THE BLUE WHALE
AI ACADEMY

# UNDERSTANDING THE AI AGENTS ARCHITECTURE


www.thebluewhale.ai

# UNDERSTANDING THE AI AGENTS ARCHITECTURE

Self Paced | 63 Lessons | 12 Quizzes

**Fee:** $ 199.00

## Overview

The AI revolution is in full swing, but what powers the next-generation AI agents behind the scenes? This resource provides an in-depth look at the architectural components that enable AI agents to function—from front-end interfaces to memory management, authentication, observability, orchestration, and more.

We break down the key technologies, frameworks, and startups driving AI agent innovation, helping you understand how these systems work together to create autonomous, intelligent agents. Whether you're a developer, researcher, or business leader, this guide equips you with the knowledge to navigate the evolving AI landscape.

## Features

- ✓ Learn about 12+ essential components of AI agent architecture.
- ✓ Discover the latest tools, frameworks, and startups shaping the field.
- ✓ Understand how these components come together in AI-powered applications.
- ✓ Stay ahead with insights into the latest developments in AI agent orchestration.
- ✓ Explore how AI agents are transforming sectors like automation, search, security, and more.

# Curriculum

## Frontend tools & frameworks for AI Agentst

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|---|---|
| Streamlit: AI-Powered Frontend Framework for Data Apps | 30 minutes |
| Flask: Lightweight Python Web Framework for AI & APIs | 30 minutes |
| Gradio: AI-Powered Interactive Frontend for Machine Learning Models | 30 minutes |
| Node.js: JavaScript Runtime for Scalable AI Web Applications | 30 minutes |
| Next.js: AI-Powered Full-Stack Framework for Web Applications | 30 minutes |
| **Quiz** | 30 minutes 5 questions |

## Memory components for AI Agents

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| Zep: AI Memory Component for Long-Term Context Retention | 30 minutes |
| Mem0: AI Memory for Contextual AI Learning | 30 minutes |
| Cognee: AI-Powered Cognitive Memory for LLMs | 30 minutes |
| Letta: AI-Powered Stateful Agents with Advanced Memory Capabilities | 30 minutes |
| **Quiz** | 30 minutes 5 questions |

## Platforms and tools for monitoring, debugging, and improving the performance of AI agents.

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|---|---|
| Arize AI: AI Model Performance Monitoring & Debugging | 30 minutes |
| LangSmith: AI Agent Debugging & Evaluation for LLMs | 30 minutes |
| Langfuse: AI Logging, Debugging & Observability for LLMs | 30 minutes |
| Helicone: AI Monitoring & API Performance Optimization | 30 minutes |
| Galileo AI: AI Performance Monitoring & Debugging for LLMs | 30 minutes |
| Opik AI: AI Model Observability & Performance Monitoring | 30 minutes |
| Metoro: AI Observability & Performance Optimization Platform | 30 minutes |

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|---|---|---|
| Braintrust: AI Workflow Monitoring & Performance Analytics | 30 minutes | |
| **Quiz** | 30 minutes | 7 questions |

## Frameworks and libraries that manage the coordination and interaction between multiple AI agents to solve complex problems.

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|---|---|---|
| LangGraph: Multi-Agent Coordination Framework for AI Workflows | 30 minutes | |
| AutoGen: Autonomous AI Agent Collaboration Framework | 30 minutes | |
| CrewAI: Multi-Agent AI Workflow Management | 30 minutes | |
| Haystack: Open-Source AI Retrieval & Multi-Agent Framework | 30 minutes | |
| LlamaIndex: AI-Powered Data Indexing & Retrieval for LLMs | 30 minutes | |
| Agno: Multi-Agent AI Coordination & Task Execution | 30 minutes | |
| Swarm AI: Decentralized Multi-Agent Intelligence for Complex Problem Solving | 30 minutes | |
| AWS Multi-Agent Orchestrator: Scalable AI Workflow Automation for Enterprises | 30 minutes | |
| **Quiz** | 30 minutes | 8 questions |

## Authentication systems for AI tools

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|---|---|---|
| Auth0: Identity and Access Management Platform | 30 minutes | |
| Okta: Comprehensive Identity and Access Management Platform | 30 minutes | |
| OpenFGA: Open Fine-Grained Authorization System | 30 minutes | |
| Anon: Automated Authentication Layer for AI Agents | 30 minutes | |
| **Quiz** | 30 minutes | 5 questions |

## External tools that AI agents use to gather information and perform tasks

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|---|---|---|
| Google AI Agents: External Tools for Information Gathering and Task Execution | 30 minutes | |

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|---|---|---|
| DuckDuckGo | 30 minutes | |
| Serper | 30 minutes | |
| Exa.Ai | 30 minutes | |
| **Quiz** | 30 minutes | 5 questions |

## Model Routing - techniques for selecting and switching between different AI models based on task requirements and performance Martian

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|---|---|---|
| Martian: Model Routing for Dynamic AI Model Selection and Performance Optimization | 30 minutes | |
| OpenRouter: Unified Interface for Multi-Model AI Access | 30 minutes | |
| NotDiamond: AI Model Routing and Multi-Agent Optimization Platform | 30 minutes | |
| **Quiz** | 30 minutes | 3 questions |

## Foundational Models - large-scale AI models that form the basis for various AI applications, providing general intelligence capabilities

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|---|---|---|
| OpenAI: Large-Scale AI Models for General Intelligence | 30 minutes | |
| DeepSeek: Large-Scale AI Models for General Intelligence | 30 minutes | |
| Gemini: Large-Scale AI Models for Multimodal Intelligence | 30 minutes | |
| Qwen: Large-Scale AI Models for General Intelligence | 30 minutes | |
| Claude: Large-Scale AI Models for Safe and Interpretable Intelligence | 30 minutes | |
| Mistral AI: Large-Scale AI Models for Open and Efficient Intelligence | 30 minutes | |
| Grok: Large-Scale AI Models for Insightful and Truth-Seeking Intelligence | 30 minutes | |
| Llama: Large-Scale AI Models for Open and Multimodal Intelligence | 30 minutes | |
| **Quiz** | 30 minutes | 8 questions |

## Processes for preparing and integrating data from various sources for use in AI applications

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|---|---|---|
| Datavolo | 30 minutes | |
| Needle | 30 minutes | |
| Verodat | 30 minutes | |
| **Quiz** | 30 minutes | 4 questions |

## Systems for storing and managing data used by AI agents, including vector databases for efficient similarity search

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|---|---|---|
| Chroma | 30 minutes | |
| Qdrant | 30 minutes | |
| Supabase | 30 minutes | |
| Pinecone | 30 minutes | |
| Weaviate | 30 minutes | |
| MongoDB | 30 minutes | |
| Neo4j | 30 minutes | |
| Fireproof | 30 minutes | |
| **Quiz** | 30 minutes | 8 questions |

## Infrastructure components that provide the necessary resources and environment for running AI agents

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|---|---|---|
| Docker Inc | 30 minutes | |
| Kubernetes | 30 minutes | |
| Auto Scale VMs | 30 minutes | |
| **Quiz** | 30 minutes | 3 questions |

### Cloud and hardware providers that offer the computing power required for training and running AI models

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|---|---|---|
| Azure | 30 minutes | |
| AWS | 30 minutes | |
| GCP | 30 minutes | |
| Groq | 30 minutes | |
| RunPod | 30 minutes | |
| **Quiz** | 30 minutes | 5 questions |

## FAQs

### Who is this course for?

This course is designed for AI developers, engineers, product managers, tech founders, and researchers who want to understand the full architecture behind AI agents.

### What will I learn from this course?

You'll gain a structured understanding of AI agent infrastructure, including tools and frameworks for memory, security, orchestration, observability, and computation.

### Do I need a technical background to understand this?

While a basic understanding of AI helps, this course is structured to be accessible to both technical and non-technical professionals.

### What industries can benefit from AI agent technology?

AI agents are revolutionizing customer support, automation, cybersecurity, content creation, search engines, financial modeling, and healthcare—this course explains how.

### How is this different from general AI courses?

Most AI courses focus on models; this course dives into the full ecosystem that makes AI agents truly autonomous, scalable, and intelligent.

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