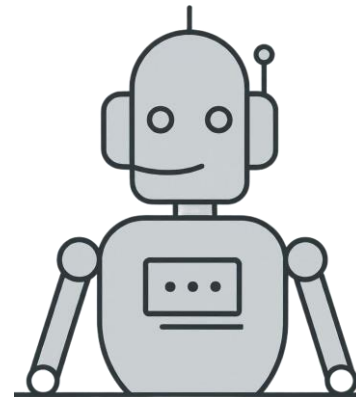# Four Important Agentic AI Patterns

AI = Intelligent computer programs that can perceive, reason, learn, and act in complex environments (Russell & Norvig, 2022)
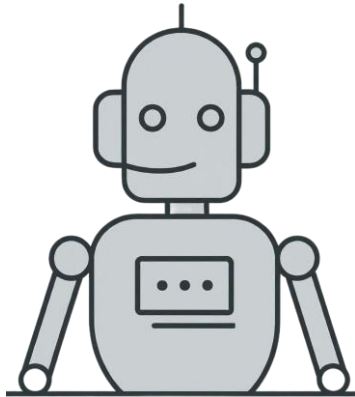
Agenda

In this session, we will discuss:

- A Framework for Agentic AI
- Four Patterns of Agentic Systems
  - Reflection
  - Tool Use
  - Planning
  - Multi-Agent Collaboration
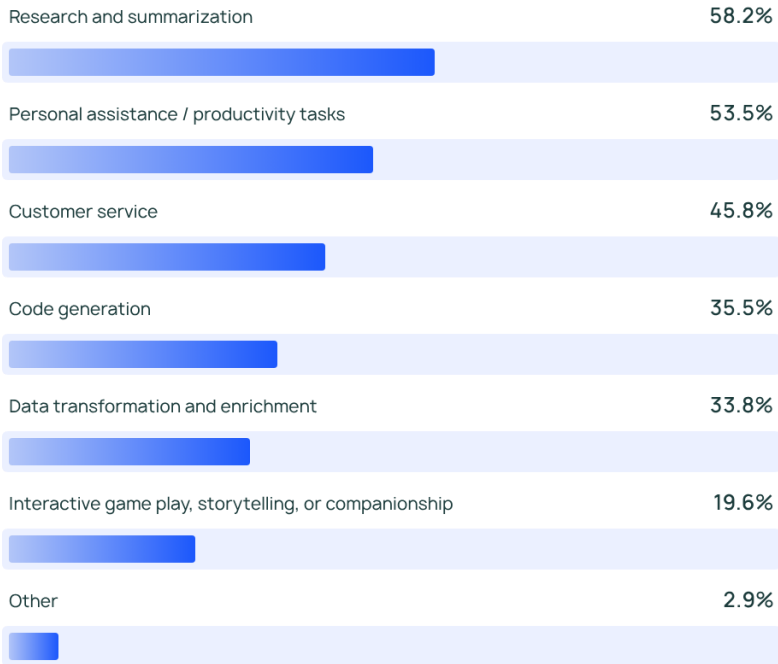
A Framework for Agentic AI
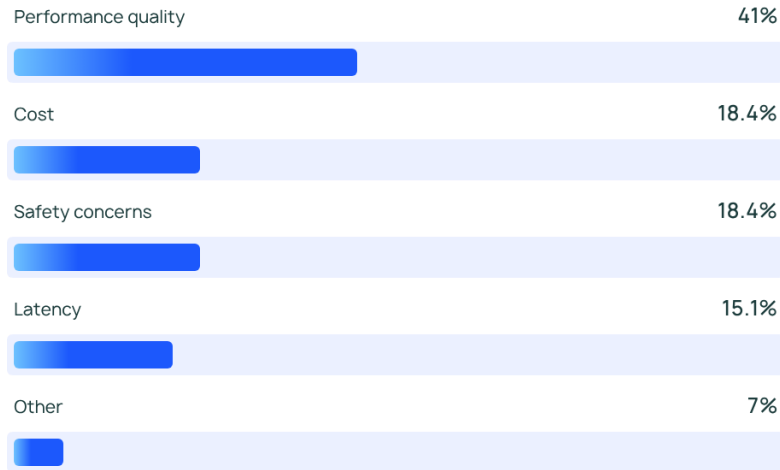
Agents: A Working Definition

AI agents are systems that actively engage in tasks, often involving planning, decision-making, and interaction with their environment to achieve defined objectives. They are unlike traditional AI models that passively provide outputs in response to specific inputs,

Agents: What are they being used for?

In your opinion, which tasks are agents best suited to perform today?

Research and summarization — 58.2%

Personal assistance / productivity tasks — 53.5%

Customer service — 45.8%

Code generation — 35.5%

Data transformation and enrichment — 33.8%

Interactive game play, storytelling, or companionship — 19.6%

Other — 2.9%

What is your biggest limitation of putting more agents in production?

Performance quality — 41%

Cost — 18.4%

Safety concerns — 18.4%

Latency — 15.1%

Other — 7%

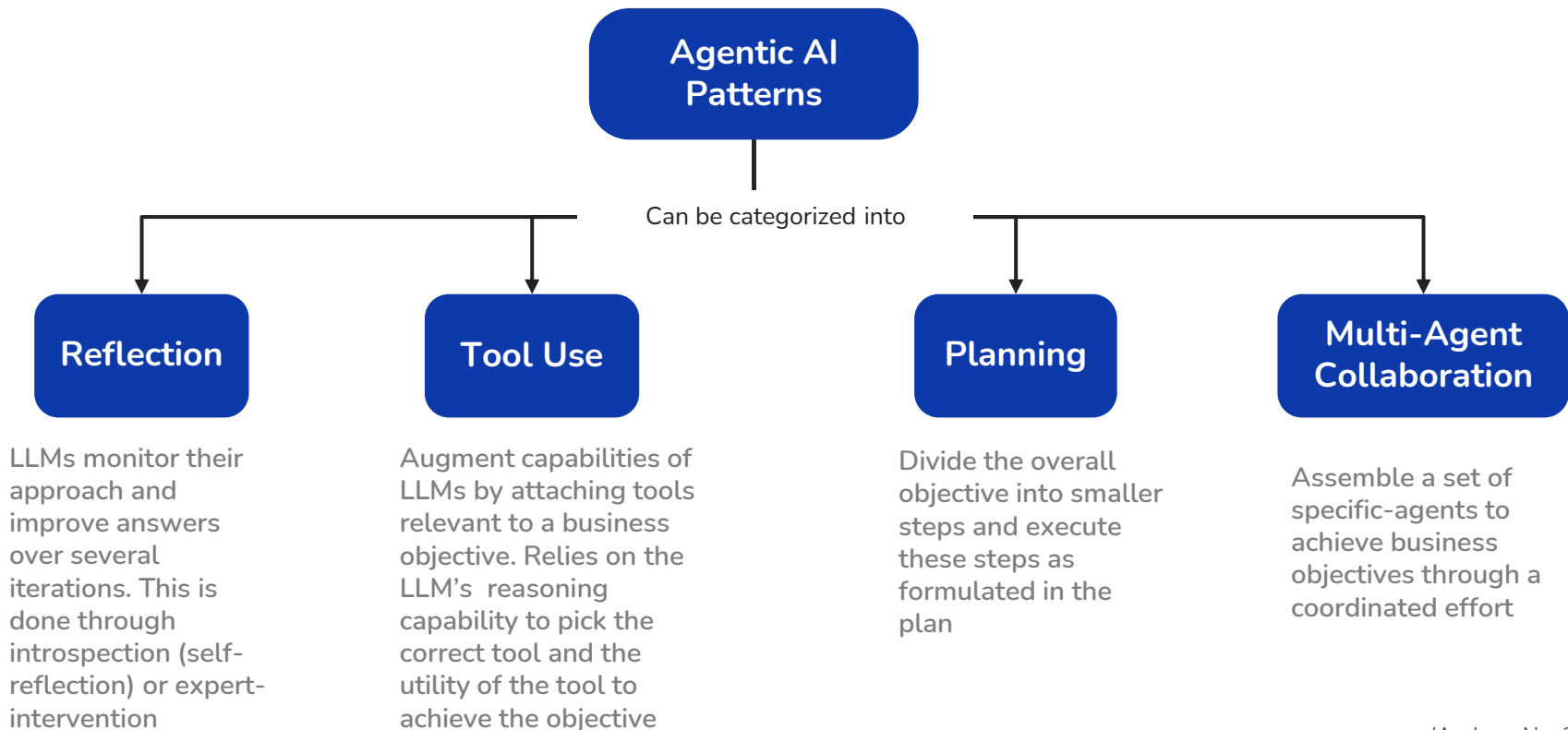# A Framework for AI Agents

(LeCun, 2022)
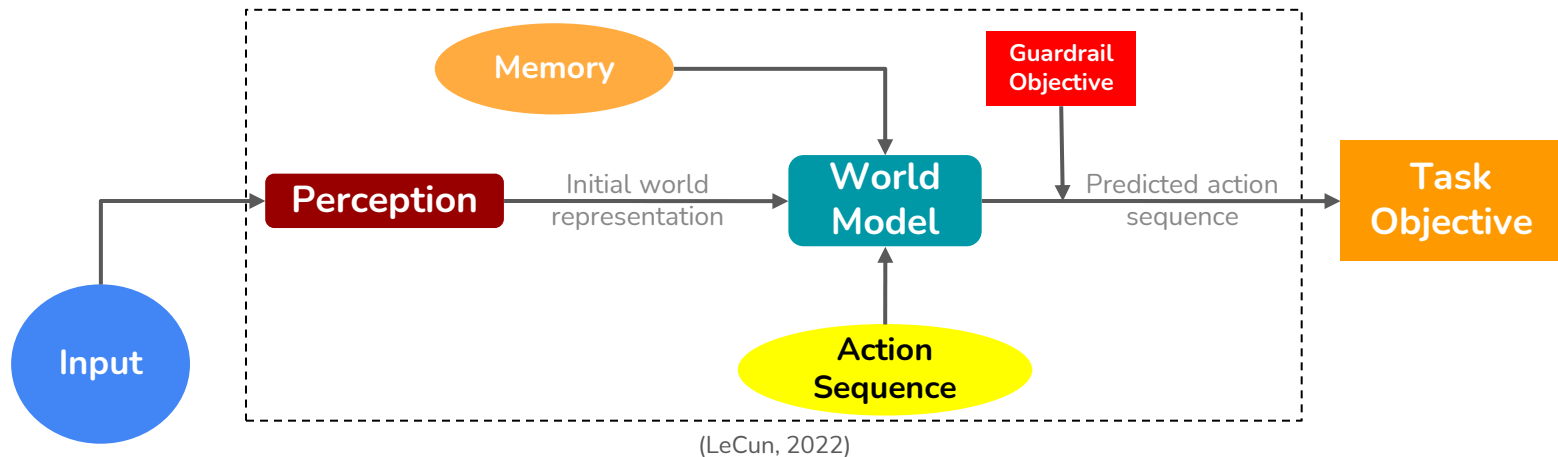
Do customers who
default maintain a low
balance?

On average, customers who
default have a negative balance
of approximately -61.80. This
suggests that customers who
default tend to maintain a low
balance.

The Four Horsemen of Agentic AI

Agentic AI Patterns

Agentic AI Patterns

Can be categorized into

Reflection

Tool Use

Planning

Multi-Agent Collaboration

LLMs monitor their approach and improve answers over several iterations. This is done through introspection (self-reflection) or expert-intervention

Augment capabilities of LLMs by attaching tools relevant to a business objective. Relies on the LLM's reasoning capability to pick the correct tool and the utility of the tool to achieve the objective

Divide the overall objective into smaller steps and execute these steps as formulated in the plan

Assemble a set of specific-agents to achieve business objectives through a coordinated effort

(Andrew Ng, 2024)

Hands-on

Introductory Implementations of the Four Agentic AI Patterns

Thank You