

## **8 Architectural Layers of Agentic Al**







Collaborative Writing Entertainment Learning / Document Agents





Agents

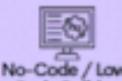
E-Commerce

Agents

LAYER 8

#### **Ops & Governance Layer**







Agent Registries Deployment No-Code / Low-& Discovery Pipelines Code Builders



Long-Term

Governance & Policy Engines Optimization



Data Privacy Enforcement

**Memory & Personalization Layer** 



Frameworks

Cognition & Reasoning Layer



Improvement



Agents





Creation



Feedback



Watchdog Agents

Guardrails &

**Ethics Engine** 

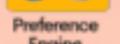


LAYER 6

LAYER 1









Emotional

Context Storage



Tool Usage



#### **Protocol Layer**



Tool Abstraction Protocol

Management







Reactivity &

Adaptation













LAYER 3

LAYER 4

LAYER 2

LAYER 1

#### **Tooling & Enrichment Layer**





Integration Layer

Vector DBs

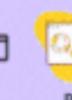


















Interfaces

#### shish Sahu Infrastructure Layer

(Prometheus, Grafana)



Protocol



















#### **Agent Internet Layer**





(Pinecone, Weaviate)



Communication Protocols





Tool Use Modules



















Actions API



& State



Autonomous Agents



# Agentic System

#### **Architecture**

#### **Infrastructure Layer**

Provides the fundamental computing resources and services like APIs, cloud compute, storage, networking, and orchestration to support all higher layers.

#### **Agent Internet Layer**

Enables networking, communication, and coordination among agents through autonomous systems, agent memory, mesh networks, and identity protocols.

#### **Protocol layer**

Defines protocols for agent-to-agent communication, capability sharing, negotiation, and integration, ensuring smooth interoperability across agents and services.

#### **Tooling Layer**

Offers tools and services for information retrieval, external tool usage, code execution, vector databases, and plugins to enhance agent capabilities.

## Cognition & Reasoning Layer

Equips agents with advanced cognitive functions like reasoning, decision making, planning, goal management, and multi-step task execution.

### Memory & Personalisation Layer

Manages memory systems, personal profiles, behavior modeling, and preferences to enable personalized and context-aware agent behavior.

#### **Application Layer**

Hosts various end-user applications such as personal assistants, research agents, learning bots, and e-commerce or entertainment

#### Ops & Governance Layer

Provides operational tools and governance frameworks including observability, deployment pipelines, trust frameworks, cost optimization, and policy enforcement.

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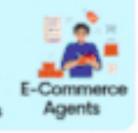


Agents

Agents

Creation

Watchdog Agents Agents



#### **Ops & Governance Layer**



Agent Registries Deployment No-Code / Low-Code Builders





& Discovery

Governance & Policy Engines Optimization



Enforcement



Frameworks

#### Cognition & Reasoning Layer



Improvement









Feedback

Loop





Guardrails &

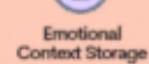




#### **Memory & Personalization Layer**

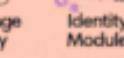








Modeling















#### **Protocol Layer**



Protocol

Tool Abstraction

Protocol

Management







Protocol

Reactivity &

Adaptation







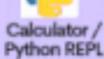




LAYER 3

#### **Tooling & Enrichment Layer**







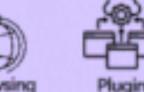
Integration Layer

Vector DBs











Code Execution

Sandbox



Interfaces

shish Sahu Infrastructure Layer













Agent Gateway

Protocol









LAYER 1

LAYER 2

LAYER 8

LAYER 1

LAYER 6

LAYER 5

LAYER 4

#### Agent Internet Layer



(Pinecone, Weaviate)







Systems













Networks





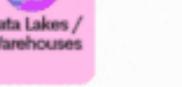














#### WebSockets Warehouses GraphQL) & State Actions API Environments

# Agentic System

Architecture

#### **Ops & Governance** Layer

Provides operational tools and governance frameworks including observability, deployment pipelines, trust frameworks, cost optimization, and policy enforcement.

#### **Application Layer**



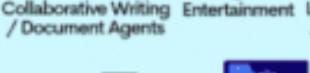


/ Document Agents













LAYER 8

LAYER 1

LAYER 6

LAYER 5

LAYER 4

LAYER 3

LAYER 2

LAYER 1

### Watchdog Agents

### Cognition & Reasoning Layer























#### **Protocol Layer**





















### Infrastructure Layer





(Prometheus, Grafana)



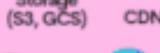
Balancers



/ Cloud

















#### **Ops & Governance Layer**











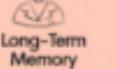


Policy Engines Optimization

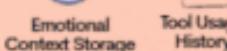


**Memory & Personalization Layer** 













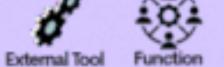
**Tooling & Enrichment Layer** 



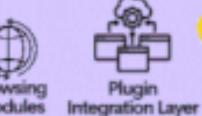


















#### Agent Internet Layer





Environments

(Pinecone, Weaviate)



Actions API



& State



Agent

Tool Use Memory



Networks



### Demo Jupyter Notebook OpenAl SDK, MongoDB

https://colab.research.google.com/github/cedricwalter/AI-Agents/blob/main/notebooks/agents/intro-generative-AI.ipynb