



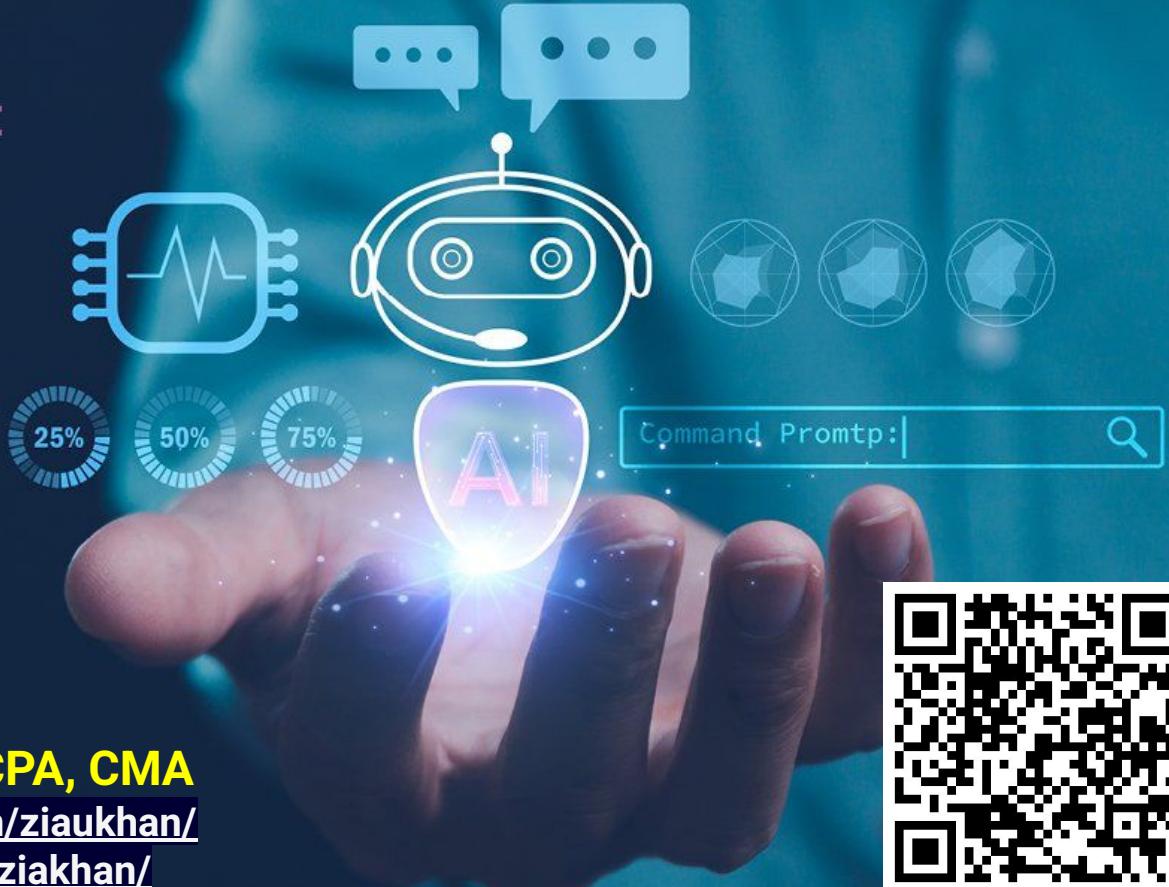
# THE RISE OF AI AGENTS

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# Presentation Outline: Building the Future

1. The Rise of Agentic AI
2. Agentia World Vision
3. AI-First and Cloud-First Development
4. DACA Design Pattern
5. Road to AGI
6. The Journey of Agentic AI
7. Focus on Vertical Agentic Solutions
8. One Person Unicorn Possible Now
9. Call to Action

# The Three Waves of AI

## Predictive AI

Focus on analyzing data to predict outcomes.

**Analyze past data** to predict future outcomes.

Why It Mattered: Enabled data-driven decision-making.

## Generative AI

Focus on creating content from data.

**Creating content** (text, images, code, videos).

Why It Mattered: Empowered creativity and productivity.

## Agentic AI

Focus on autonomous actions and learning iteratively.

**Autonomous actions**, environment interaction, iterative learning.

Why It Matters: AI becomes proactive, managing complex tasks.

# Chatbot Arena LLM Leaderboard

## Community-driven Evaluation for Best LLMs

Rank* (UB)	Rank (StyleCtrl)	Model	Arena Score	95% CI	Votes	Organization	License
1	1	Gemini-2.5-Pro-Exp-03-25	1439	+7/-10	5858	Google	Proprietary
2	7	Llama-4-Maverick-03-26-Experimental	1417	+13/-12	2520	Meta	Llama
2	1	ChatGPT-4o-latest (2025-03-26)	1410	+8/-10	4899	OpenAI	Proprietary
2	5	Grok-3-Preview-02-24	1403	+6/-6	12391	xAI	Proprietary
2	4	chocolate_(Early_Grok-3)	1402	+5/-5	13865	xAI	Proprietary
3	2	GPT-4.5-Preview	1398	+5/-7	12312	OpenAI	Proprietary
7	9	Gemini-2.0-Flash-Thinking-Exp-01-21	1380	+4/-4	24298	Google	Proprietary
7	6	Gemini-2.0-Pro-Exp-02-05	1380	+4/-4	20289	Google	Proprietary
7	4	ChatGPT-4o-latest (2025-01-29)	1375	+4/-5	24163	OpenAI	Proprietary
7	5	DeepSeek-V3-0324	1369	+10/-10	3526	DeepSeek	MIT
10	7	DeepSeek-R1	1358	+5/-5	14259	DeepSeek	MIT

# Generative AI: A Three-Year Revolution.



ChatGPT



Grok AI



Gemini

- Transformed content creation (text, images, code).
- Paved the way for agentic AI's autonomous capabilities.
- From creativity to action, AI redefines possibilities.

# What is an AI Agent?

- **Definition:** An autonomous entity that perceives, decides, and acts in digital or physical environments.
- **Types:**
  - Software Agents: Operate in digital systems (e.g., chatbots, workflows).
  - Physical Agents: Interact with the physical world (e.g., robots, vehicles).
- **Role in DACA:**

Core components driving intelligent automation.  
Agents are the building blocks of **Agentia World**.

# 2025 Top 10 Strategic Technology Trends

**1**

Agentic AI

**2**

AI Governance Platforms

**3**

Disinformation Security

**4**

Post-Quantum Cryptography

**5**

Ambient Invisible Intelligence

**6**

Energy-Efficient Computing

**7**

Hybrid Computing

**8**

Spatial Computing

**9**

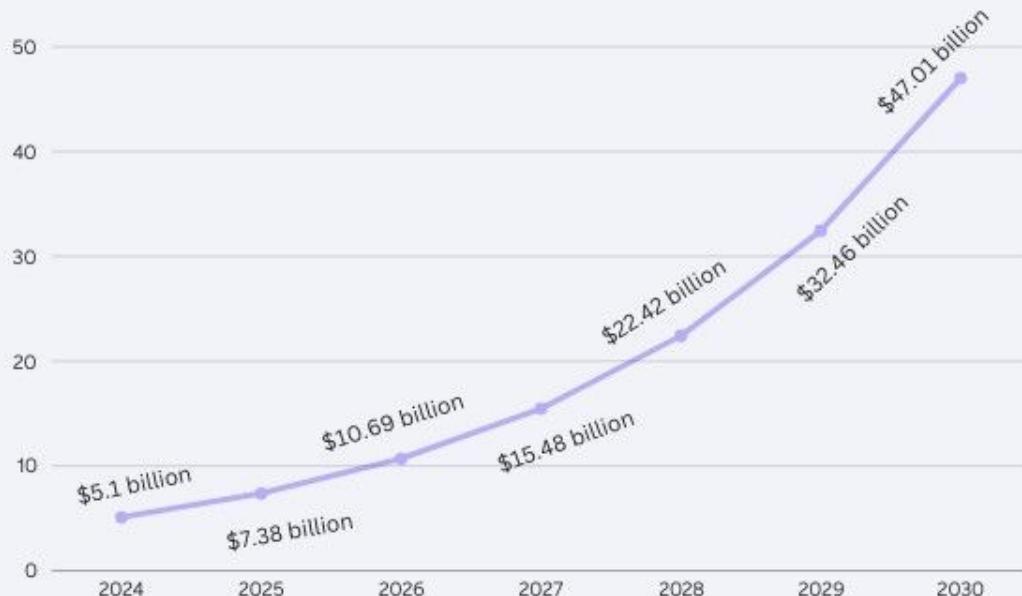
Polyfunctional Robots

**10**

Neurological Enhancement

# AI Agents Market Size

The AI agents market is estimated to be valued at **\$7.38 billion** and will continue to grow at a compound annual growth rate of **44.8%** and reach **\$47.1 billion by 2030**.



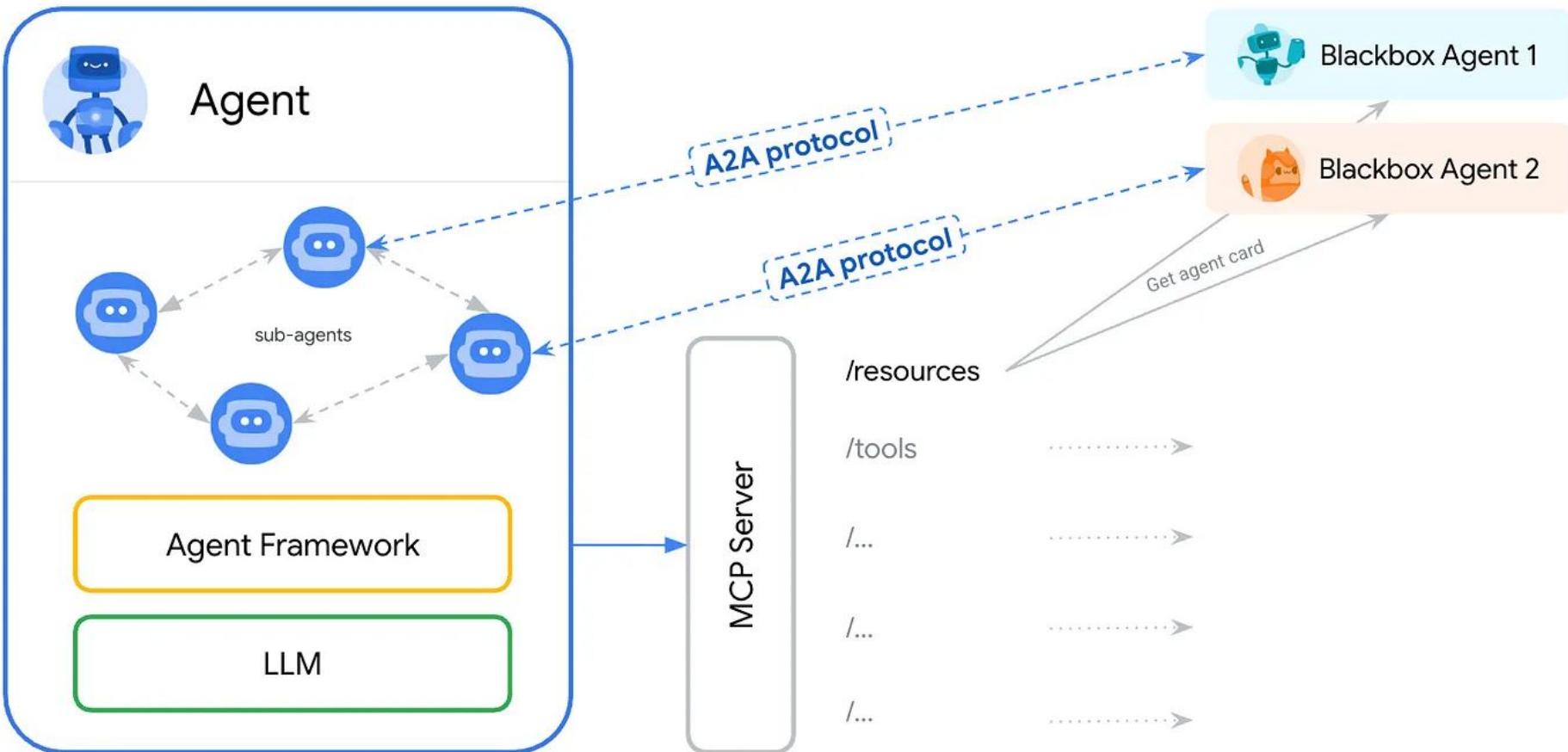
# Our Vision: **Agentia World**

- Picture a world where **everything is an AI agent** – from your coffee machine to entire cities.
- A **dynamic, living network** seamlessly integrated into daily life.
- **Systems communicating through sophisticated, intelligent dialogues**, not outdated APIs.
- A vision that's both **digital and physical**.

# Our Vision: A World Transformed



# Agentic Application



# The Critical Challenge

**How do we design AI Agents that can handle  
10 million concurrent users without failing?**

The challenge is intensified as we must guide our students to solve this issue with minimal financial resources available during training.

**The Solution: DACA Design Pattern**

# DACA: Dapr Agentic Cloud Ascent

- **Overview:** A design pattern for scalable, resilient agentic AI systems.
- **Core Tenets:**
  - AI-First: Agents drive logic via OpenAI SDK, A2A, MCP.
  - Cloud-First: Scales via Docker/Rancher, Lens, Dapr, Kubernetes.
- **Components:**
  - OpenAI Agents SDK (agent logic).
  - MCP (tool calling).
  - A2A Protocol (agent communication).
  - Dapr (distributed capabilities).
- **Vision:** Enables Agentia World's intelligent ecosystem.

# The Core Idea of DACA: Develop Anywhere

- Use containers (Docker/OCI) as the standard for development environments for Agentic AI.
- Ensure consistency across developer machines (macOS, Windows, Linux) and minimize "it works on my machine" issues.
- Use open-source programming languages like Python, libraries such as Dapr, orchestration platforms like Kubernetes, applications like Rancher Desktop, databases like Postgres, and protocols like MCP and A2A.
- Leverage tools like VS Code Dev Containers for reproducible, isolated development environments inside containers.
- The goal is OS-agnostic, location-agnostic, consistent Agentic AI development.

# The Core Idea of DACA: Cloud Anywhere

- Use Kubernetes as the standard orchestration layer for AI Agent deployment. This allows agentic applications packaged as containers to **run consistently across different cloud providers (AWS, GCP, Azure) or on-premises clusters.**
- Use Dapr to **simplify building distributed, scalable, and resilient AI Agents and workflows.**
- Leverage tools like Helm for packaging and GitOps tools (Argo CD) for **deployment automation.**
- The goal is **deployment portability and avoiding cloud vendor lock-in.**

# AI-First Development in DACA

- **Definition:** Prioritizes AI as the core of system logic from the start.
- **Key Features:**
  - Autonomous agents powered by OpenAI Agents SDK.
  - Intelligent communication via A2A Protocol.
  - Tool integration with MCP for dynamic capabilities.
- **Why It Matters:**
  - Enables adaptive, reasoning-driven systems.
  - Aligns with Agentia World's vision of intelligent networks.
  - AI-first ensures agents drive innovation and autonomy.

# Cloud-First Development in DACA

- **Definition:** Builds systems for **cloud-native scalability** from day one.
- **Key Features:**
  - Containerized agents (Docker/Rancher) for portability.
  - Serverless platforms (Azure Container Apps) for efficiency.
  - Kubernetes for **planetary-scale** orchestration.
- **Why It Matters:**
  - Scales **AI agents** seamlessly from 10 to millions of users.
  - Leverages free-tier services to **minimize costs**.
  - Cloud-first powers **DACA's global reach**.



node<sup>js</sup>

python™

.NET

=GO

Java

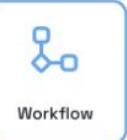
C++

PHP

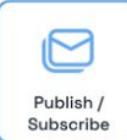
R

Use any language or runtime

HTTP/gRPC



Workflow



Publish /  
Subscribe



Service  
Invocation



State  
Management



Actors



Jobs



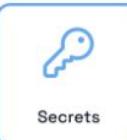
Observability



Security



External  
Configuration



Secrets



Bindings



Cryptography



Distributed  
lock



Conversation



Resiliency

A Azure

aws

Google Cloud

kubernetes

Virtual or  
physical machines

Databases

Message Brokers

Services

Host on & integrate with any cloud or edge infrastructure

# Why OpenAI Agents SDK should be the Main Framework for Agentic Development for Most Use Cases?

Table 1: Comparison of Abstraction Levels in AI Agent Frameworks

Framework	Abstraction Level	Key Characteristics	Learning Curve	Control Level	Simplicity
OpenAI Agents SDK	Minimal	Python-first, core primitives (Agents, Handoffs, Guardrails), direct control	Low	High	High
CrewAI	Moderate	Role-based agents, crews, tasks, focus on collaboration	Low-Medium	Medium	Medium
AutoGen	High	Conversational agents, flexible conversation patterns, human-in-the-loop support	Medium	Medium	Medium
Google ADK	Moderate	Multi-agent hierarchies, Google Cloud integration (Gemini, Vertex AI), rich tool ecosystem, bidirectional streaming	Medium	Medium-High	Medium
LangGraph	Low-Moderate	Graph-based workflows, nodes, edges, explicit state management	Very High	Very High	Low
Dapr Agents	Moderate	Stateful virtual actors, event-driven multi-agent workflows, Kubernetes integration, 50+ data connectors, built-in resiliency	Medium	Medium-High	Medium

# DACA Main Components

## 01 Python

- Modern Python Programming
- Type Hints, Asyncio, Data Classes, Generics, etc.

## 02 AI Agents

- OpenAI Responses API
- OpenAI Agents SDK

## 03 FastAPI & MCP

- Containerized FastAPI for Building APIs with Asynchronous capabilities
- Containerized MCP for Standardize AI Model Integrations and Tool Calling

## 04 DAPR & A2A

- Build Resilient, Stateless, and Stateful applications that run on the cloud with Dapr
- Agent-to-Agent Communication with A2A protocol

## 05 Deploy & Scale

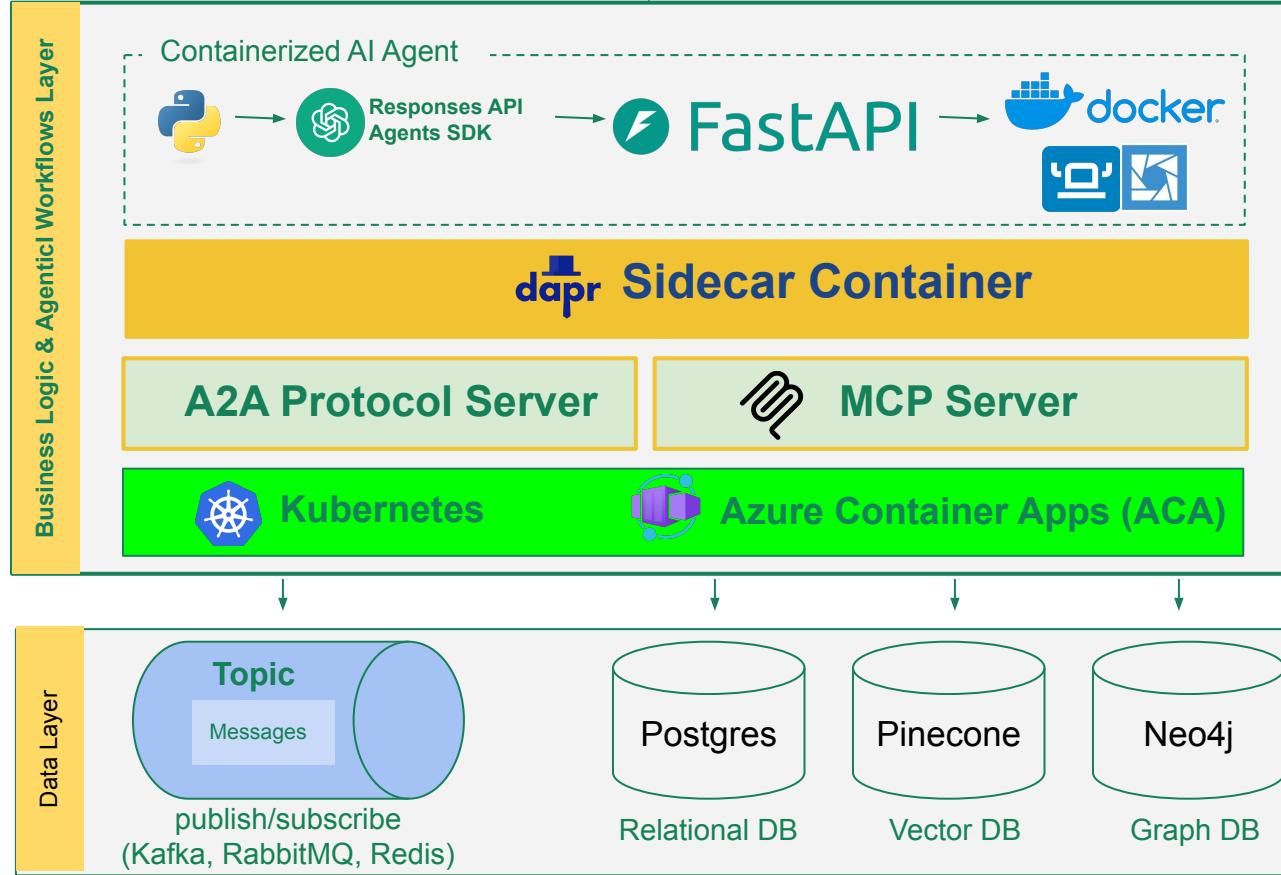
- Docker to Build Containers
- Serverless Container Platforms for Enterprise Deployments
- Kubernetes for Planet Scale

## 06 Monitor & Eval

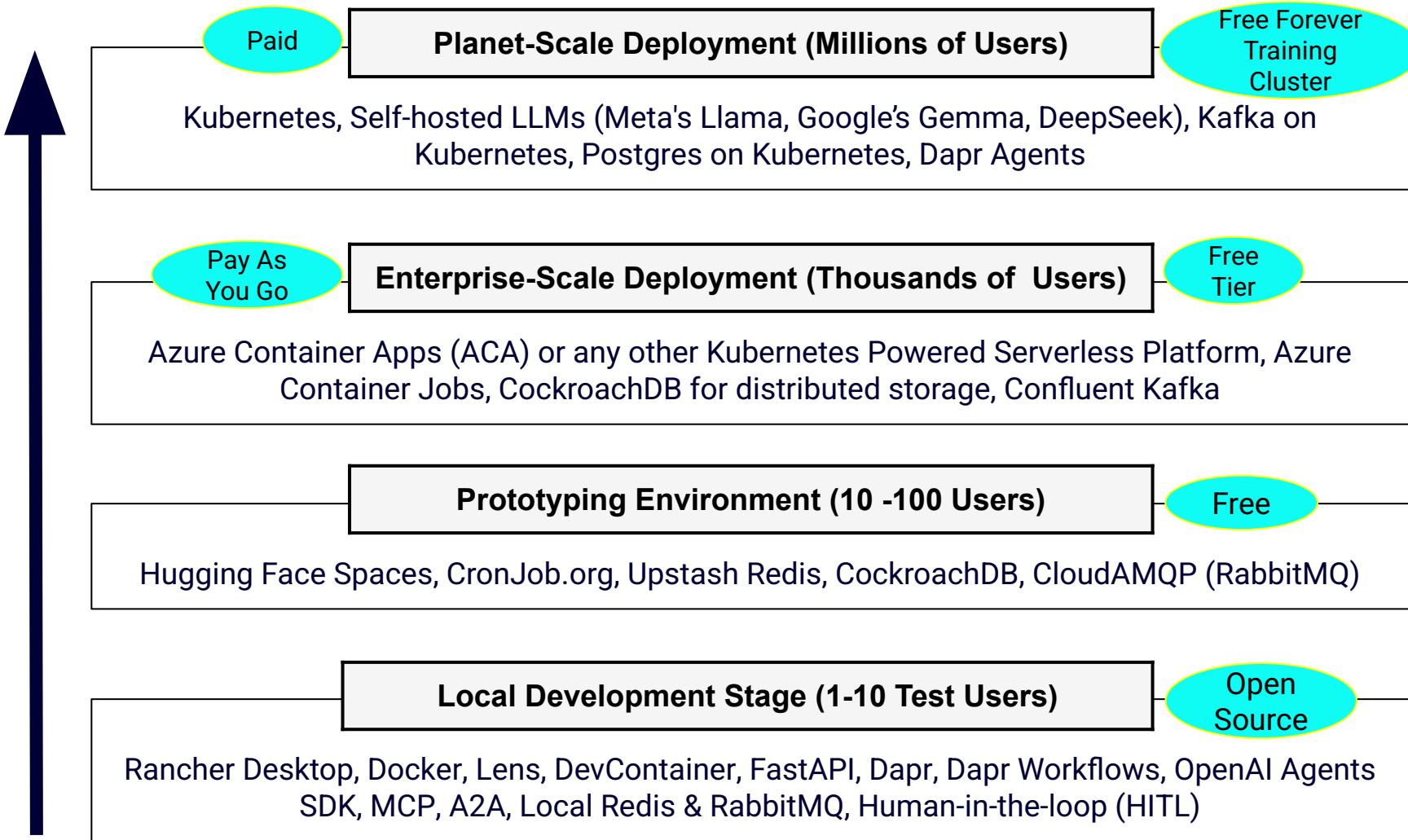
- Use testing & monitoring tools for your Distributed AI Agents

## Dapr Agentic Cloud Ascent (DACA) Architecture

### Presentation Layer (Next.js/Streamlit/Chainlit)



# The DACA Multi-Agent Ascent



# The Global AI Race: A New Frontier in Power

- Investing in AI is now essential for global relevance.
- **AI is more than technology—it's a pathway to economic power and geopolitical influence.**
- **It also impacts the future of humanity.**
- The US and China are leading the AI charge.
- Countries like the UK, Israel, and India are rapidly advancing.
- AI is projected to add \$15.7 trillion to global GDP by 2030 (source: Gartner).
- Nations are investing heavily to capture these economic benefits.
- Saudi Arabia Plans \$100 Billion AI Project to Rival UAE.

# Market Demand for AI Jobs

- **High Demand for AI Talent:** Fields like agentic AI, humanoid robotics, and physical AI are seeing rapid growth.
- **Top industries hiring for AI roles:** tech, finance, healthcare, and manufacturing .
- **Lucrative Salaries:** AI professionals can expect salaries ranging from **\$150,000 to over \$200,000**, with opportunities only expanding.

# There are 1.2 million Python job openings listed on LinkedIn



python



Worldwide

Jobs ▾

Date posted ▾

Experience level ▾

Company

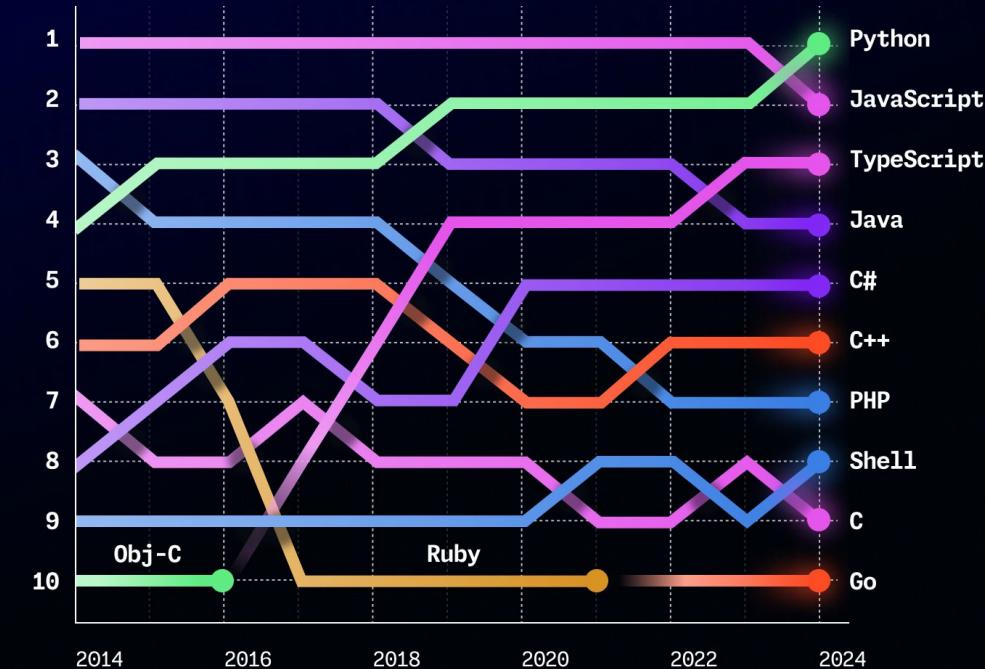
python in Worldwide  
1,268,340 results

Set alert



# Top programming languages on GitHub

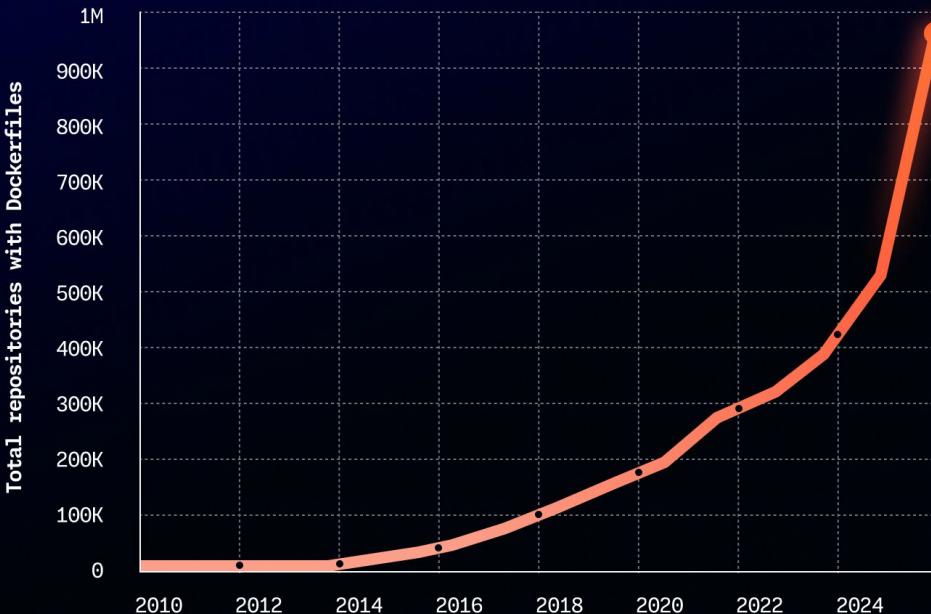
RANKED BY COUNT OF DISTINCT USERS CONTRIBUTING TO PROJECTS OF EACH LANGUAGE.



# Cloud Native AI

## Growth in Dockerfiles usage

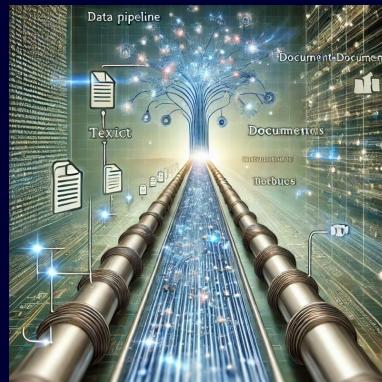
QUERIED FOR REPOSITORIES THAT CONTAIN A FILE NAMED DOCKERFILE,  
PLOTTED AGAINST CREATION YEAR OF THE REPOSITORY.



# Two-Step Lifecycle and AI Model Pipeline

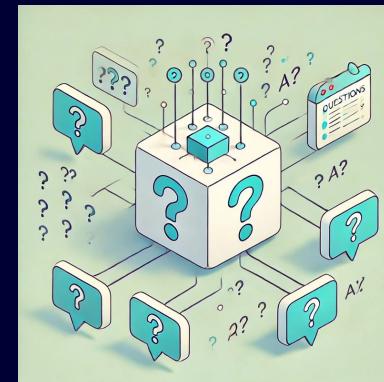
## Training

Teaching AI to Understand Language



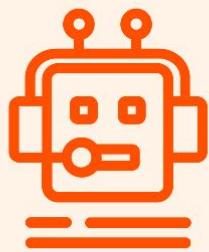
## Inference

Using AI to Generate Responses



# What is AI?

## ANI vs. AGI vs. ASI



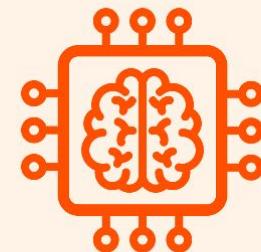
### Artificial narrow intelligence (ANI)

Designed to perform specific tasks



### Artificial general intelligence (AGI)

Can behave in a human-like way across all tasks



### Artificial super intelligence (ASI)

Smarter than humans—the stuff of sci-fi

# Road To AGI

## OpenAI Imagines Our AI Future

### Stages of Artificial Intelligence

---

Level 1	Chatbots, AI with conversational language
Level 2	Reasoners, human-level problem solving
Level 3	Agents, systems that can take actions
Level 4	Innovators, AI that can aid in invention
Level 5	Organizations, AI that can do the work of an organization

Source: Bloomberg reporting

Bloomberg

# Now we have Two Fundamental Scaling Laws

## Training

Improvements in performance in LLMs been due to increases in model scale.

Size (number of parameters), training data volume, and computational resources.

## Inference

Intelligence Requires Thinking.

The more you Compute the Higher Quality Answers You Provide.

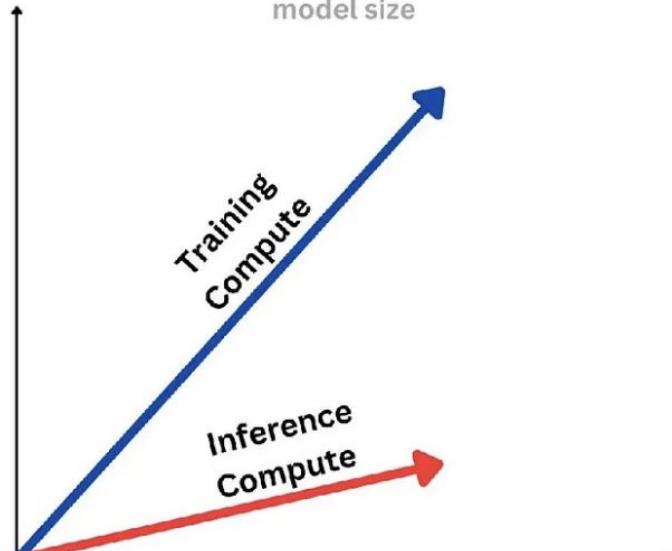
This shift will move us from a world of massive pre-training clusters toward inference clouds, which are distributed, cloud-based servers for inference,

# New scaling law: why OpenAI's o1 model matters

OpenAI created a new way to scale - through more compute during generation

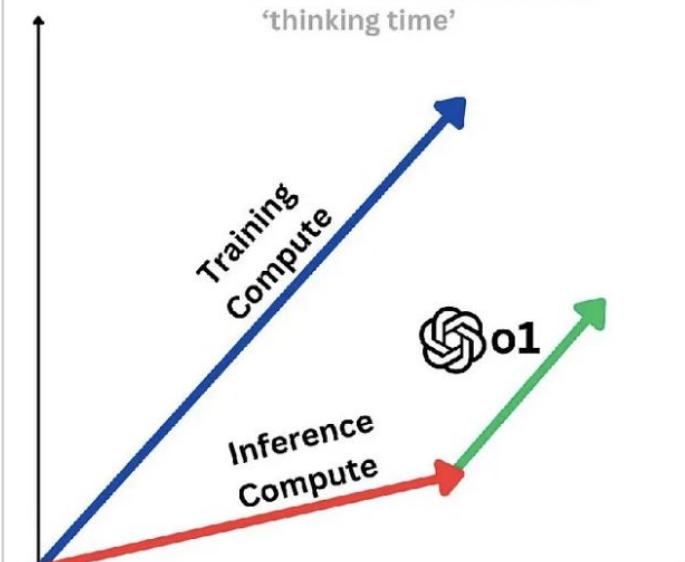
## Before OpenAI o1

Inference compute scaled **linearly** with  
model size



## After OpenAI o1

Inference compute scaled **exponentially** with  
'thinking time'



Inference comparison between traditional LLMs and o1 model ([Source](#))

# Level 3: Agentic AI

**Agentic AI** is like having a smart robot friend who can think and make decisions and take actions by itself, just like a real person.



Software agents are virtual entities that operate in digital environments. They perform tasks autonomously by interacting with software, data, and digital services.



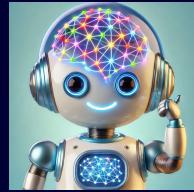
Physical agents, also known as embodied agents, are AI entities that interact with the physical world. These agents often include humanoids, autonomous vehicles, and autonomous systems.



# The Journey of Agentic AI

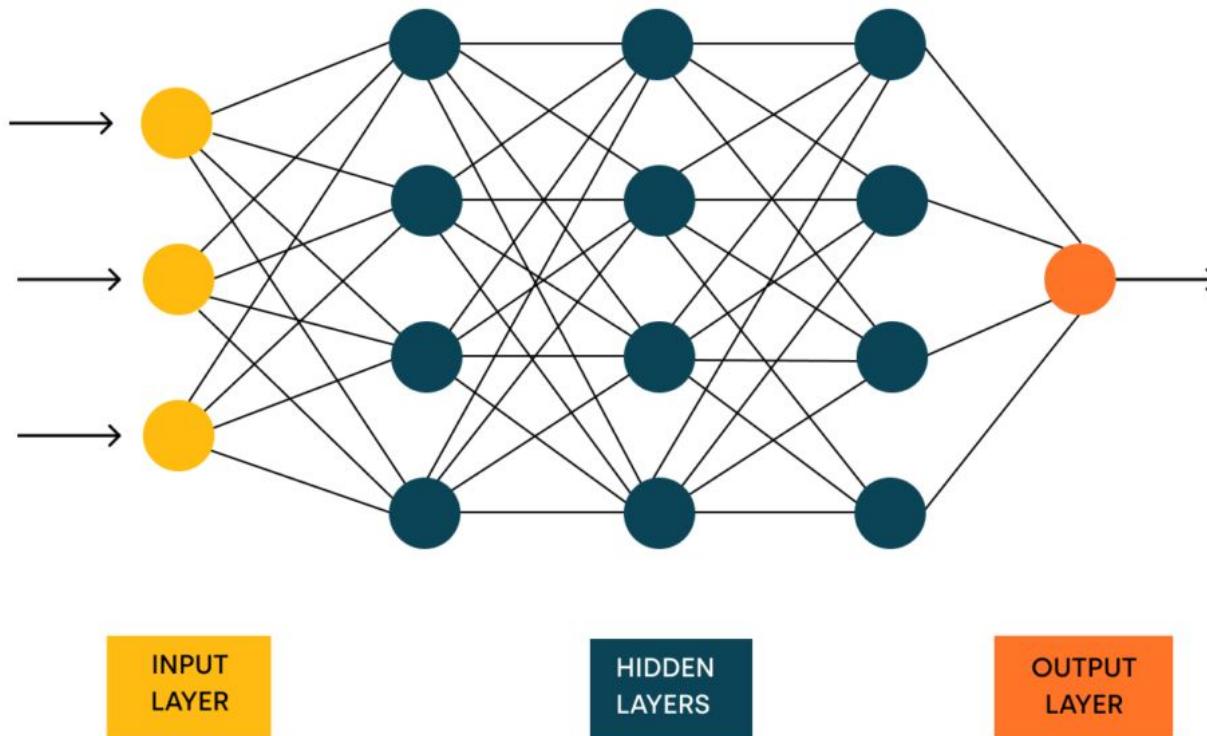
- **Neural Networks** gave AI a brain to think.
- **GPUs** helped AI learn fast by working on many things at the same time.
- **Transformers** gave AI the ability to understand and communicate.
- **Tool Calling** gave AI the ability to take Action and connect to the world.

# Neural Networks – The Brain of AI



- **AI Thinks Like Our Brains!**
- AI uses Neural Networks to think.
- Just like our brains have lots of tiny cells talking to each other, **neural networks are like tiny computer helpers working together.**
- These helpers teach AI to recognize pictures, understand words, and learn new things!

# AI is Smart Because of Neural Networks!

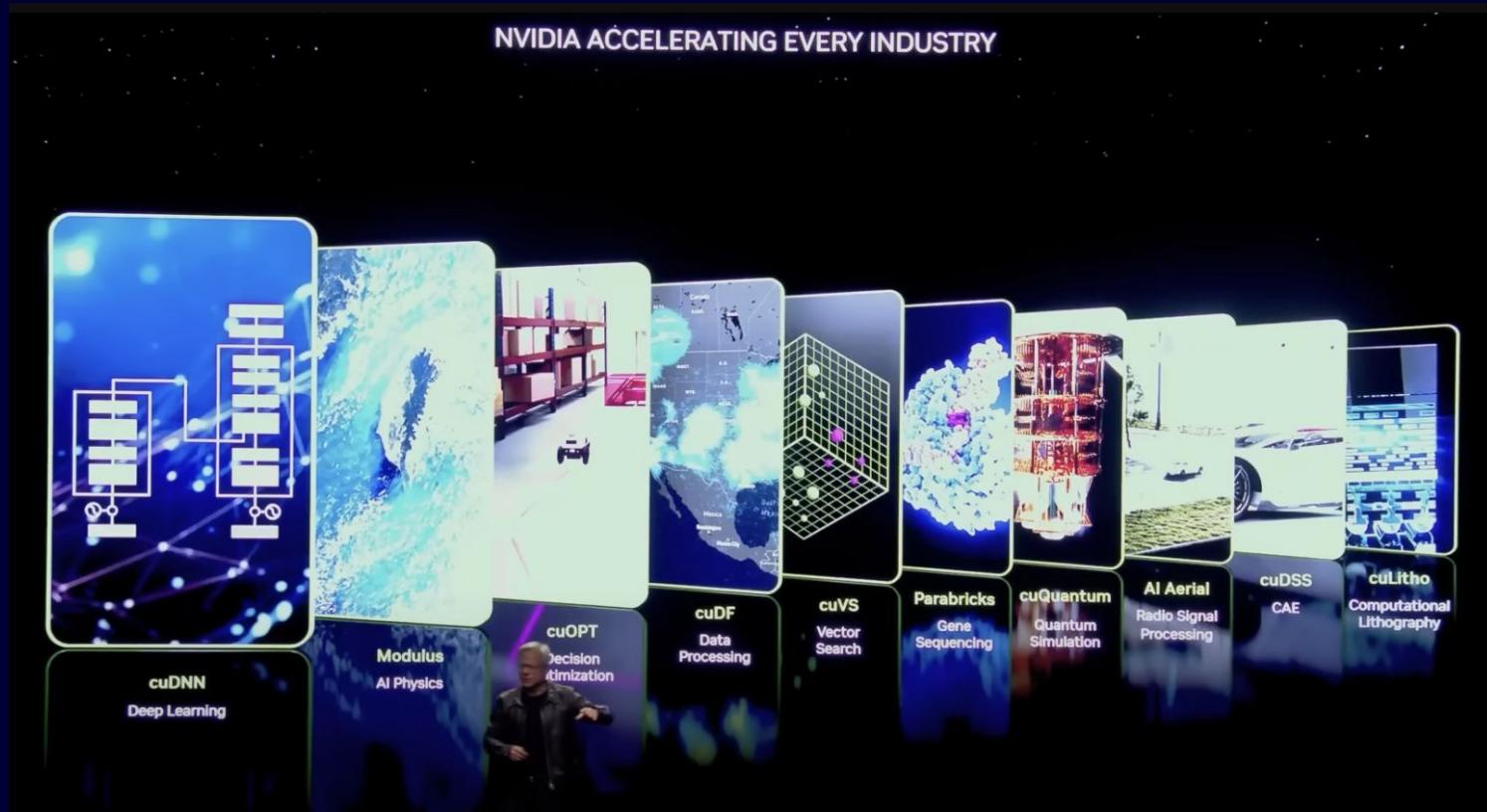




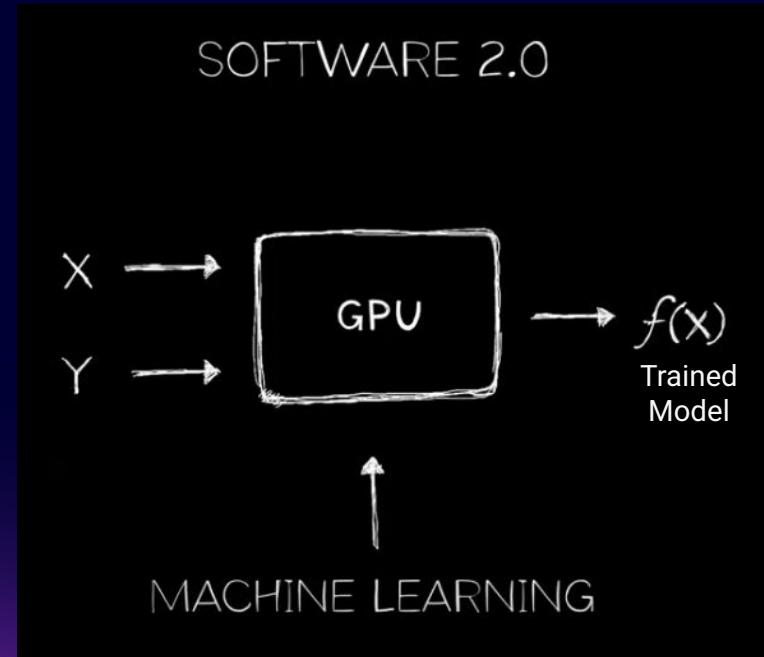
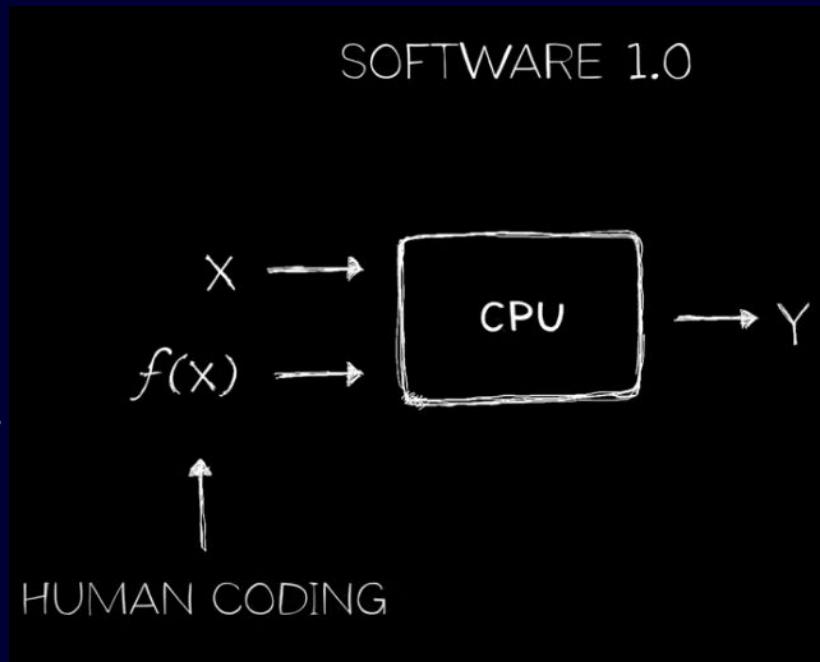
# GPUs – The Muscles of AI

- AI Needs Strong Muscles to Work Fast – That's GPUs!
- **GPUs are special computer parts that work on many things all at once.**
- Imagine having lots of helpers doing small jobs together at the same time—that's how GPUs work!
- **This is called working in parallel.**
- CPUs (normal computer brains) do one thing at a time, like a person building with one block at a time.
- GPUs can handle many blocks at once, making things go much faster!
- With GPUs, AI can learn from tons of information quickly, just like a team finishing a big puzzle faster than one person.

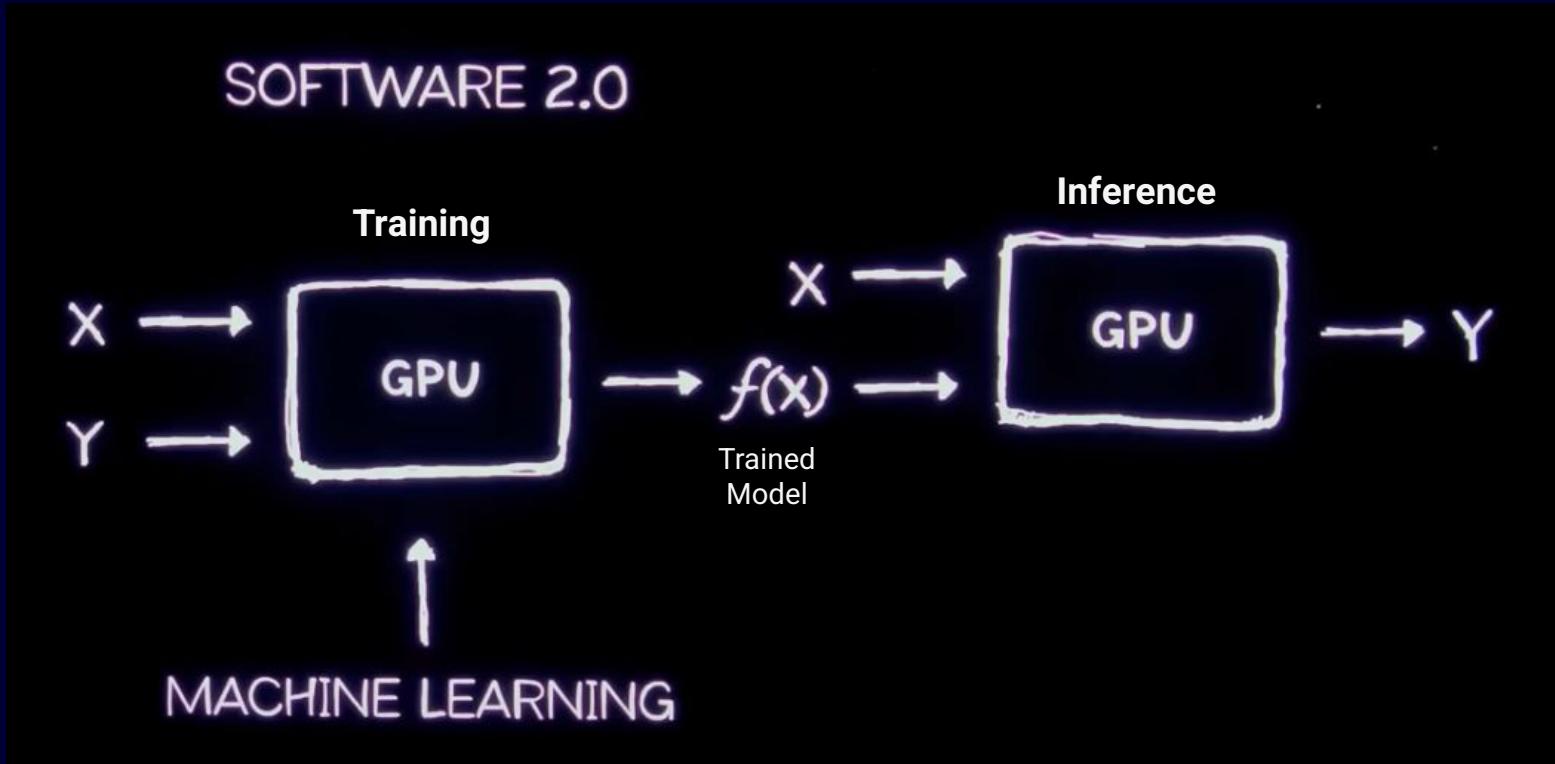
# GPUs accelerate processes up to 100 times faster



# GPUs accelerate processes up to 100 times faster



# GPUs accelerate processes up to 100 times faster



# Tool Calling: A Core Feature of Agentic AI

**Tool calling enables AI agents to autonomously select and utilize external tools or APIs to accomplish tasks beyond their inherent capabilities.**

## Significance in Agentic AI:

- Enhances problem-solving by allowing AI to access specialized resources.
- Facilitates dynamic decision-making through real-time data retrieval and processing.
- Expands the functional scope of AI agents, enabling them to perform complex, multi-step operations.

## Example:

An AI agent tasked with planning a trip can autonomously access flight booking APIs, hotel reservation systems, and local event databases to create a comprehensive itinerary.

# Join the Fourth Industrial Revolution

You should be prepared not only for high-value job roles but also for leadership in AI's next evolution, essential to the future economy

# Let's Build DACA Vertical AI Solutions

Design & Build Intelligent Planet Scale  
Vertical LLM Agents and bring  
Agentia World to Life

# Vertical vs. Horizontal AI Solutions

- **Horizontal Solutions:**
  - General-purpose AI for broad use cases (e.g., chatbots, LLMs).
  - Pros: Wide applicability, rapid deployment.
  - Cons: Lack depth, generic outputs.
- **Vertical Solutions:**
  - Specialized AI for industry-specific tasks (e.g., logistics, healthcare, education).
  - Pros: Tailored, high-impact, domain expertise.
  - Cons: Narrower scope, higher customization.
- Vertical solutions target specific industries (e.g., logistics, healthcare), while horizontal solutions are broad (e.g., general chatbots).

# Our Focus: Vertical Agents

- AI-first: Deep domain logic via OpenAI SDK, MCP, A2A.
- Cloud-first: Scalable, industry-tuned deployments.
- Example: Logistics agent optimizing supply chains with A2A.

**Vertical agents drive precision in Agentia World.**

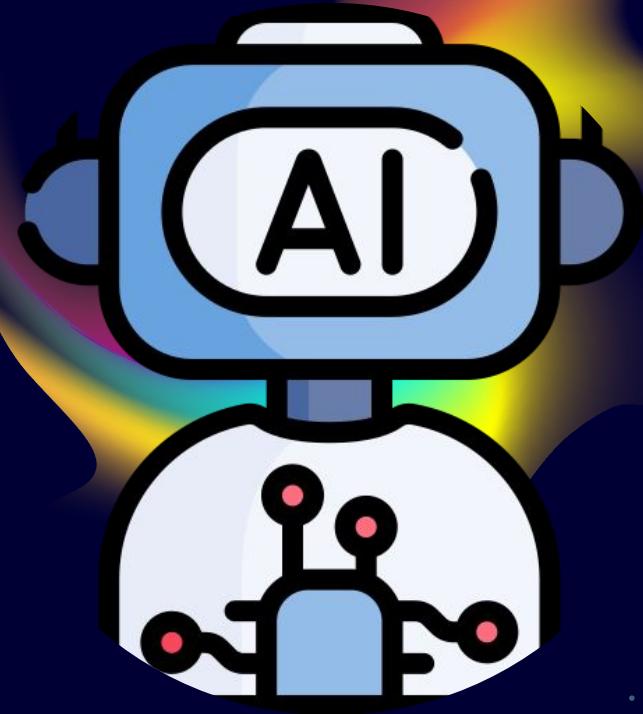
# Monetizing Vertical Agents

- Why Vertical Agents Excel:
  - Targeted Value: **Solve niche pain points** (e.g., logistics, healthcare).
  - Premium Pricing: Expertise **drives higher fees** vs. horizontal agents.
- Recurring Revenue: **Subscriptions/usage fees ensure stability.**
- DACA's Monetization Edge:
  - AI-First: OpenAI SDK, MCP tailor **agents for industry ROI**.
  - Cloud-First: Scalable delivery **maximizes margins**.
- Industry Examples:
  - Logistics: \$10K/month for route optimization (cf. Veeva's healthcare SaaS).
  - Healthcare: \$5/patient for triage automation (cf. ServiceTitan's contractor fees).
  - Retail: \$2K/month/store for inventory (cf. Toast's restaurant subscriptions).
  - Construction: \$15K/month/site for compliance (cf. Procore's project management).

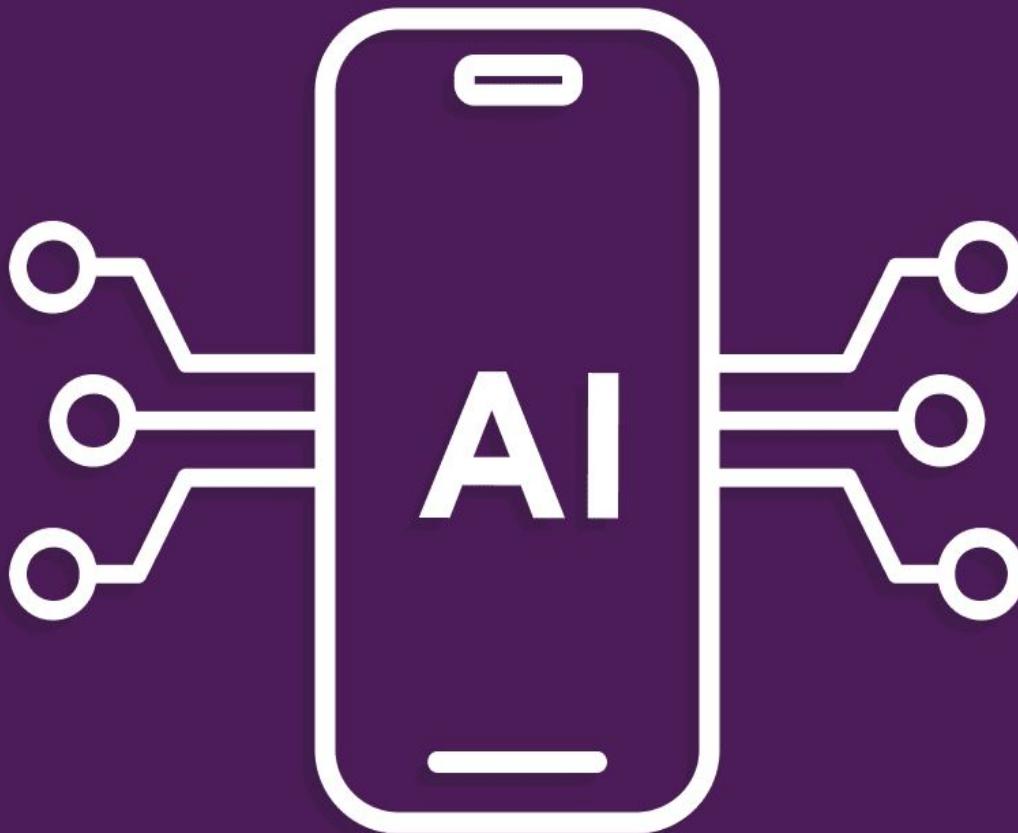
**Vertical agents mirror vertical SaaS success in Agentia World.**

Think of agents as the new **apps** for an AI-powered world.

Every organization will have a **constellation of agents**. They will work on behalf of an individual, team or function to execute and orchestrate businesses process.



# AI Agents will Replace SaaS and Apps



Your Apps Are on Borrowed Time.  
AI Agents Are on the Way

# Monetization Logic

- Vertical agents' specificity allows for **higher customer retention** (clients rely on tailored solutions).
- Niche markets have **less competition**, enabling **premium pricing**.
- Cloud scalability supports **usage-based or subscription models**, maximizing revenue per client.
- Draws from industry trends where **vertical SaaS outperforms horizontal platforms**.

# Vertical SaaS Outperforming Horizontal Platforms

- **Toast (Restaurants)** is a vertical SaaS platform tailored for restaurants, offering point-of-sale (POS), payments, payroll, inventory management, and customer loyalty tools. Its industry-specific focus enables it to outperform horizontal POS platforms like Square and Clover, which target broad markets (e.g., retail, services, restaurants).
- **ServiceTitan (Home Services)** is a vertical SaaS platform designed for home service businesses, offering tools for scheduling, dispatching, invoicing, marketing, and customer management, tailored to contractors like HVAC technicians, plumbers, and electricians. Its industry-specific focus enables it to outperform horizontal platforms like Salesforce and Zoho CRM, which serve broad industries (e.g., retail, tech, services).
- **Procore's (Construction)** \$7B valuation (2024) reflects its dominance in construction, surpassing horizontal project management platforms like Trello (\$10B acquisition but broader focus).
- **Mindbody Valued (Fitness & Wellness)** at ~\$2B (2024) outshines horizontal booking platforms like Calendly (\$3B valuation but less specialized), as fitness businesses demand tailored tools.
- **Shopify's (E-commerce, Semi-Vertical)** \$80B valuation (2024) reflects its e-commerce focus, outperforming fully horizontal platforms like Wix (\$5B, broader scope), as retailers prioritize specialized commerce tools.

# Why Vertical SaaS Outperforms Horizontal Platforms

- **Deep Industry Fit:** Vertical solutions embed into specific workflows (e.g., Toast's kitchen operations, Procore's construction bids), **creating indispensable tools**. Horizontal platforms (e.g., Slack, Zoom) offer broad utility but lack depth, reducing pricing power.
- **Higher Margins:** **Specialized features justify premiums** (e.g., ServiceTitan's \$10K/month vs. Salesforce's \$1K/month for generic CRM), as clients value ROI over cost. Vertical agents can charge \$5K-\$50K/month for high-impact automation (e.g., logistics cost savings).
- **Recurring Revenue:** **Integration into daily operations ensures subscriptions or usage-based fees** (e.g., Mindbody's 2-3% per booking). Agents can adopt similar models, charging per transaction (e.g., \$1/order optimized).
- **Lower Churn:** Vertical SaaS sees 85-95% **retention due to switching costs** (e.g., retraining staff on Procore). Vertical agents, embedded via A2A and MCP, create **similar lock-in**.
- **Valuation Premiums:** Vertical SaaS commands 10-20x revenue multiples (e.g., Veeva at \$20B with \$2B ARR) vs. **5-10x for horizontal** (e.g., HubSpot at \$30B with \$2B ARR), reflecting niche dominance. Agentic AI startups could follow suit.

# Call to Action

1. **Embrace the opportunities** presented by Agentic AI and actively engage in its development and application.
2. **Cultivate audacious leadership** to navigate the transformative potential of AI effectively.
3. **Foster collaboration and knowledge sharing** within the Agentic AI community to accelerate progress and ensure responsible Agentic AI development.

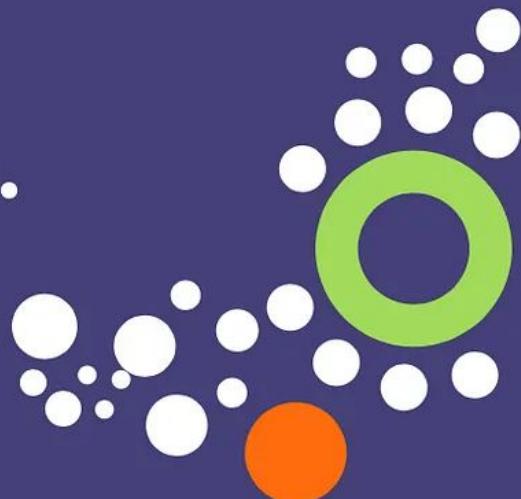
# Could Agentic AI Create a One-Person Unicorn?

The AI revolution has already minted dozens of unicorns—startups valued at \$1 billion before going public. Now it will create a whole new type of startup: **The One-Person Unicorn**

There comes a time  
we need to stop reading the  
books of others.

**And write our own.**

- Albert Einstein



# Audacious Leadership

## Leading in a AI World

# **Audacious Leadership: Empowering You to Soar**

**Why Being Bold is Essential for Men and Women  
in Leadership Who want to Change Pakistan**



EARN  
WHILE YOU  
LEARN

# Rethink Everything

‘We’re suddenly in a moment  
where it’s time to rethink  
everything’

# Detailed Syllabus

<http://bit.ly/3CpZtTY>

# Whatsapp Channel: Latest News

<https://bit.ly/49werTR>

# Thanks

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<https://www.facebook.com/ziakhan/>