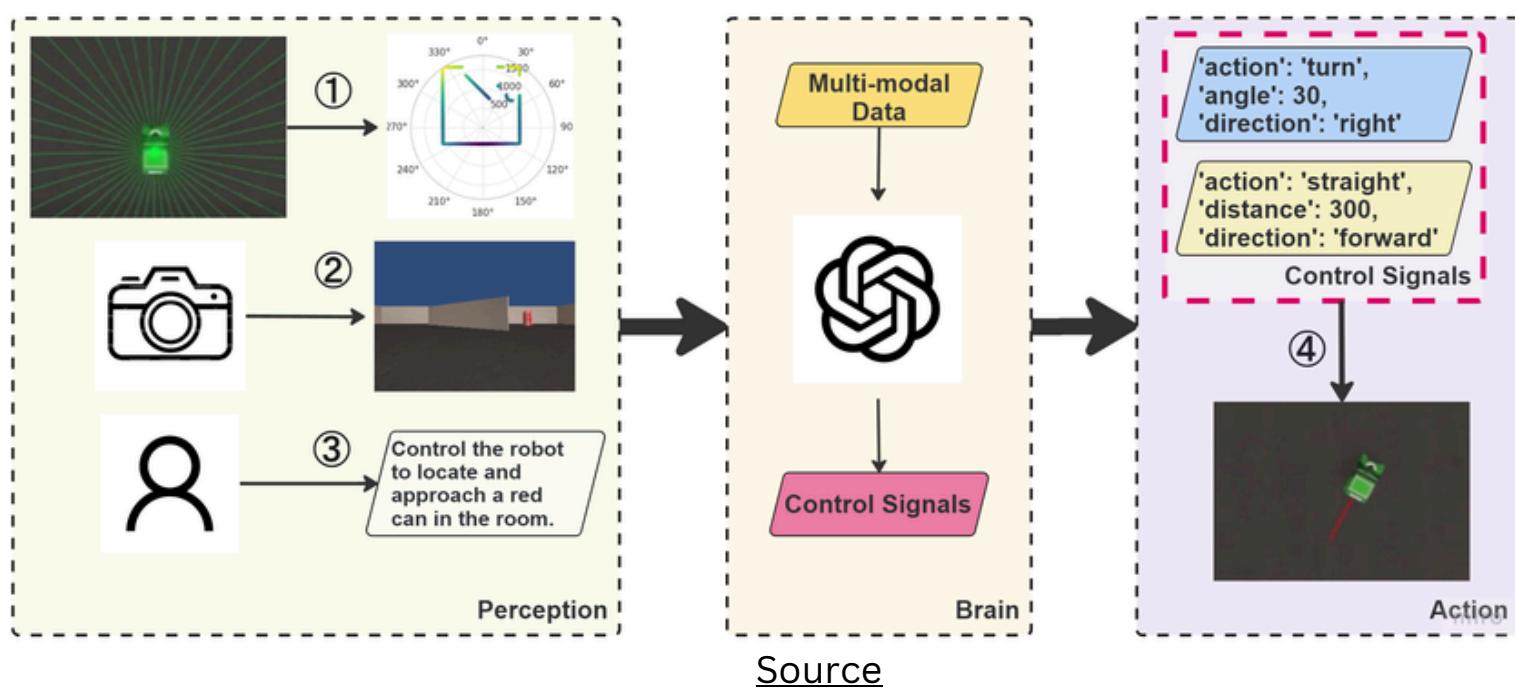
- Breaks problems into smaller steps.
- Uses “if-then” conditions.
- Common in rule-based AI systems.

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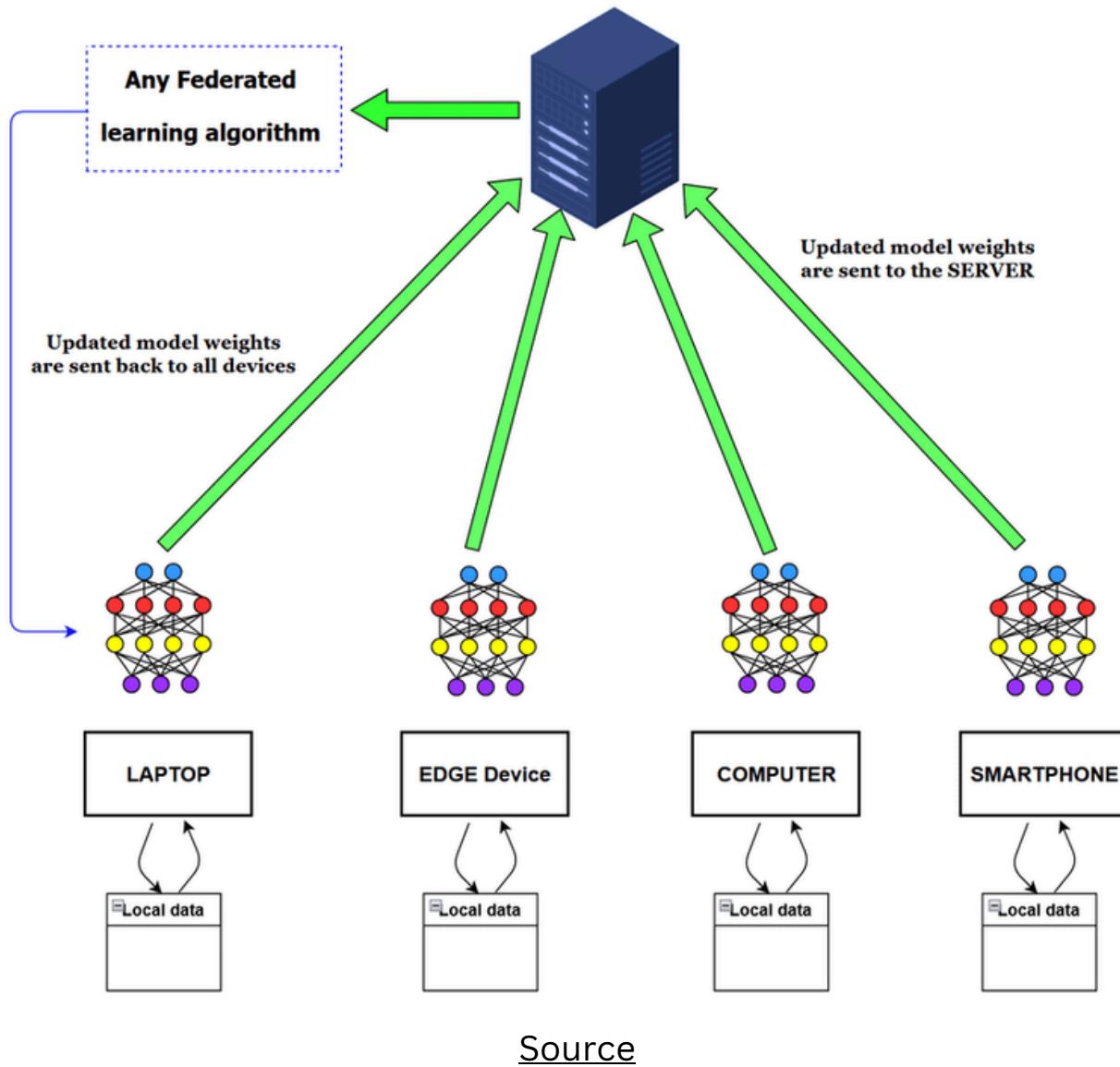
E - Embodied AI

AI with a physical or virtual presence.

- Can interact with the real world.
- Found in robots and metaverse avatars.
- Enhances human-AI interaction.



F - Federated Learning



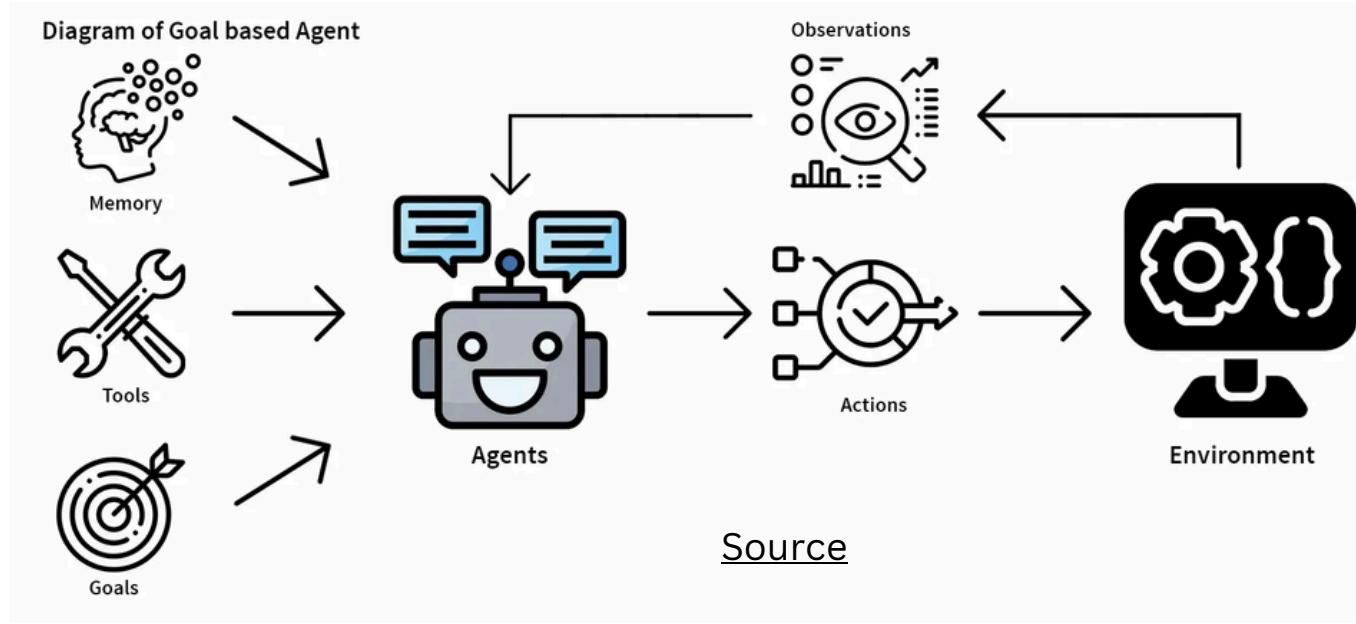
AI learns from decentralized data sources.

- Preserves privacy.
- No need to share raw data.
- Used in healthcare and mobile AI.

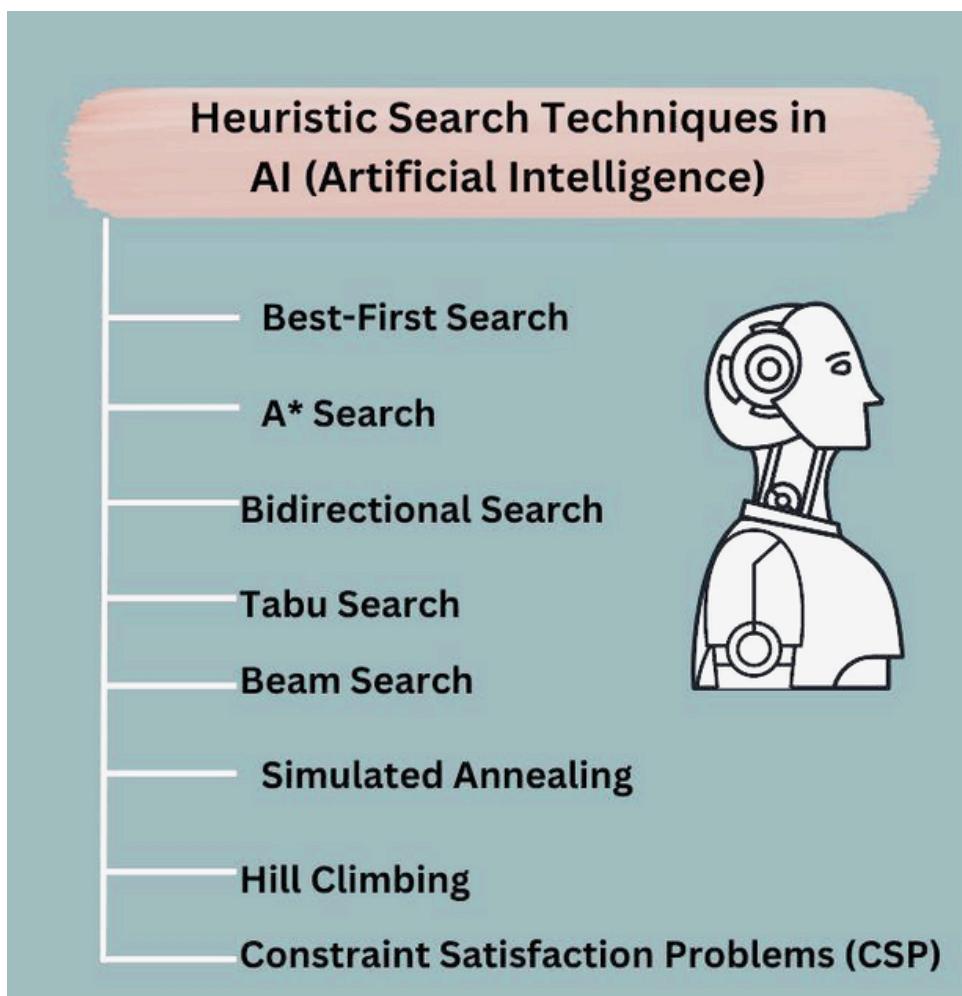
G - Goal-Oriented Agent

An AI agent designed to achieve a specific task.

- Focuses on efficiency.
- Learns from feedback.
- Examples: Chess AI, warehouse robots.



H - Heuristic Function



A shortcut method for fast decision-making.

- Uses approximations.
- Common in game AI.
- Balances speed vs. accuracy.

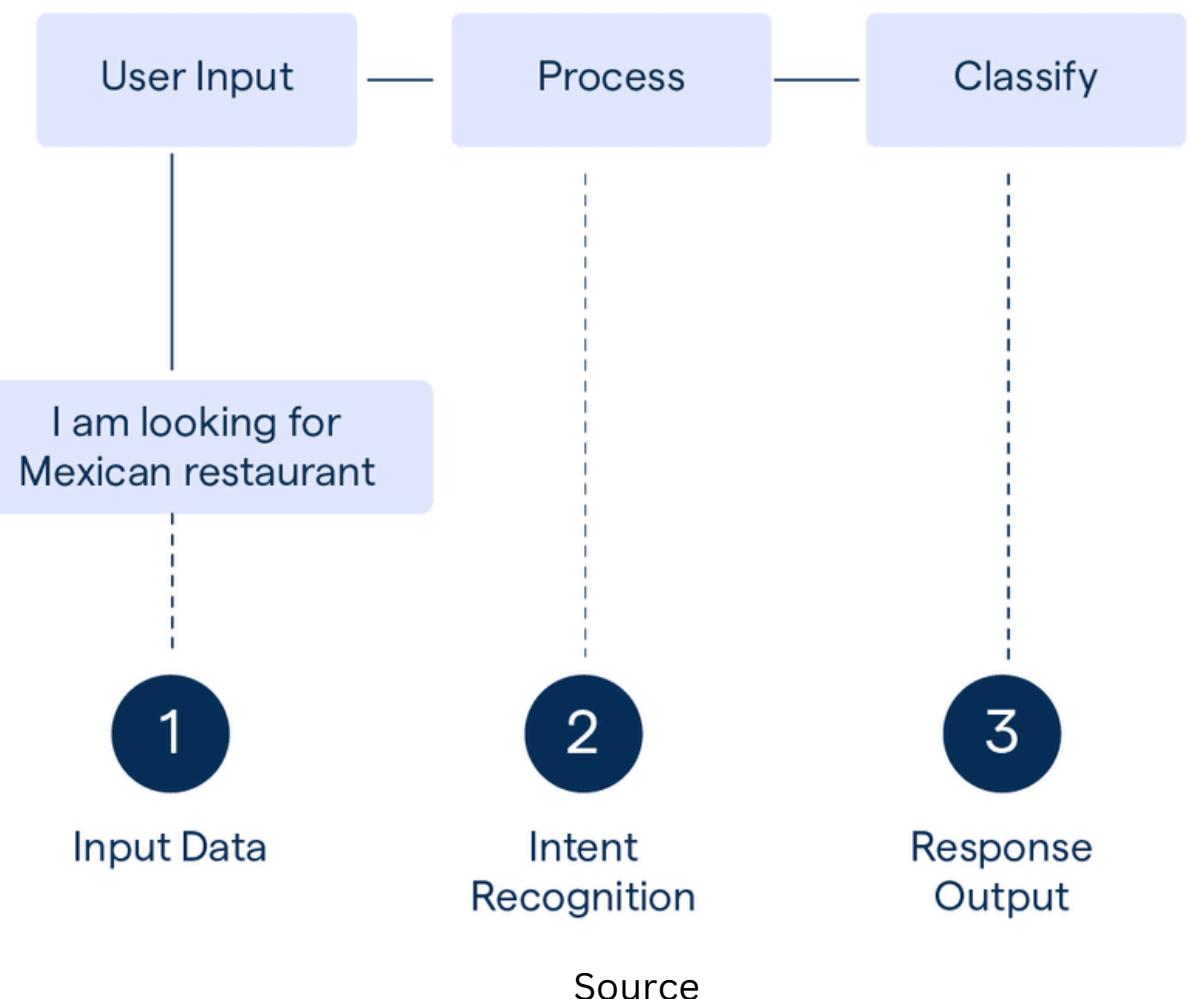
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I - Intent Recognition

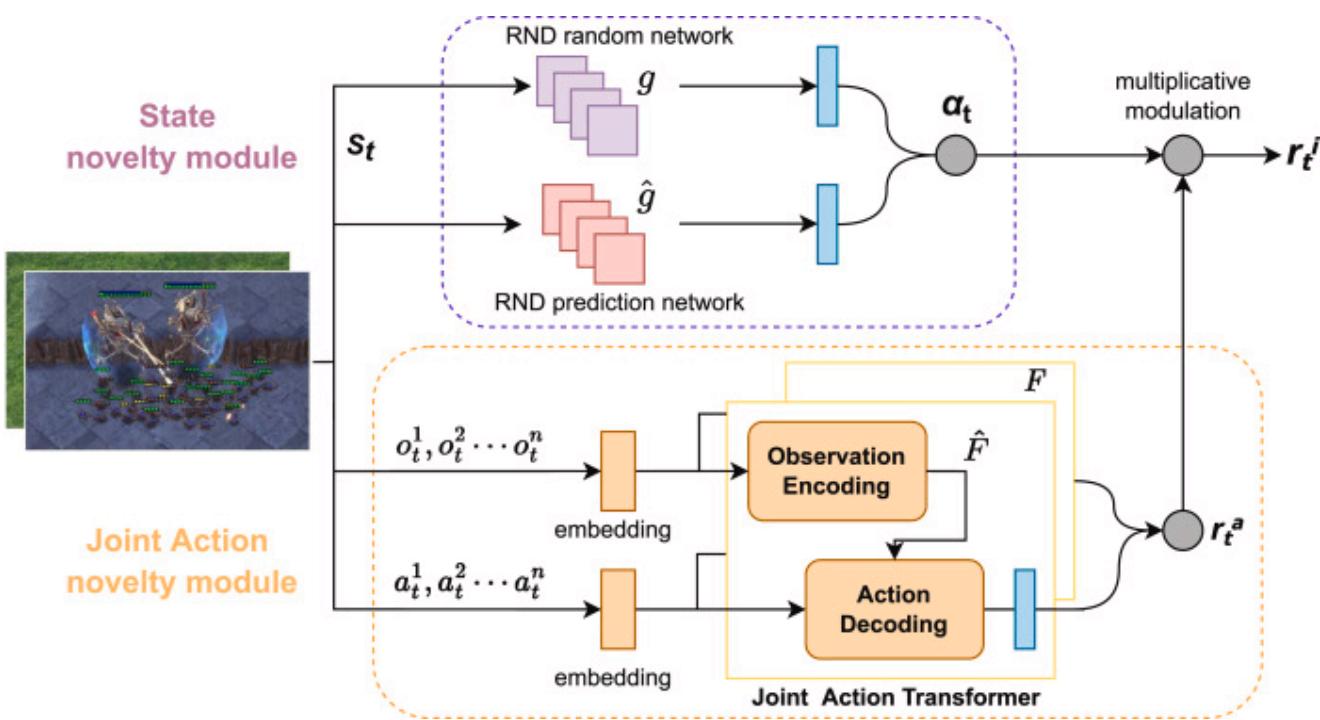
Intent Recognition

Understanding user goals in conversations.

- Essential for chatbots.
- Uses NLP and context clues.
- Improves user experience.



J - Joint Action Learning



AI agents learning to collaborate.

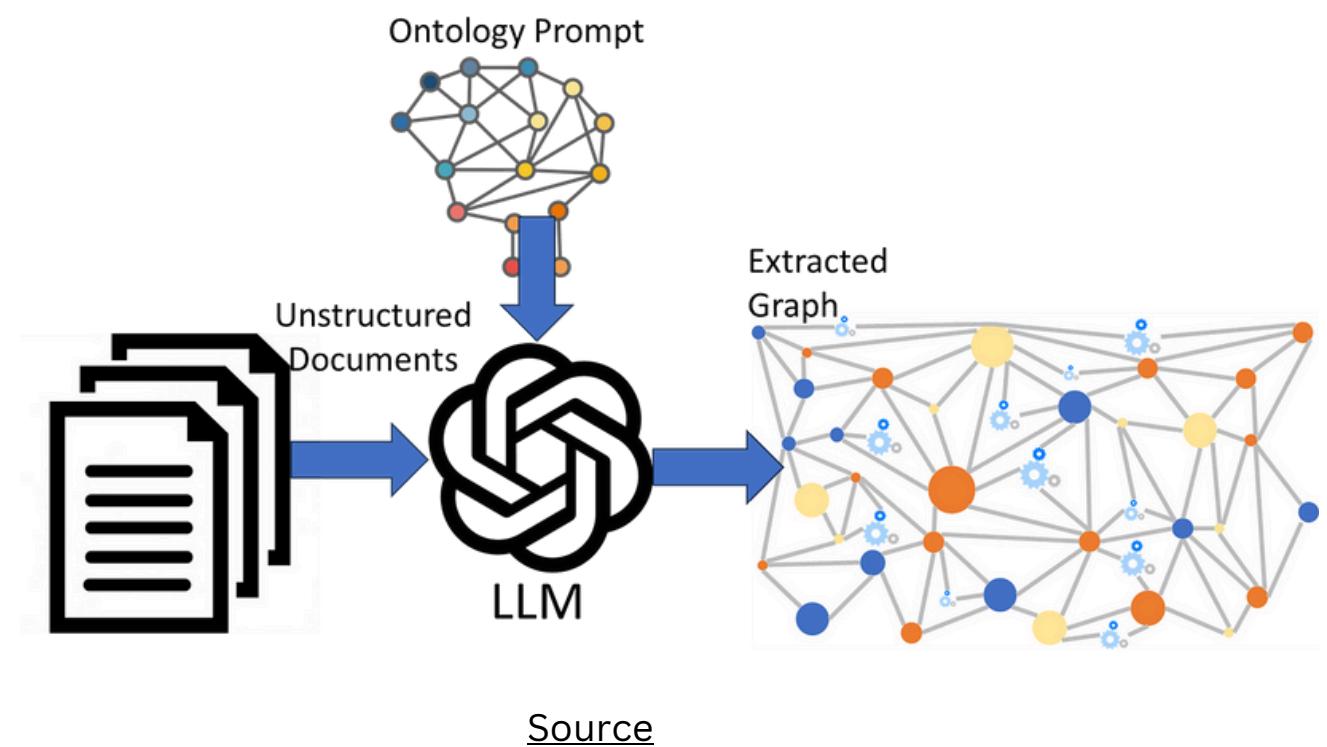
- Used in multi-agent systems.
- Helps in coordination tasks.
- Examples: Self-driving fleets.

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K - Knowledge Graph

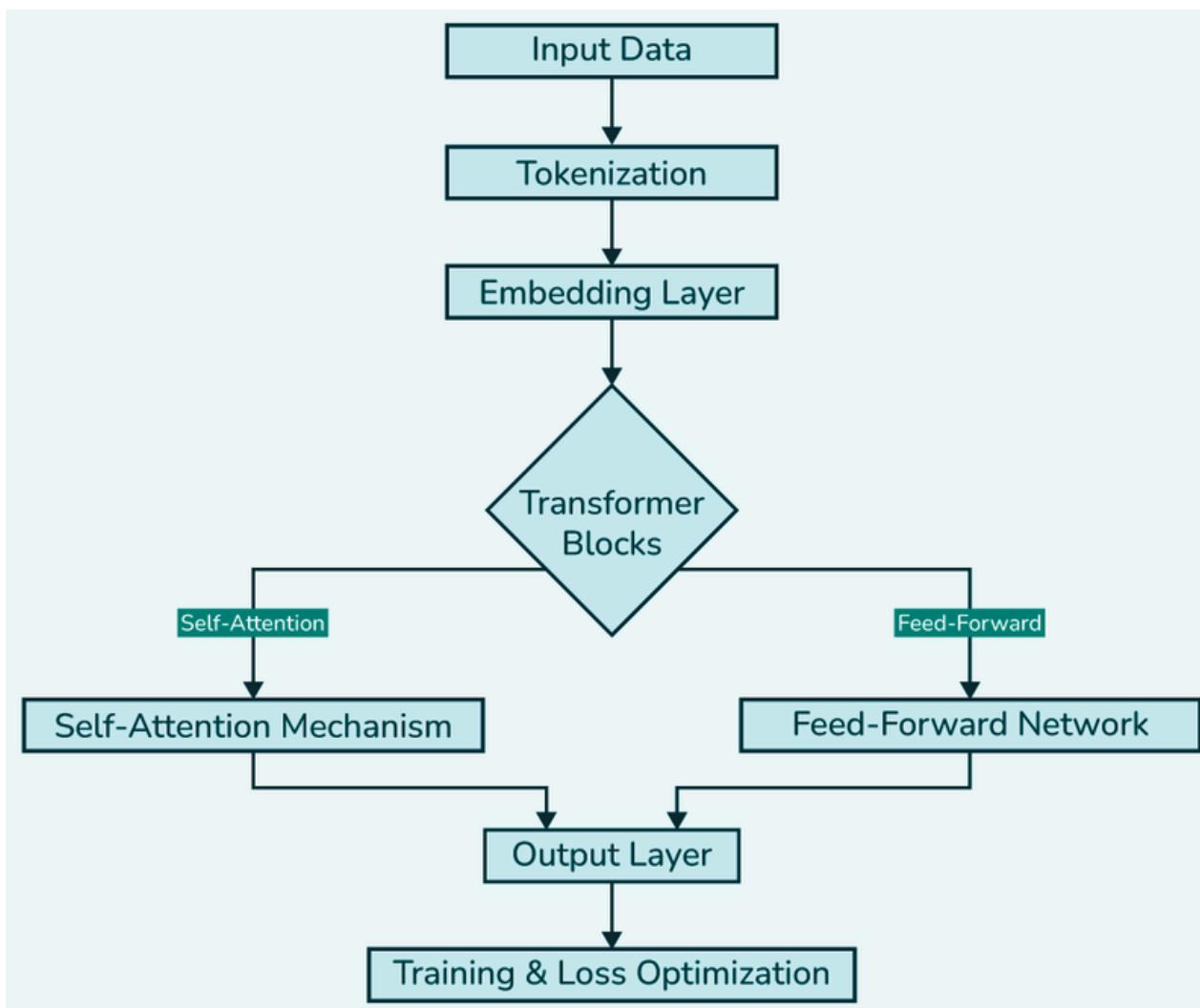
A network of connected information.

- Enhances AI reasoning.
- Used in search engines.
- Google's Knowledge Graph is a famous example.



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L - Large Language Model (LLM)



An AI model trained on vast text data.

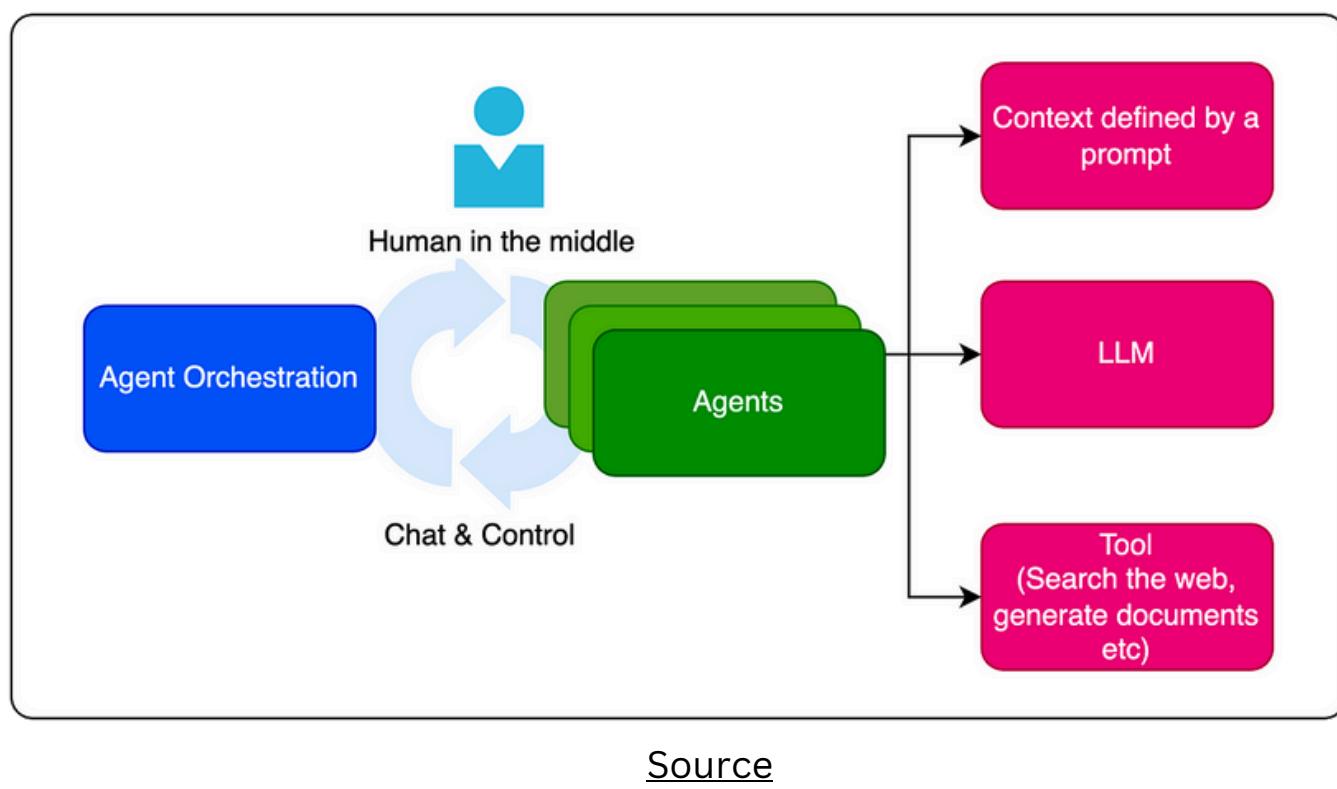
- Generates human-like text.
- Can answer questions, write code.
- Examples: GPT-4, Claude, Gemini.

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M - Multi-Agent System (MAS)

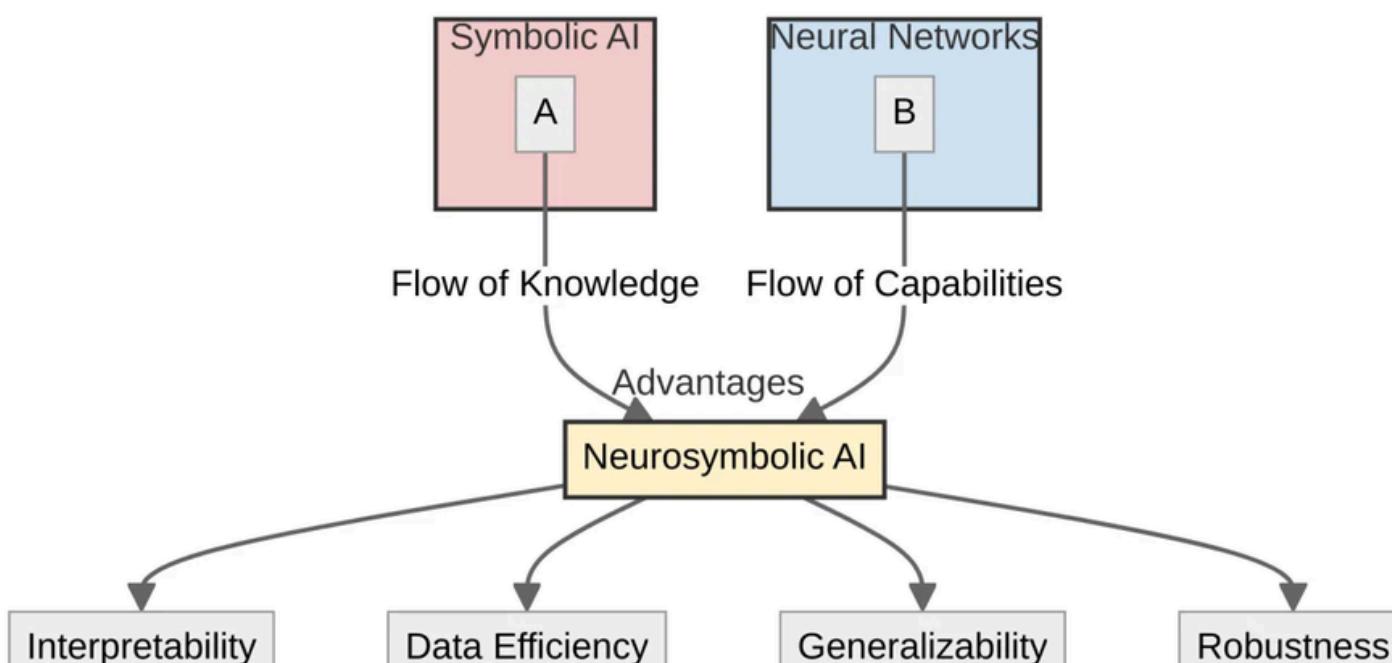
A system of AI agents working together.

- Decentralized decision-making.
- Used in simulations, trading bots.
- Inspired by swarm behavior.



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N - Neural-Symbolic AI



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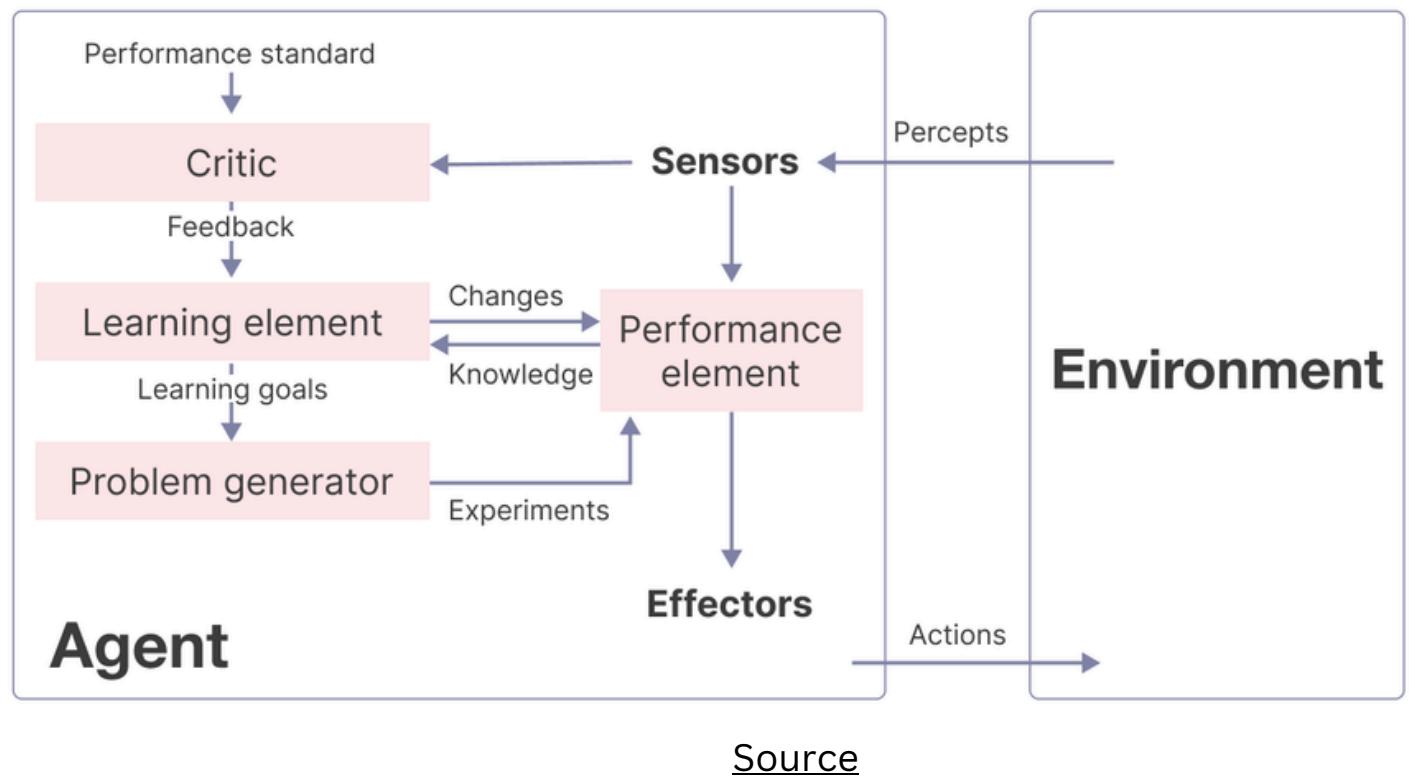
Combines deep learning with logical reasoning.

- Bridges neural networks & symbolic AI.
- Enhances explainability.
- Useful in law and science AI.

O - Online Learning

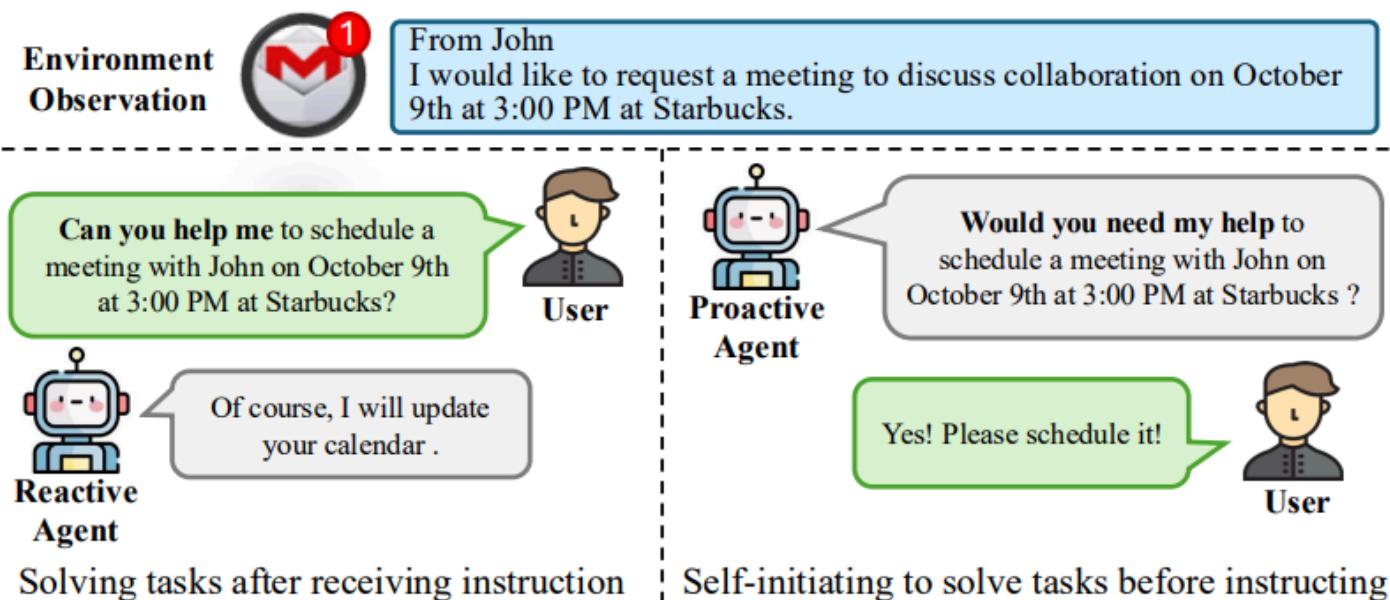
AI that continuously updates its knowledge.

- Learns from real-time data.
- Adapts to changing environments.
- Used in recommendation systems.



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P - Proactive Agent



Anticipates user needs before being asked.

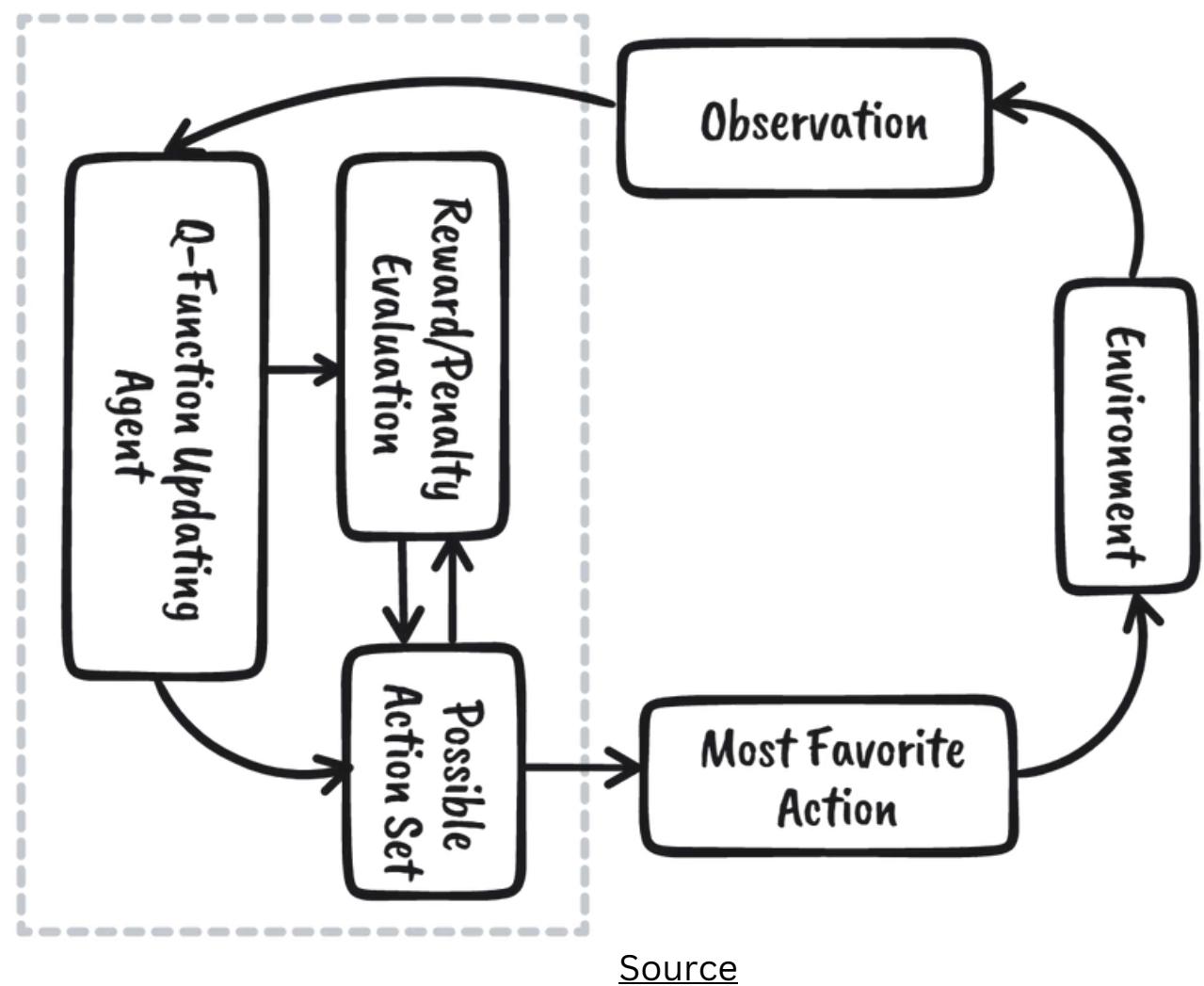
- Takes initiative in decision-making.
- Improves automation efficiency.
- Found in smart assistants.

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Q - Q-Learning

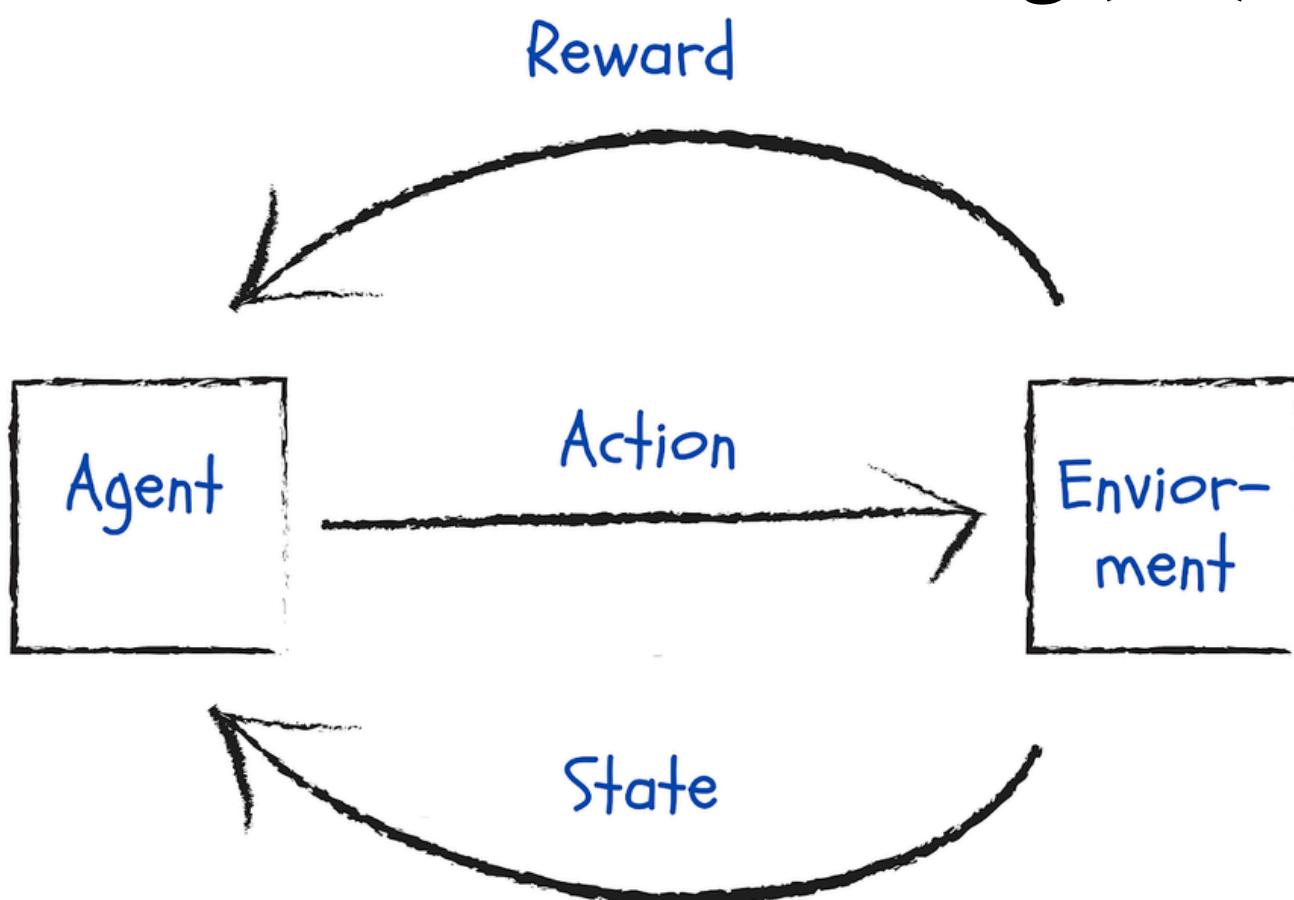
A reinforcement learning method.

- AI learns through trial and error.
- Uses rewards to improve decisions.
- Core of self-learning AI.



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R - Reinforcement Learning (RL) Agent



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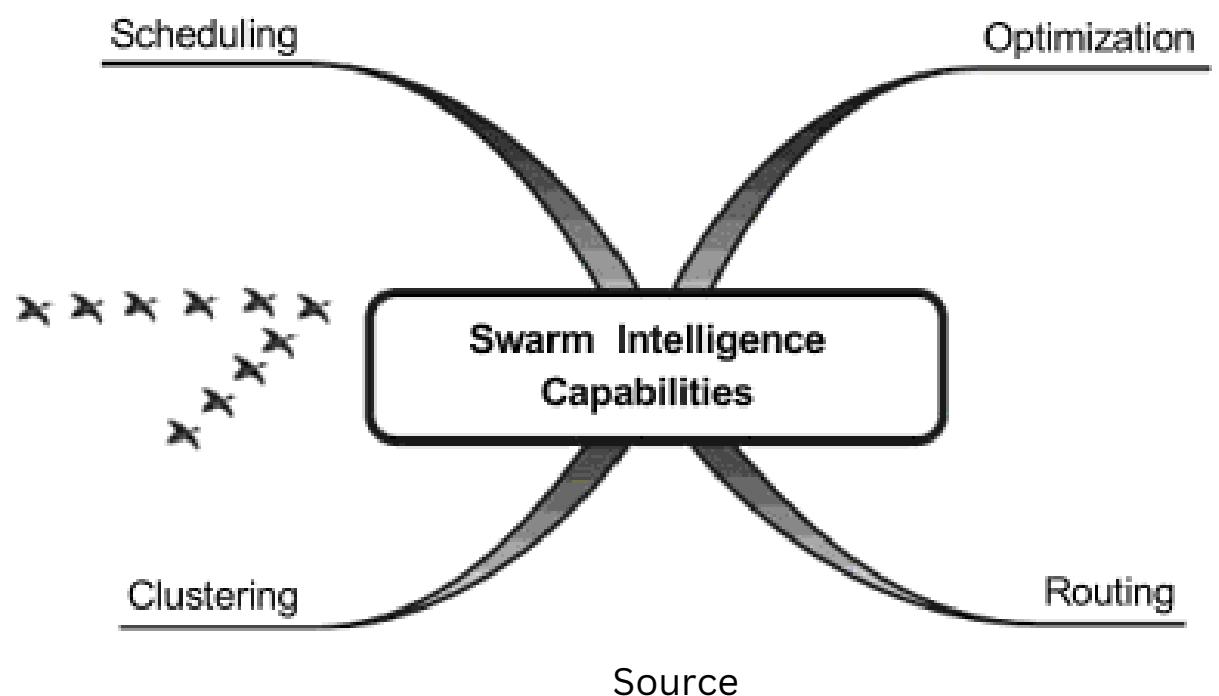
An AI that learns by maximizing rewards.

- Improves over time.
- Used in robotics, gaming.
- Example: AlphaGo.

S - Swarm Intelligence

AI inspired by collective behavior in nature.

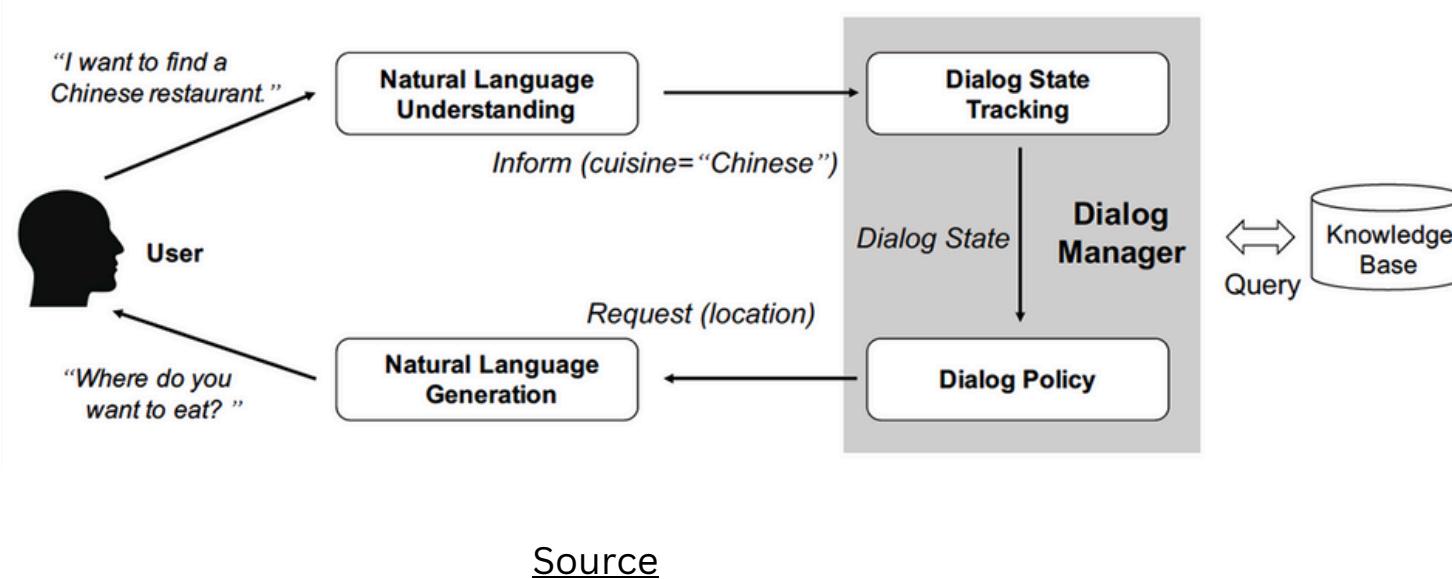
- Decentralized problem-solving.
- Mimics ants, bees, birds.
- Used in logistics, traffic control.



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T - Task-Oriented Dialogue System

AI designed for specific tasks.



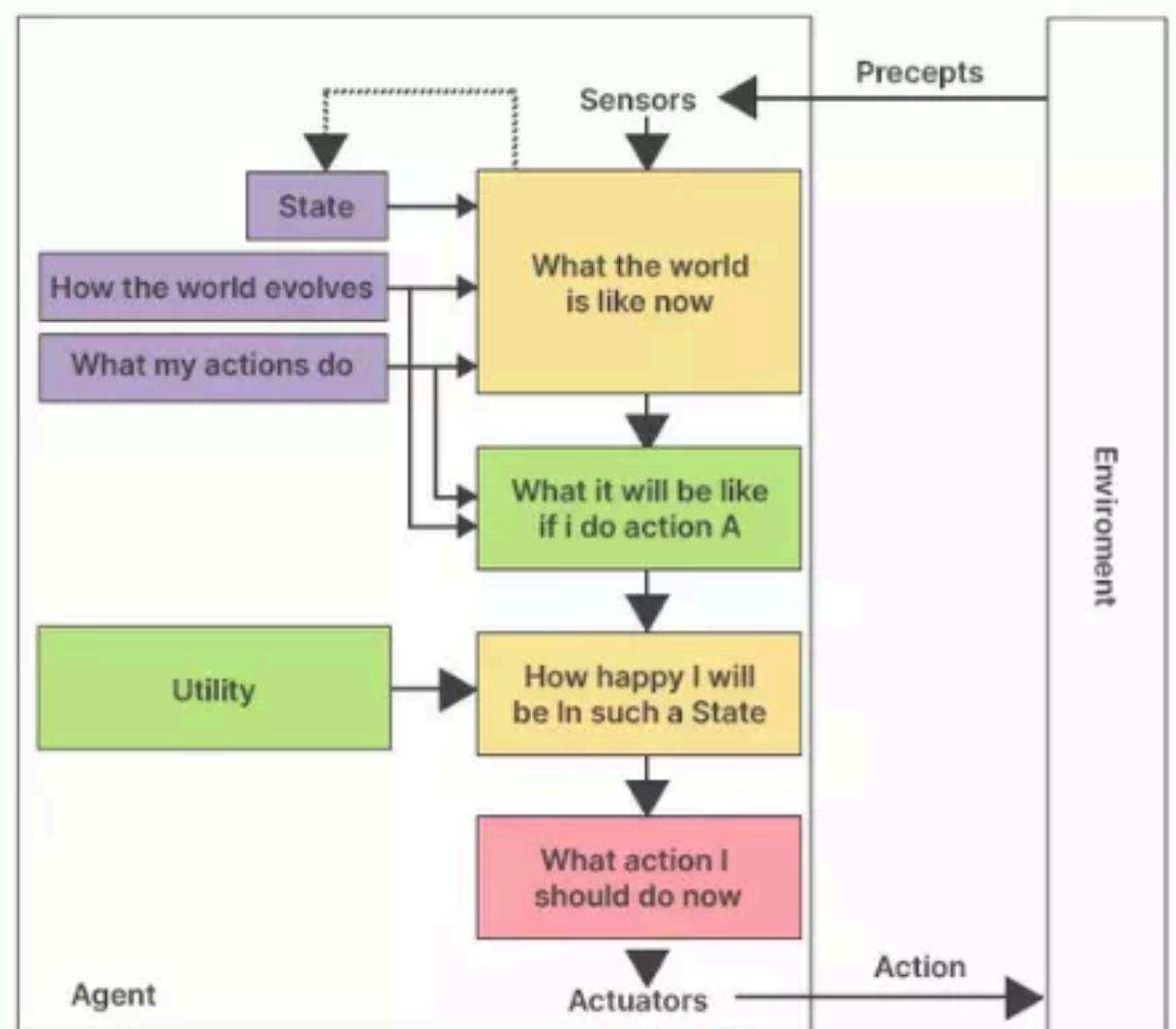
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- Optimized for efficiency.
- Limited to a domain (e.g., flight booking).
- Example: Customer support bots.

U - Utility-Based Agent

Chooses actions based on the highest utility.

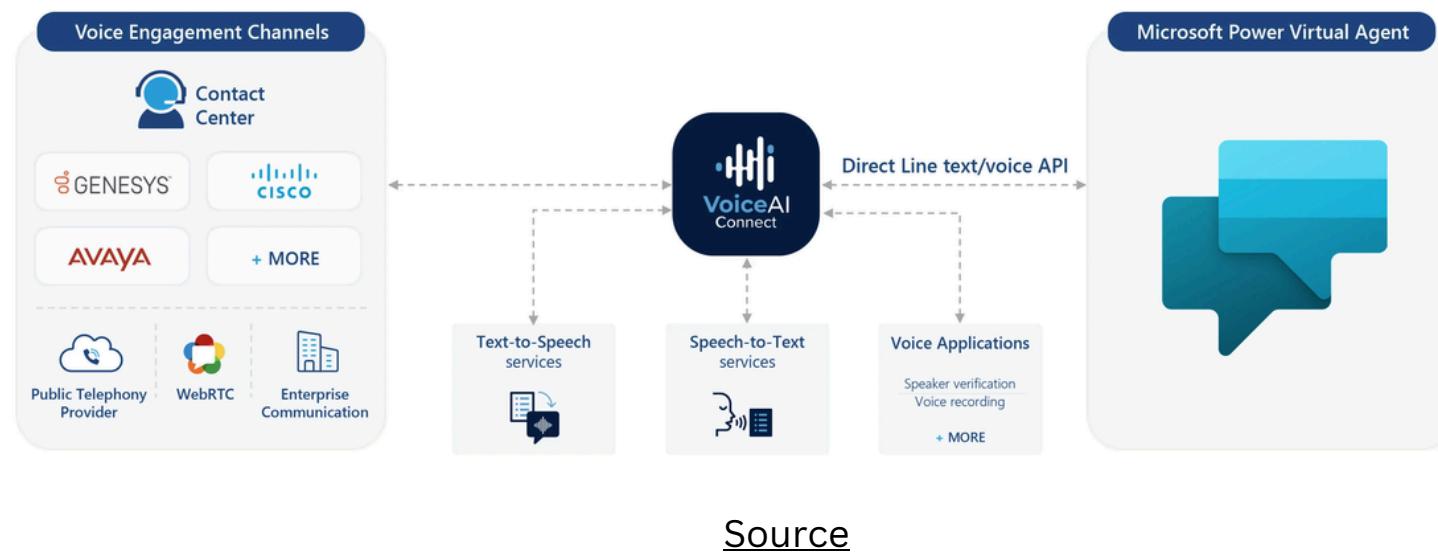
- Maximizes performance.
- Used in economics, robotics.
- Evaluates trade-offs.



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V - Virtual Agent

AI-driven digital characters or bots.

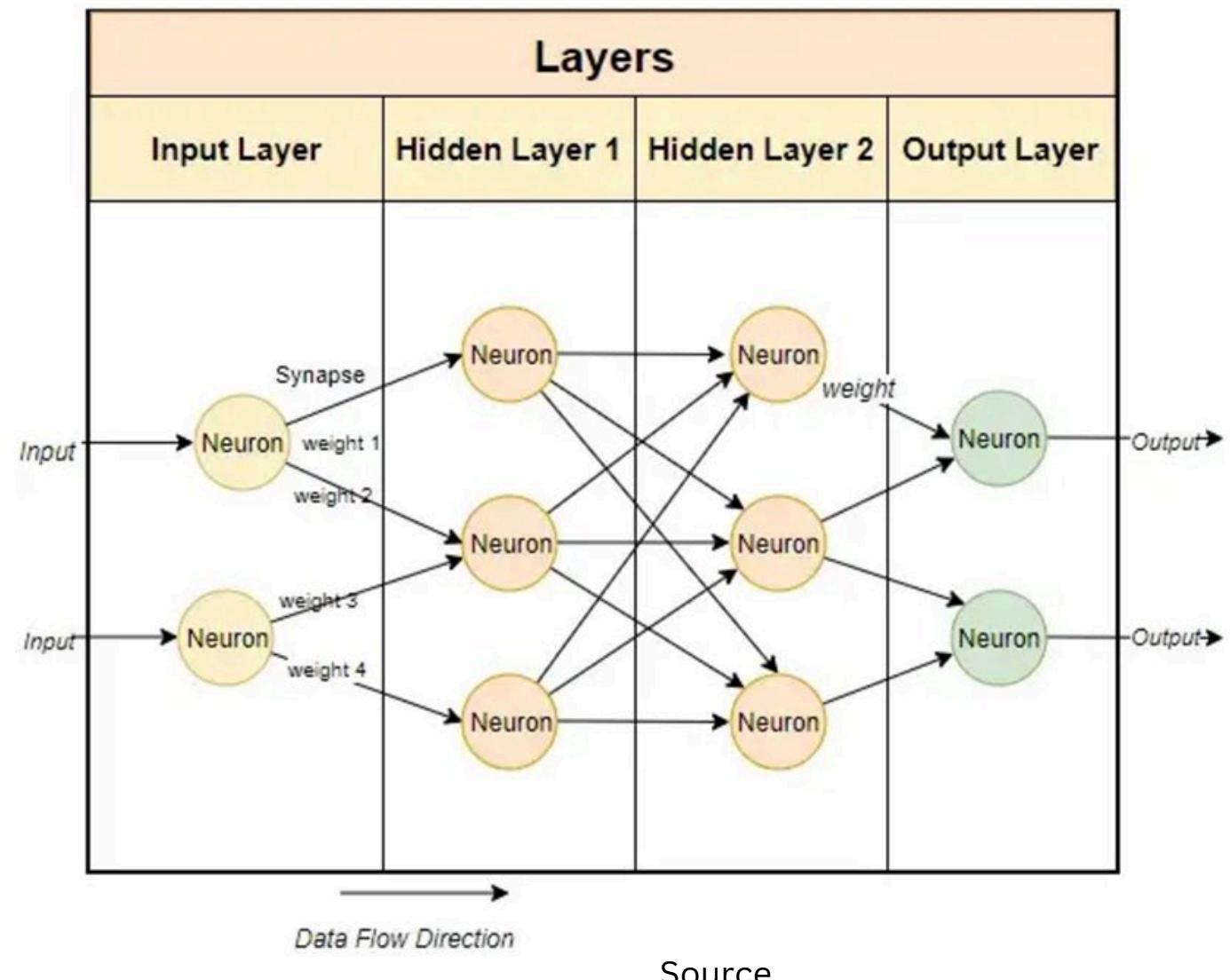


- Interacts in virtual worlds.
- Can be 2D or 3D avatars.
- Used in gaming, training simulations.

W - Weighted Action Selection

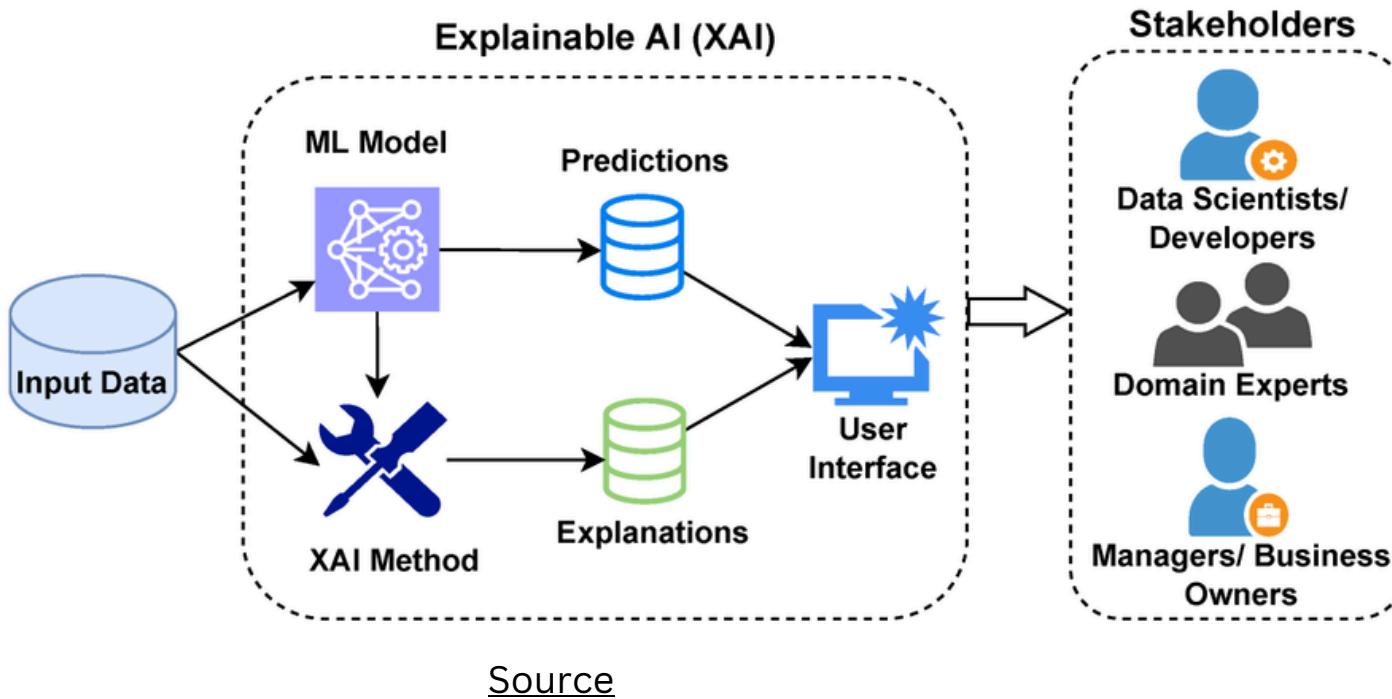
A technique to prioritize AI decisions.

- Assigns different weights to actions.
- Balances risk and reward.
- Used in strategic AI.



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X - Explainable AI (XAI)



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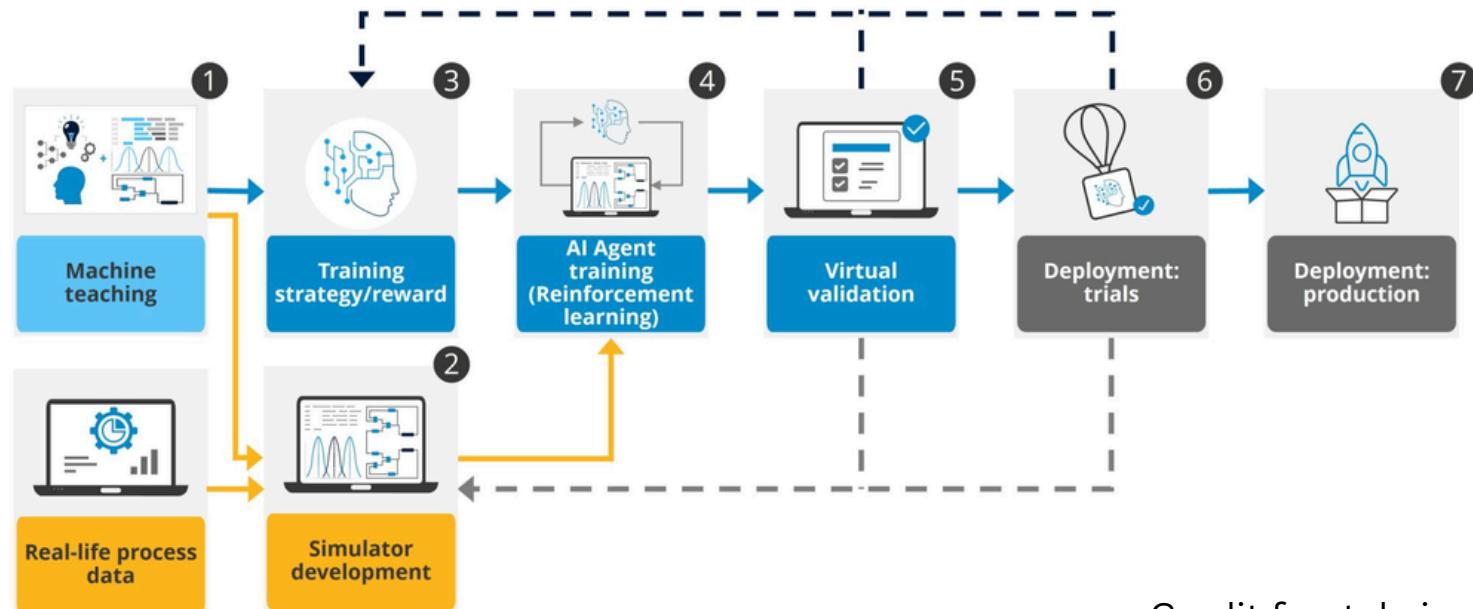
AI that provides human-understandable reasoning.

- Reduces AI "black box" issues.
- Important for trust and ethics.
- Used in healthcare, finance AI.

Y - Yield Optimization

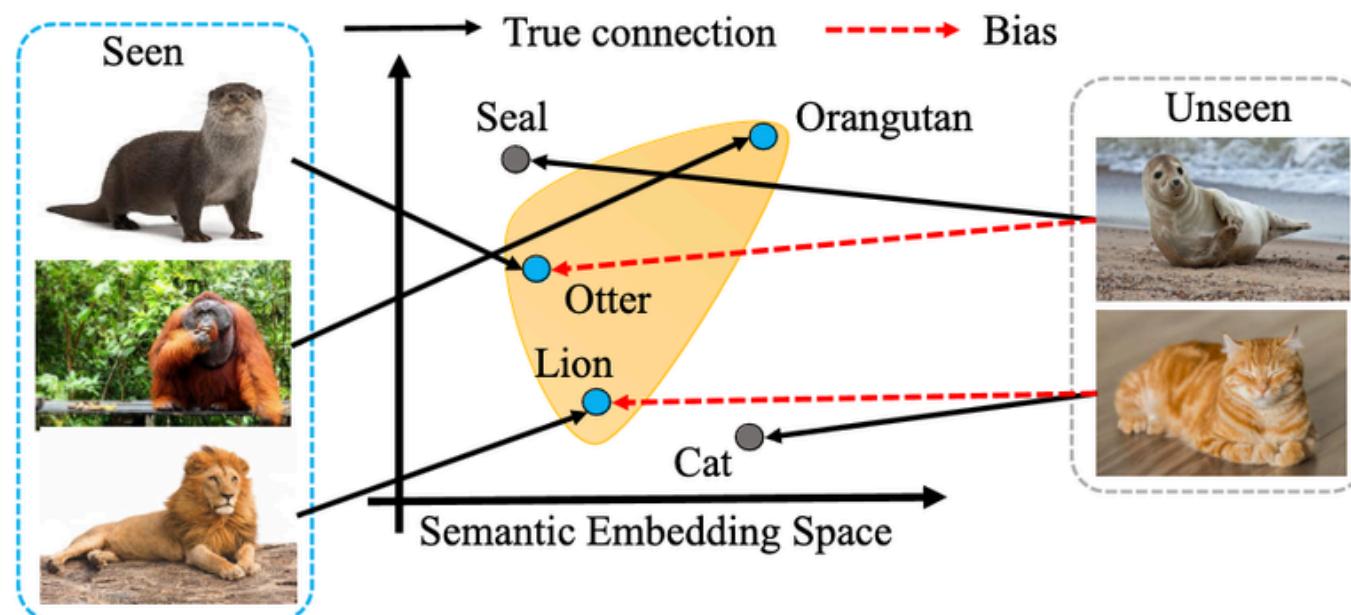
Maximizing output relevance and efficiency.

- Improves response quality for fine-tuned models.
- Involves iterative adjustments and monitoring.
- Enhances user satisfaction in real-world use.



Credit:fractal.ai

Z - Zero-shot learning



Performing tasks without task-specific fine-tuning.

- Leverages general knowledge from pretraining.
- Useful for quick adaptation to new domains.
- A hallmark of advanced LLMs.

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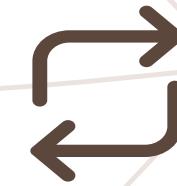
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