

State of Agentic

AI.

AI That Answers



"Write a reply to this client..."

"Summarize this CV..."

"Give me 5 business ideas..."

AI That Acts



"Book my flight to London"

"Fix the bug in my codebase"

"Send the weekly report..."

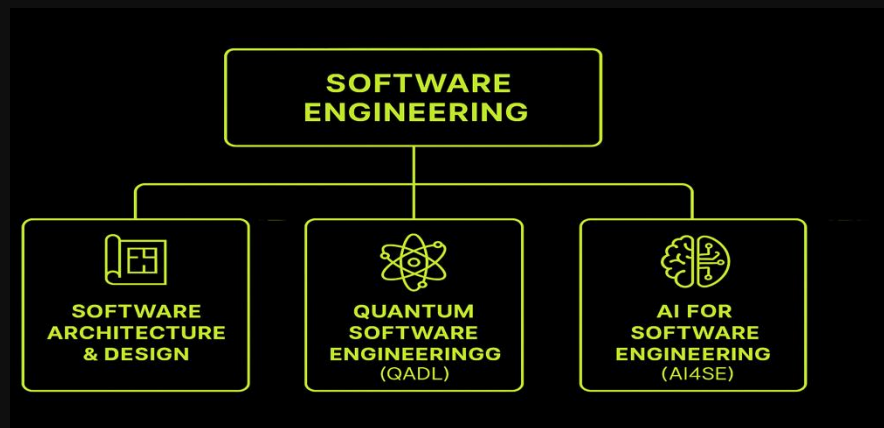
Who I am..



<https://gpt-lab.eu/>



- Postdoctoral Researcher, Vice-Head, **GPT-Lab**
- PhD in Software Engineering, Wuhan University



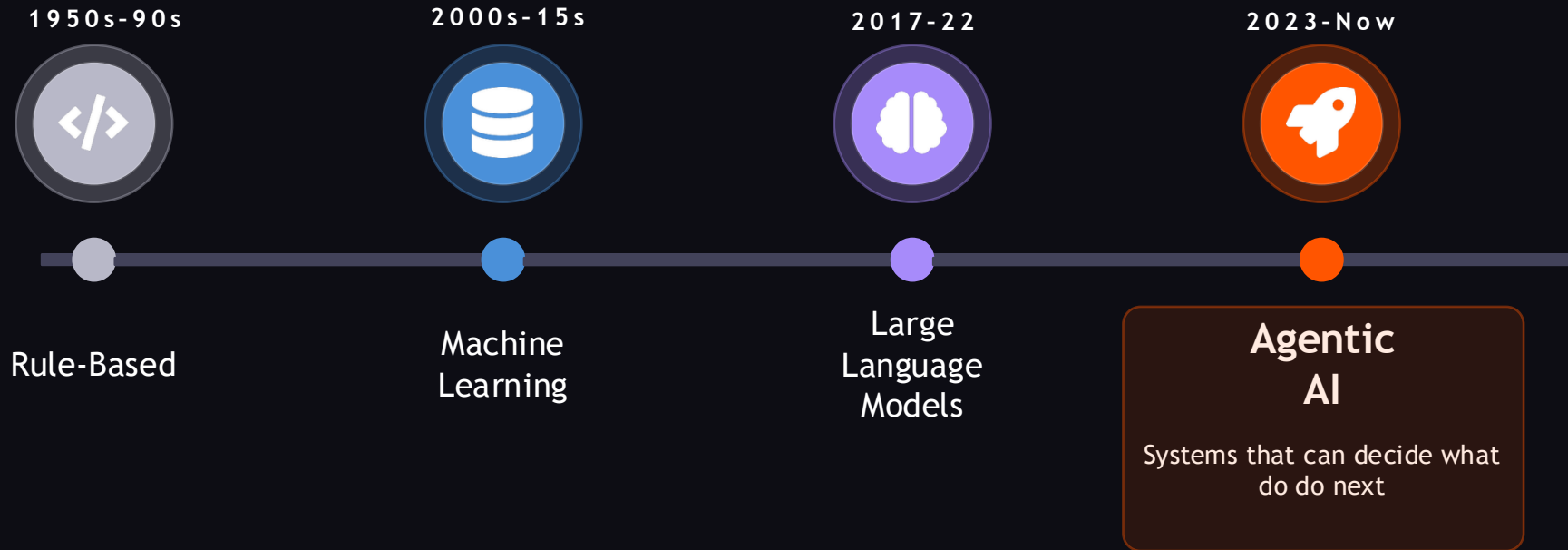
80+

Research Papers

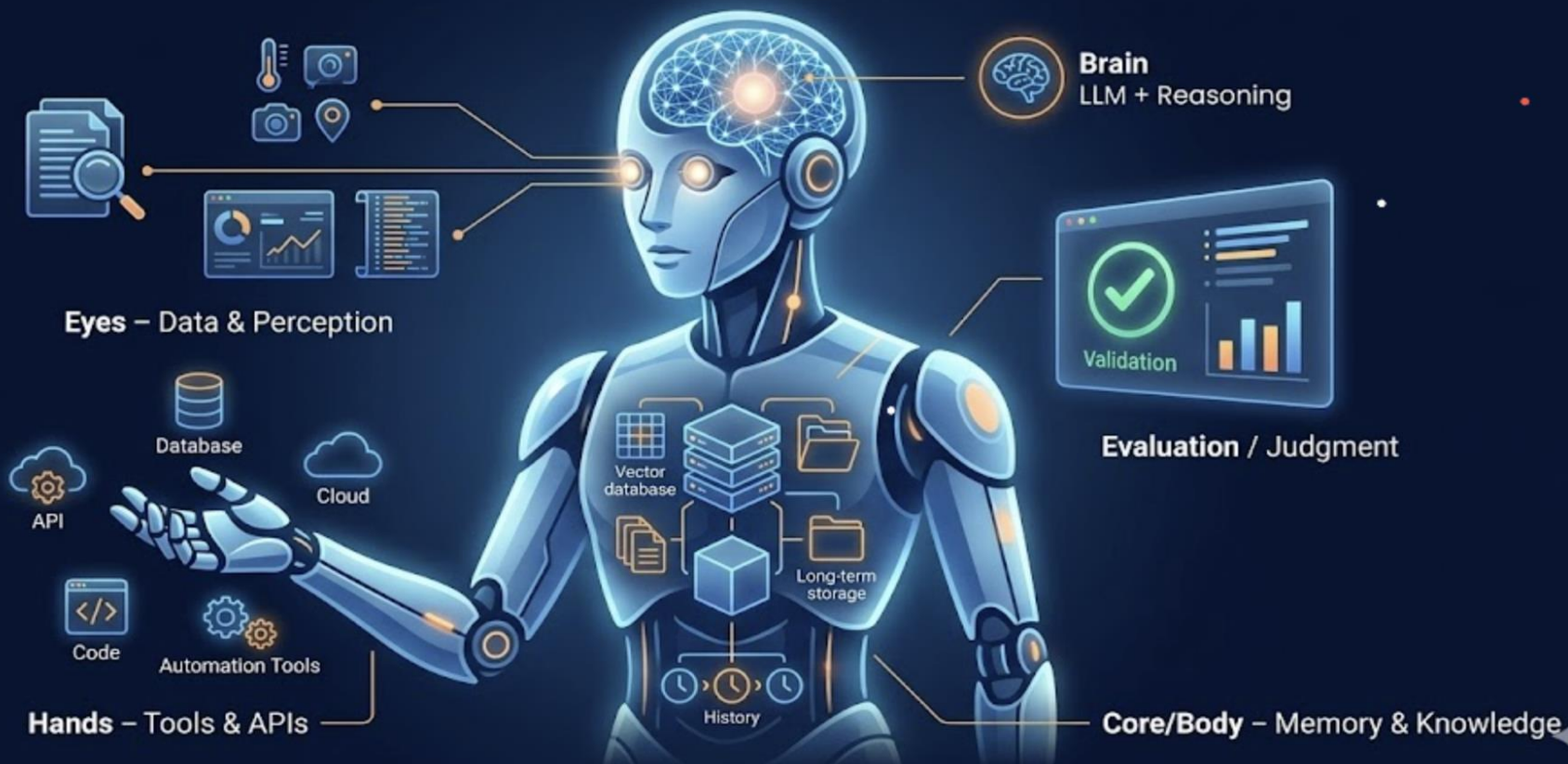
2,600+

Citations

Four eras. One direction.



A Superhuman **Agentic AI** System



WHY NOW

Four forces. All arrived at once.



10×

REASONING POWER

Modern LLMs plan, self-correct
and chain complex logic



1M+

TOOL APIS

Everything is an API — search,
code, email, databases



1M+

TOKEN CONTEXT

From 4K → 1M+ tokens
Agents hold entire tasks



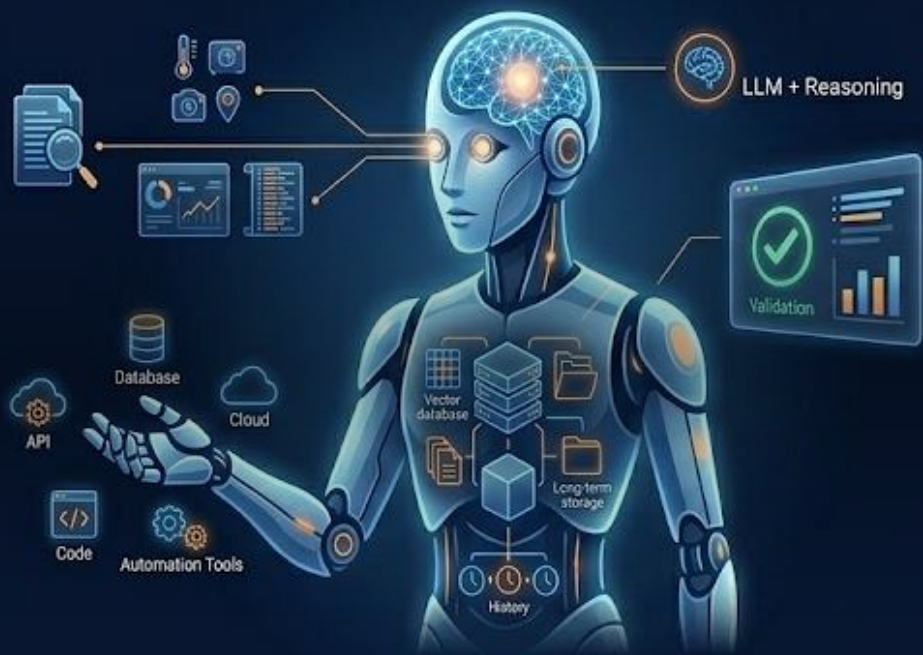
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INFERENCE COST

100 LLM steps costs cents.
Agentic loops are viable.

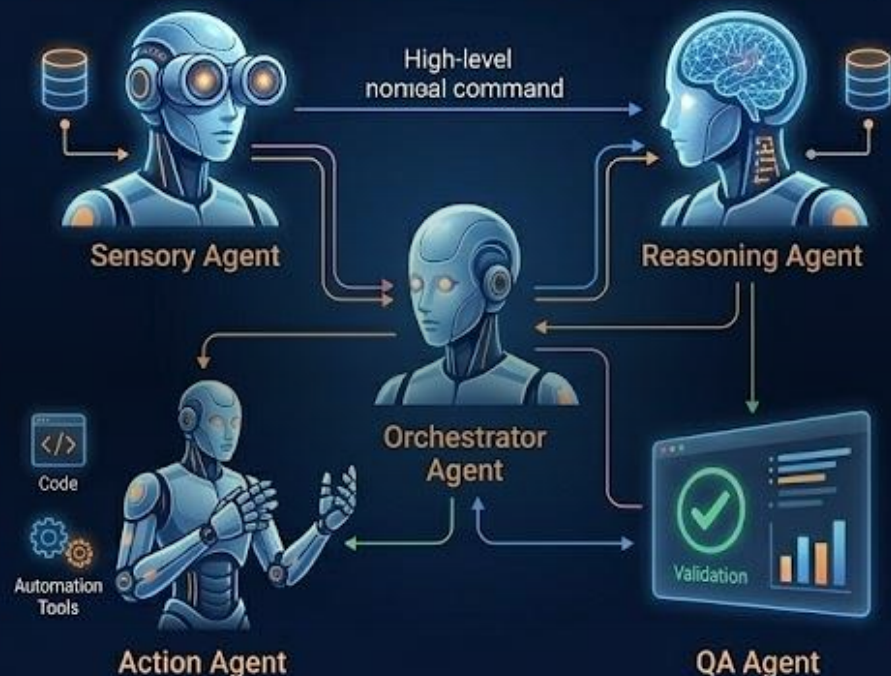
A Superhuman **Agentic AI** System

Panel A: **SOLO AGENT** (The Generalist)



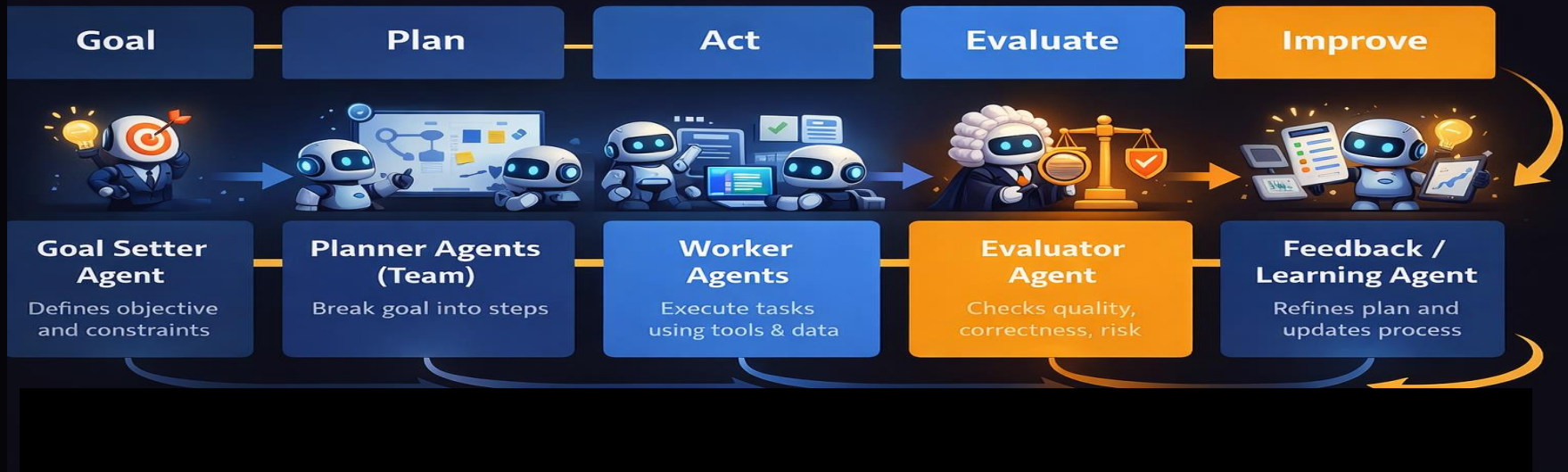
A single complete, autonomous generalist unit. Handles all cognitive load sequentially. Parallelization is limited.

Panel B: **MULTI-AGENT** (Specialized Crew)



Distinct roles with specialized capabilities. Parallel execution of tasks. Coordinated via orchestration.

How Agentic AI Systems Work



Agentic Frameworks Landscape



Google Agent SDK

formerly ADK

Flexible framework for building multi-agent systems.

Google

Multi-agent

Production



LangGraph

by LangChain

Graph-based orchestration for complex agent workflows.

Open-source

Graph-based

Production



CrewAI

by CrewAI Inc.

Role-based multi-agent collaboration, easy to prototype.

Role-based

Fast

Popular



AutoGen

by Microsoft

Agents communicate through messages and coordinated roles.

Open-source

Multi-agent

Conversational



LlamaIndex

for Agentic RAG

Data-aware agents over structured and unstructured knowledge.

RAG

Data-centric

Retrieval



Semantic Kernel

by Microsoft

AI orchestration with plugins, memory, and enterprise integration.

Enterprise

Plugins

Integration

Already in Production.



Workflow Automation

- End-to-end process execution
- Support, HR, operations



Data Analysis

- Automated insights and reports
- Dashboards, business queries



IT & Operations

- Incident handling & monitoring
- Code generation, process automation



Industrial Use

- Predictive maintenance
- Process optimization



Supply Chain

- Demand forecasting
- Inventory decisions



Knowledge Tasks

- Document analysis
- Research and summarization

Most current deployments focus on structured, repeatable workflows.

Powerful but....



Reliability

Errors cascade.
Recovery is immature.



Safety

Real-world actions.
Wrong steps hurt.



Observability

100-step runs are
hard to trace & debug.



Cost

Long chains are slow
But expensive.



Context Limits

Long tasks lose
track of earlier state.



Trust

When to act without
asking permission?

The next chapter of Agentic AI.



Persistent Agents

Always-on. Know your goals.
More colleague than tool.



Agent Economies

Agents hire other agents.
Automated AI supply chains.



Human-Agent Teams

Humans: strategy.
Agents: execution.



Self-Improving Loops

Agents that learn from runs
and write better agents.

The question is no longer:

"Can AI understand me?"

It's: "Can AI do the work for me?"



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Postdoctoral Research Fellow

