

**[K-Scaleup Forum with Silicon Valley AI Nexus]
The AI Insight You Can't Google - What Silicon Valley
Actually Knows About Agents, Bio-Convergence, and
Building Global Companies**

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About Speaker

- *Co-Founder & CTO @ Erudio Bio, Inc., San Jose & Novato, CA, USA* 2023 ~
- *Co-Founder & CEO @ Erudio Bio Korea, Inc., Korea* 2025 ~
- *Co-Founder, Leader, and Chair of Silicon Valley AI Nexus, USA* 2024 ~
- *CGO / Global Managing Partner @ LULUMEDIC, Seoul, Korea* 2025 ~
- *AI-Korean Medicine Integration Initiative Task Force Member @ The Association of Korean Medicine, Seoul, Korea* 2025 ~
- *Advisor to Korean American Semiconductor Professional Alliance (KASPA)* 2026 ~
- *KFAS-Salzburg Global Leadership Fellow @ Salzburg Global Seminar, Austria* 2024 ~
- *Adjunct Professor, EE Department @ Sogang University, Seoul, Korea* 2020 ~
- *Advisory Professor, EECS Department @ DGIST, Korea* 2020 ~
- Global Advisory Board Member @ Innovative Future Brain-Inspired Intelligence System Semiconductor of Sogang University, Korea 2020 ~
- Technology Consultant @ Gerson Lehrman Group (GLG), NY, USA 2022 ~

- Co-Founder & CTO / Head of Global R&D / Chief Applied Scientist / Senior Fellow @ Gauss Labs, Inc., Palo Alto, CA, USA 2020 ~ 2023
- VP / Fellow @ SK hynix 2020 ~ 2021
- Senior Applied Scientist @ Amazon.com, Inc., Vancouver, BC, Canada 2017 ~ 2020
- Principal Engineer @ Software R&D Center, Samsung Electronics 2016 ~ 2017
- Principal Engineer @ Strategic Marketing & Sales, Samsung Electronics 2015 ~ 2016
- Principal Engineer @ DT Team, DRAM Dev, Samsung Electronics 2012 ~ 2015
- Senior Engineer @ CAE Team, Memory Business, Samsung Electronics 2005 ~ 2012
- PhD - Electrical Engineering @ Stanford University, CA, USA 2001 ~ 2004
- Development Engineer @ Voyan, Santa Clara, CA, USA 2000 ~ 2001
- MS - Electrical Engineering @ Stanford University, CA, USA 1998 ~ 1999
- BS - Electrical & Computer Engineering @ Seoul National University 1994 ~ 1998

Highlight of Career Journey

- BS in Electrical Engineering (EE) @ Seoul National University
- MS & PhD in Electronics Engineering (EE) @ Stanford University
 - *Convex Optimization - Theory, Algorithms & Software*
 - Advisor - *Prof. Stephen P. Boyd*
- Principal Engineer @ Samsung Semiconductor, Inc.
 - *AI & Convex Optimization*
 - collaboration with *DRAM/NAND Design/Manufacturing/Test Teams*
- Senior Applied Scientist @ Amazon.com, Inc.
 - *e-Commerce AIs* - anomaly detection, deep RL, and recommender system
 - *Jeff Bezos's project - drove \$200M* in sales via Amazon Mobile Shopping App
- *Co-Founder & CTO / Global R&D Head & Chief Applied Scientist* @ Gauss Labs, Inc.
- *Co-Founder & CTO* @ Erudio Bio, Inc.
- *Co-Founder & CEO* @ Erudio Bio Korea, Inc.

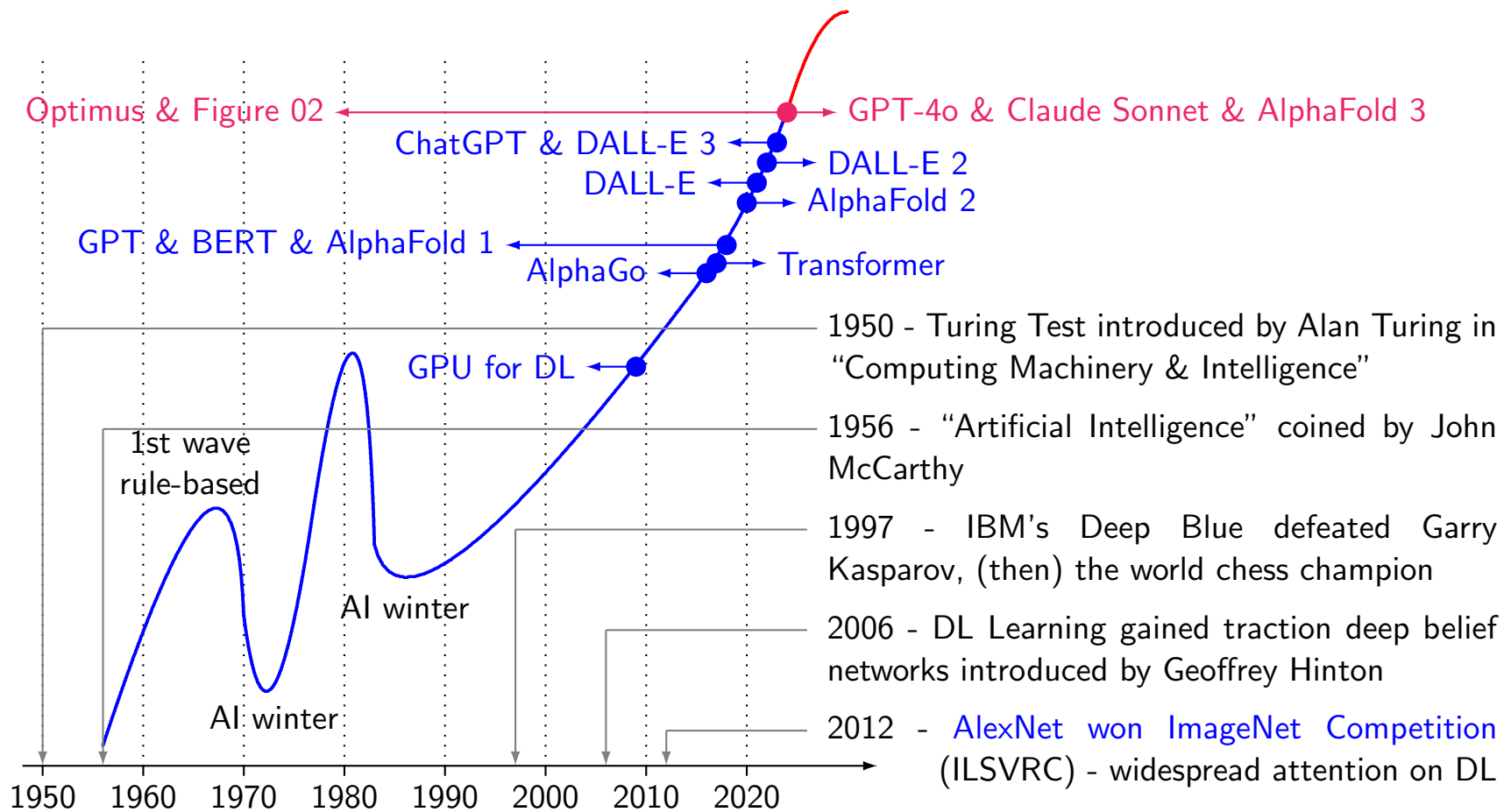
Unpacking AI for K-Scaleup Forum with Silicon Valley AI Nexus

- Artificial Intelligence - 5
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 - Significant AI Achievements - 2014 – 2025
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Artificial Intelligence

AI History

History



Significant AI Achievements - 2014 – 2025

Deep learning revolution

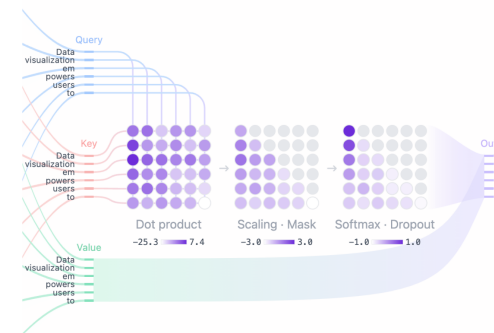
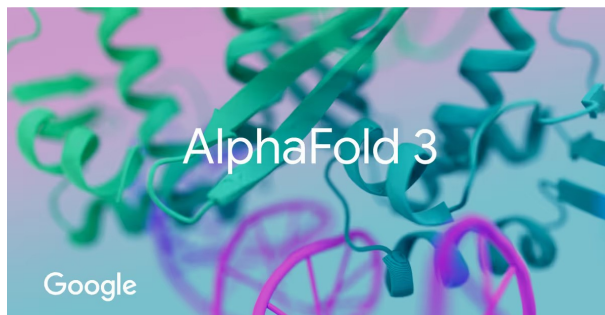
- 2012 – 2015 - DL revolution¹
 - CNNs demonstrated exceptional performance in image recognition, *e.g.*, *AlexNet's victory in ImageNet competition*
 - widespread adoption of DL learning in CV transforming industries
- 2016 - AlphaGo defeats human Go champion
 - DeepMind's AlphaGo defeated world champion in Go, extremely complex game *believed to be beyond AI's reach*
 - significant milestone in RL - AI's potential in solving complex & strategic problems



¹CV: computer vision, NN: neural network, CNN: convolutional NN, RL: reinforcement learning

Transformer changes everything

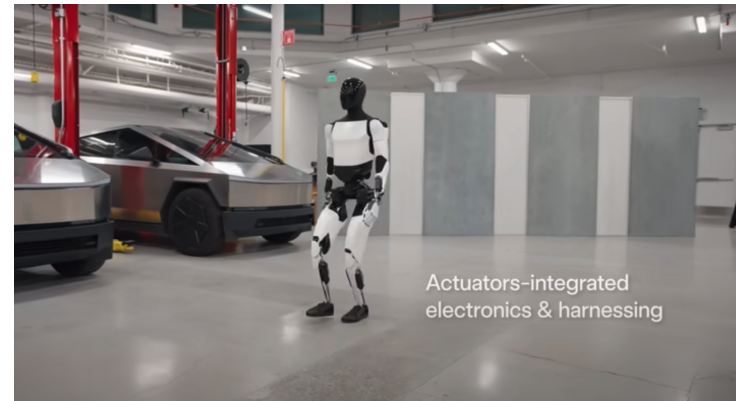
- 2017 – 2018 - Transformers & NLP breakthroughs²
 - *Transformer (e.g., BERT & GPT) revolutionized NLP*
 - major advancements in, e.g., machine translation & chatbots
- 2020 - AI in healthcare – AlphaFold & beyond
 - DeepMind's *AlphaFold solves 50-year-old protein folding problem* predicting 3D protein structures with remarkable accuracy
 - accelerates drug discovery and personalized medicine - offering new insights into diseases and potential treatments



²NLP: natural language processing, GPT: generative pre-trained transformer

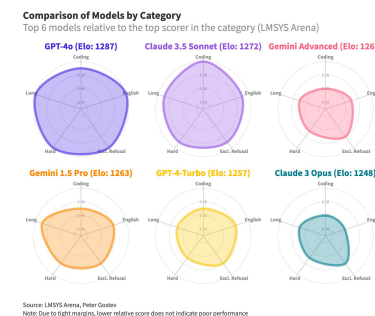
Lots of breakthroughs in AI technology and applications in 2024

- proliferation of advanced AI models
 - GPT-4o, Claude Sonnet, Claude 3 series, Llama 3, Sora, Gemini
 - *transforming industries* such as content creation, customer service, education, *etc.*
- breakthroughs in specialized AI applications
 - Figure 02, Optimus, AlphaFold 3
 - driving unprecedented advancements in automation, drug discovery, scientific understanding - *profoundly affecting healthcare, manufacturing, scientific research*



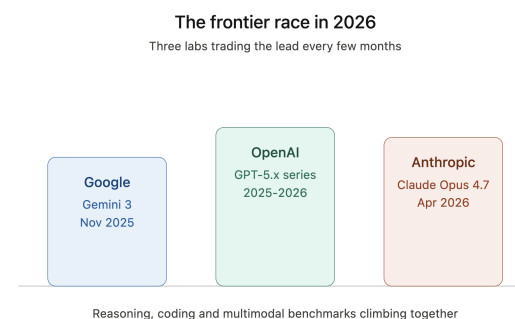
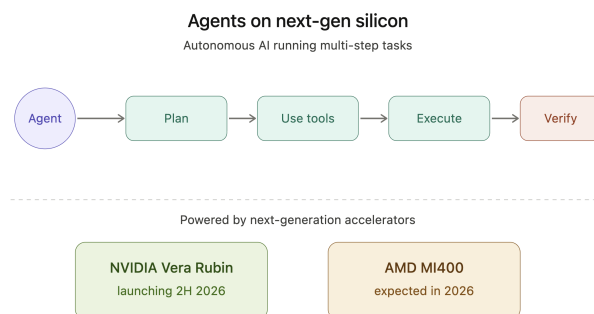
Major AI Breakthroughs in 2025

- next-generation foundation models
 - GPT-5 (Aug 2025) and Claude 4 demonstrate strong reasoning abilities
 - open-source models (Llama, DeepSeek, Qwen) closing the gap
- hardware innovations
 - NVIDIA Blackwell Ultra (B300) shipped in late 2025, with Rubin announced for 2026
 - AMD's MI350 series accelerators challenging NVIDIA's market dominance
- AI-human collaboration systems
 - agentic AI going mainstream – systems autonomously executing multi-step tasks
 - multimodal interfaces enabling more natural human-AI collaboration
 - AI systems increasingly explaining their (reasoning) and recommendations



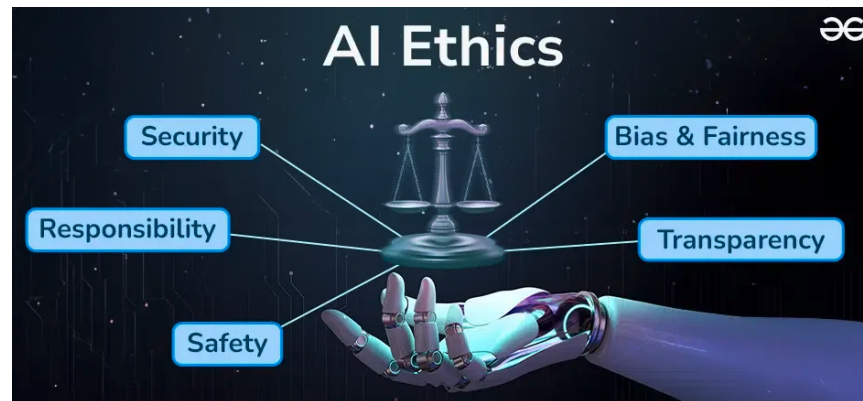
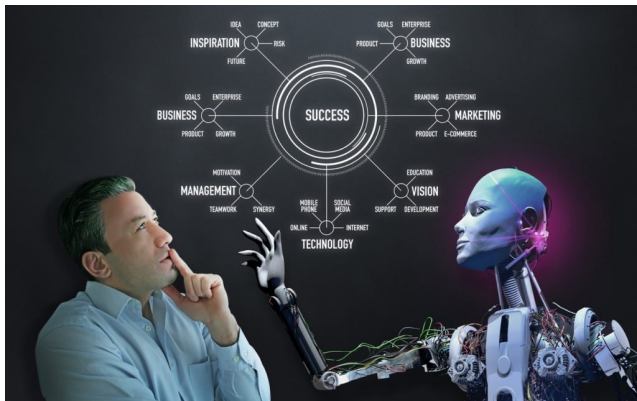
Where AI Is Heading in 2026 (as of May 2026)

- frontier models reaching new performance ceilings
 - Gemini 3, GPT-5.2 / 5.x series, Claude Opus 4.7 → multimodal benchmarks higher
 - intensifying competition among Google, OpenAI, and Anthropic
- hardware scaling and diversification
 - NVIDIA's Vera Rubin platform launching in 2H claiming $\sim 5\times$ faster than Blackwell
 - AMD MI400 series expected in 2026, continuing to challenge NVIDIA's dominance
- agentic AI going mainstream
 - AI agents autonomously executing long-horizon, multi-step tasks
 - expected expansion into enterprise workflows across software, finance, and research
 - growing focus on AI safety, reliability, and self-verification as capabilities scale



Transformative impact of AI - reshaping industries, work & society

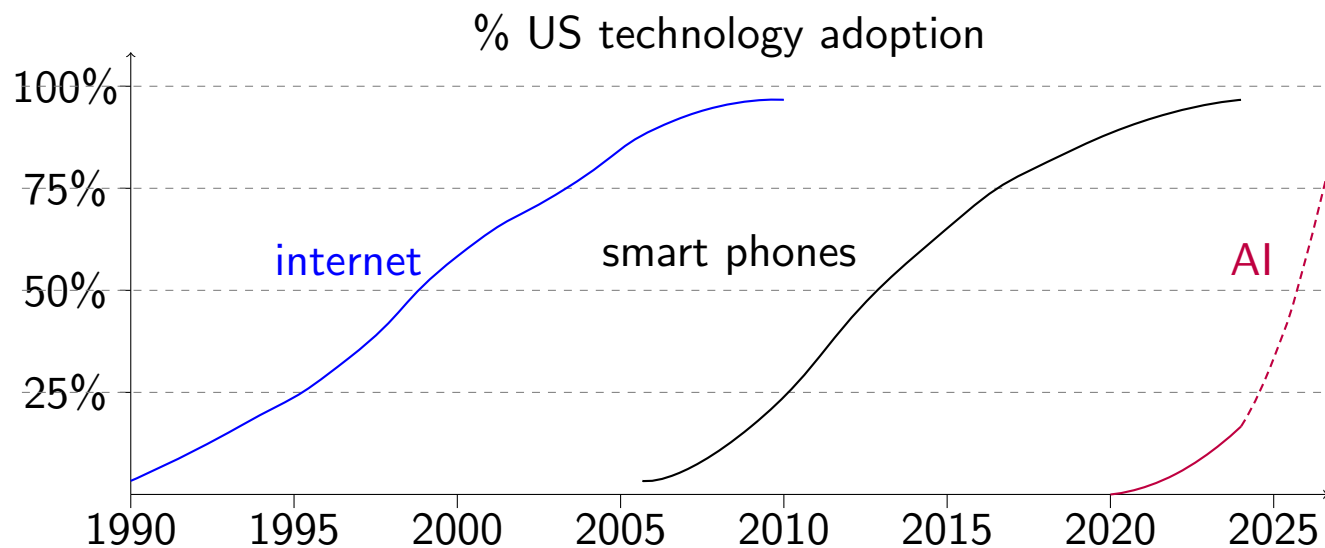
- accelerating human-AI collaboration
 - not only reshaping industries but *altering how humans interact with technology*
 - AI's role as collaborator and augmentor redefines productivity, creativity, the way we address global challenges, *e.g., sustainability & healthcare*
- AI-driven automation *transforms workforce dynamics* - creating new opportunities while challenging traditional job roles
- *ethical AI considerations* becoming central not only to business strategy, but to society as a whole - *influencing regulations, corporate responsibility & public trust*



Measuring AI's Ascent

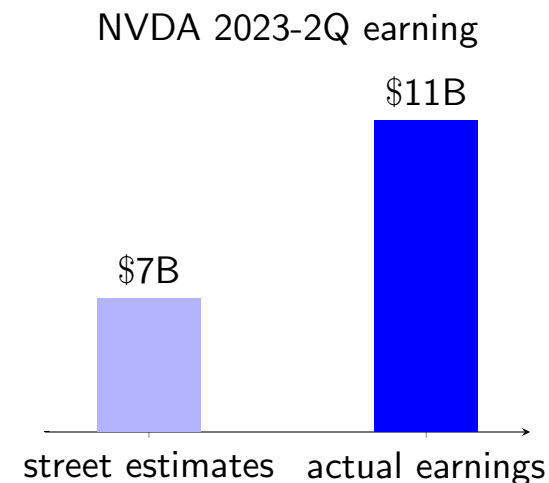
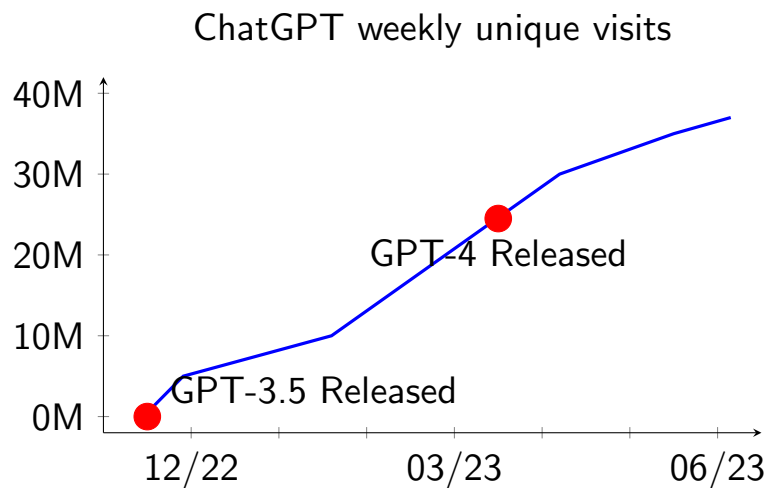
Where are we in AI today?

- sunrise phase - currently experiencing dawn of AI era with significant advancements and increasing adoption across various industries
- early adoption - in early stages of AI lifecycle with widespread adoption and innovation across sectors marking significant shift in technology's role in society



Explosion of AI ecosystems - ChatGPT & NVIDIA

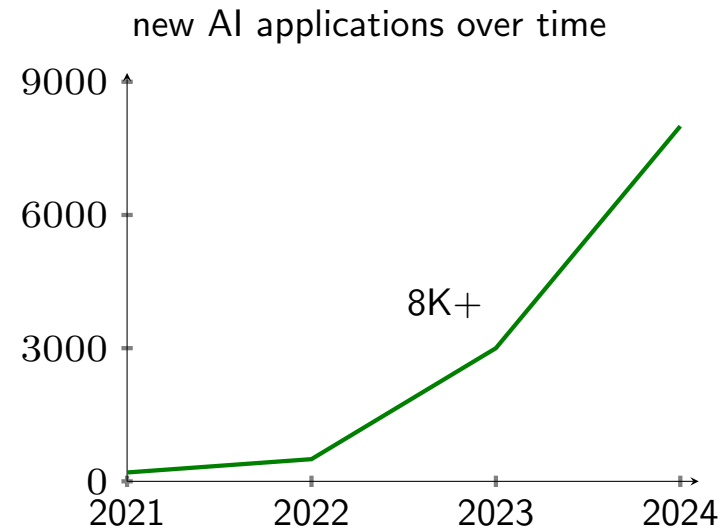
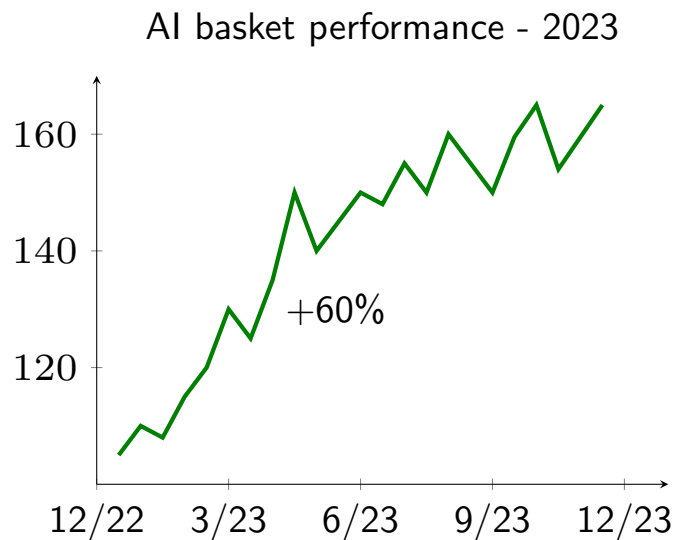
- took only *5 months for ChatGPT users to reach 35M*
- NVIDIA 2023 Q2 earning exceeds market expectation by big margin - \$7B vs \$13.5B
 - surprisingly, *101% year-to-year growth*
 - even more surprisingly *gross margin was 71.2%* - up from 43.5% in previous year³



³source - Bloomberg

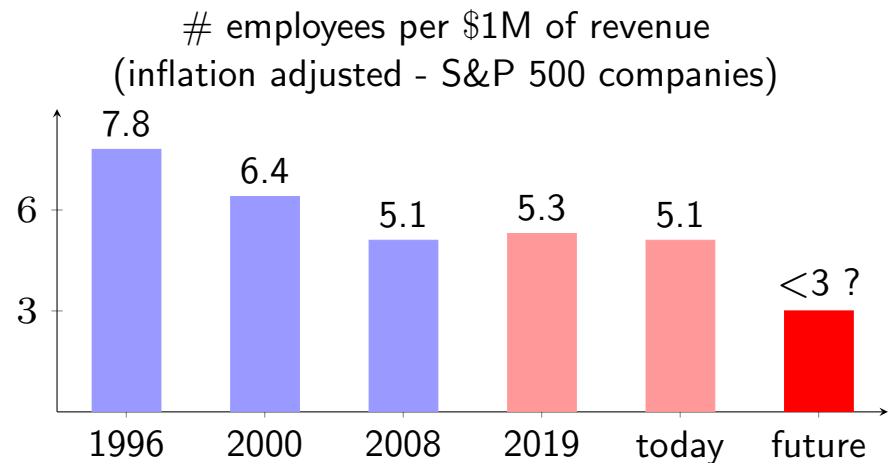
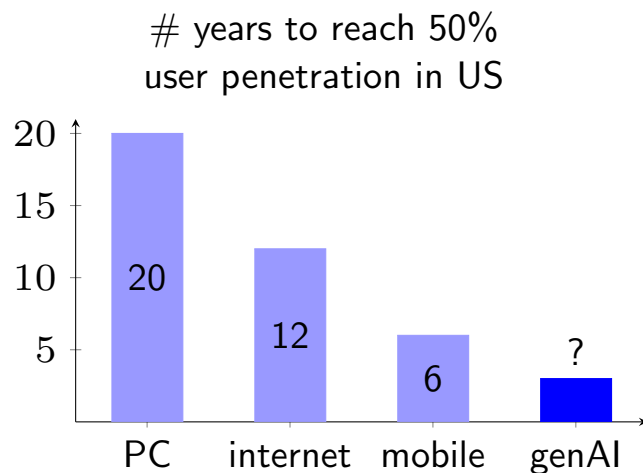
Explosion of AI ecosystems - AI stock market

- *AI investment surge in 2023 - portfolio performance soars by 60%*
 - AI-focused stocks significantly outpaced traditional market indices
- *over 8,000 new AI applications* developed in last 3 years
 - applications span from healthcare and finance to manufacturing and entertainment



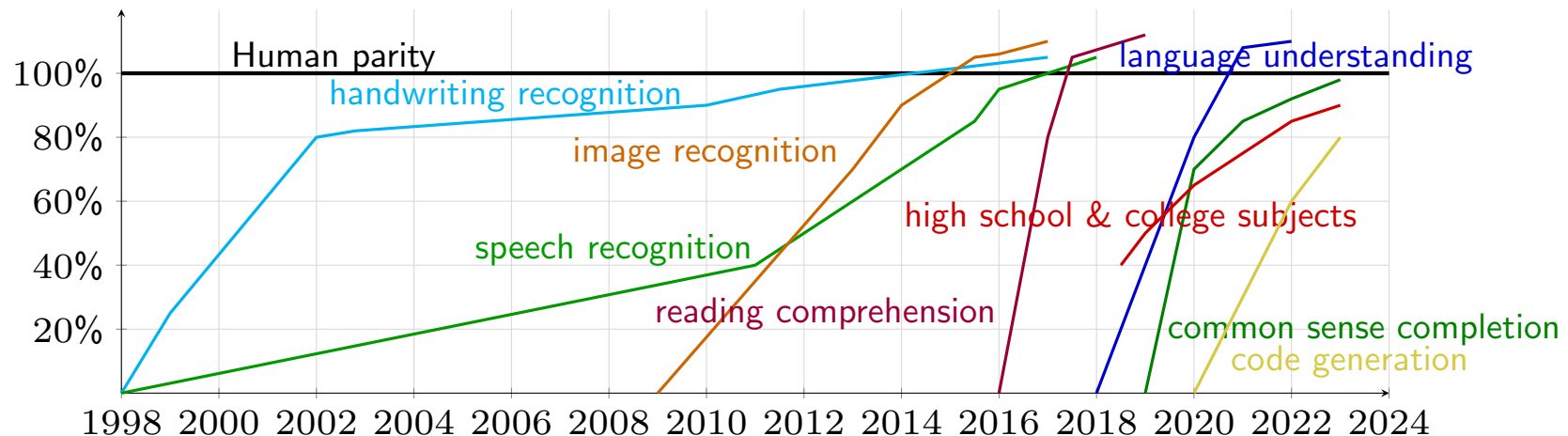
AI's transformative impact - adoption speed & economic potential

- adoption - has been twice as fast with platform shifts suggesting
 - increasing demand and readiness for new technology improved user experience & accessibility
- AI's potential to drive economy for years to come
 - 35% improvement in productivity driven by introduction of PCs and internet
 - greater gains expected with AI proliferation



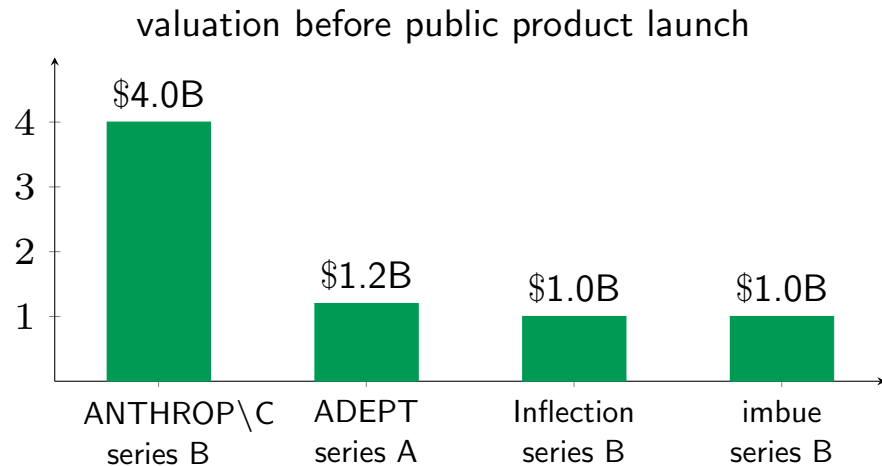
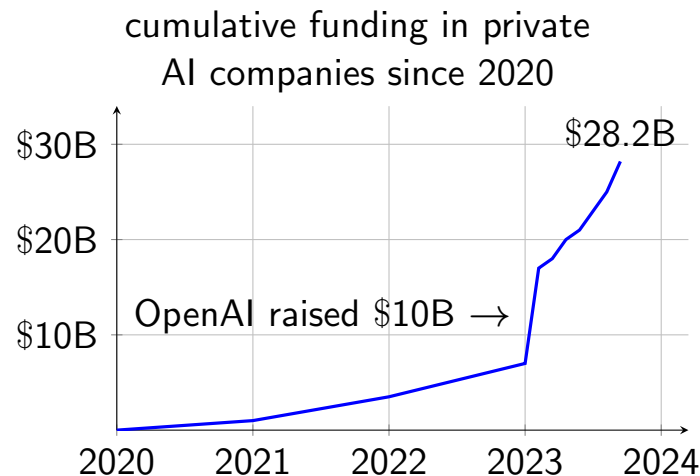
AI getting more & more faster

- steep upward slopes of AI capabilities highlight accelerating pace of AI development
 - period of exponential growth with AI potentially mastering new skills and surpassing human capabilities at ever-increasing rate
- closing gap to human parity - some capabilities approaching or arguably reached human parity, while others having still way to go
 - achieving truly human-like capabilities in broad range remains a challenge



Massive investment in AI

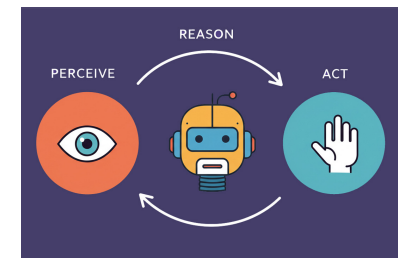
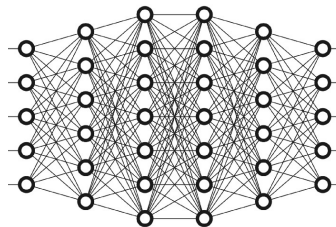
- *explosive growth* - cumulative funding skyrocketed reaching staggering \$28.2B
- OpenAI - significant fundraising (=\$10B) fueled rapid growth
- *valuation surge* - substantial valuations even before public products for stellar companies
- *fierce competition for capital* among AI startups driving innovation & accelerating development
- massive investment indicates *strong belief in & optimistic outlook for potential of AI* to revolutionize industries & drive economic growth



AI Agents

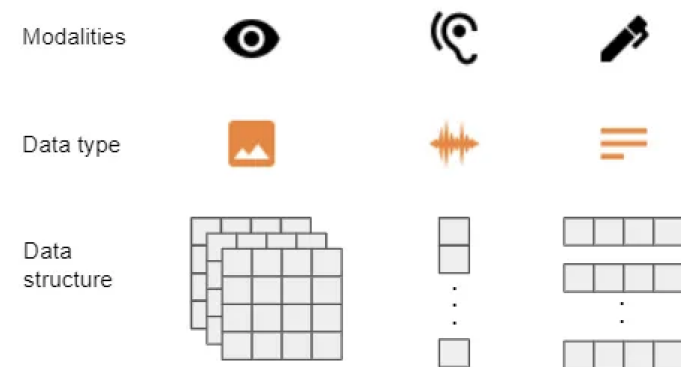
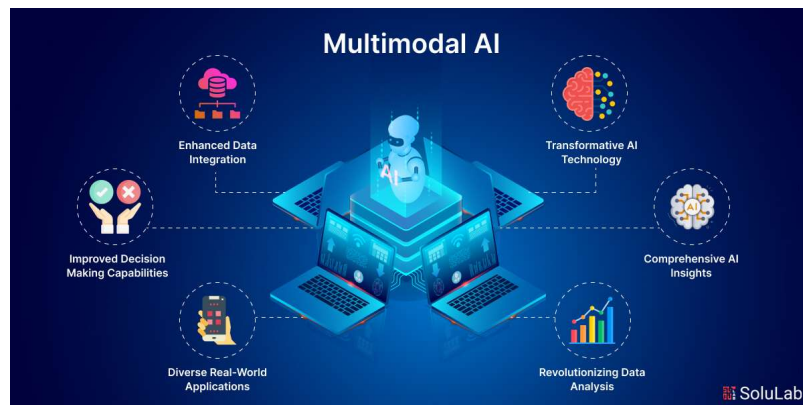
AI progress in 21st century in keywords

- 2010 ~ Big Data
- 2012 ~ Deep Learning
- 2017 ~ Transformer - Attention is All you need!
- 2022 ~ LLM & genAI
- 2024 ~ AI Agent (Agentic AI)



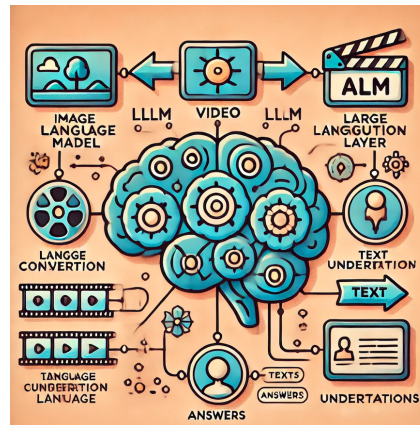
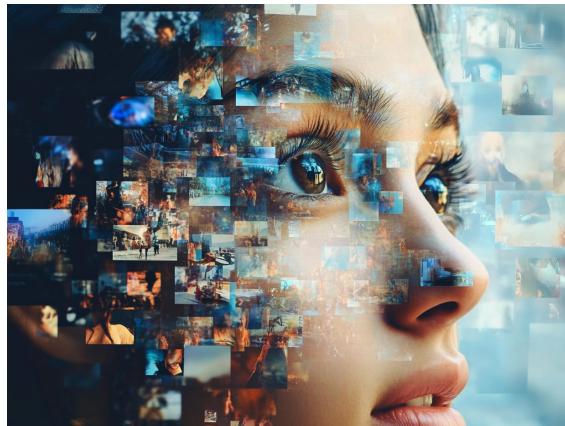
Multimodal learning

- understand information from multiple modalities, *e.g.*, text, images, audio, video
- representation learning methods
 - combine multiple representations or learn multimodal representations simultaneously
- applications
 - images from text prompt, videos with narration, musics with lyrics
- collaboration among different modalities
 - understand image world (open system) using language (closed system)



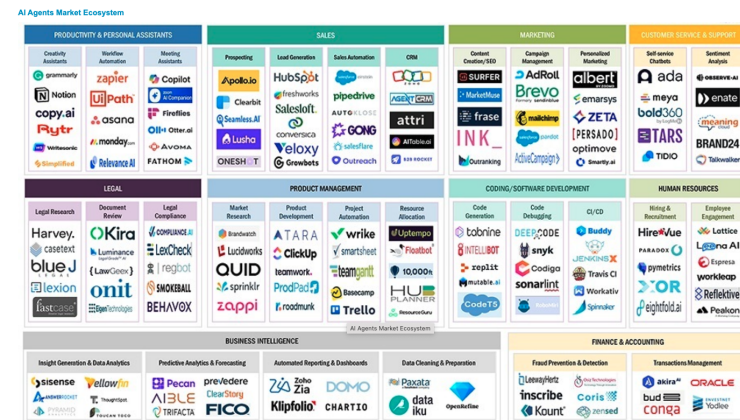
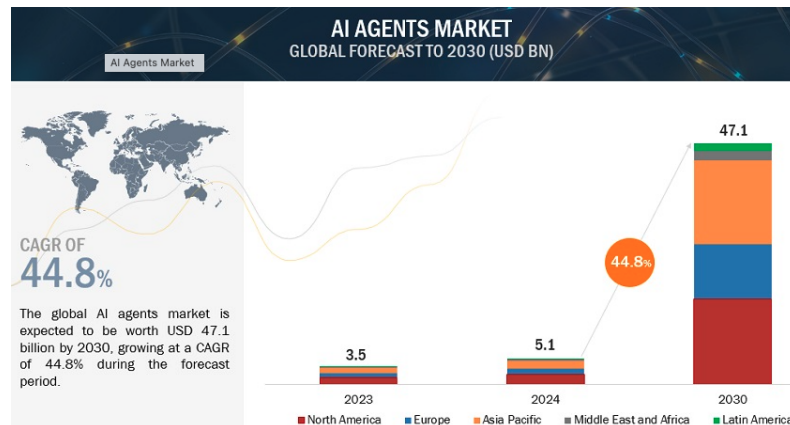
Implications of success of LLMs

- many researchers change gears towards LLM
 - from computer vision (CV), speech, music, video, even reinforcement learning
- *LLM is not only about NLP . . .* humans have . . .
 - evolved to optimize natural language structures for eons
 - handed down knowledge using *this natural languages* for thousands of years
 - internal structure (or equivalently, representation) of natural languages optimized via *thousands of generation by evolution*
- LLM *connects non-linguistic world (open system) via natural languages (closed system)*



Multimodal AI (mmAI)

- mmAI - systems processing & integrating data from multiple sources & modalities, to generate unified response / decision
- 1990s – 2000s - early systems - initial research combining basic text & image data
- 2010s - CNNs & RNNs enabling more sophisticated handling of multimodality
- 2020s - modern multimodal models - Transformer-based architectures handling complex multi-source data at highly advanced level
- mmAI *mimics human cognitive ability* to interpret and integrate information from various sources, leading to holistic decision-making

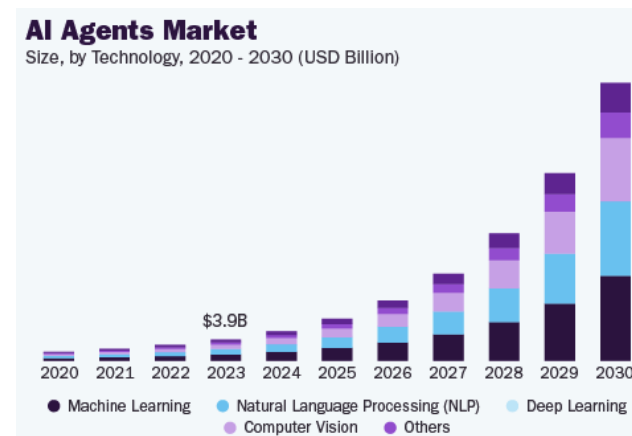
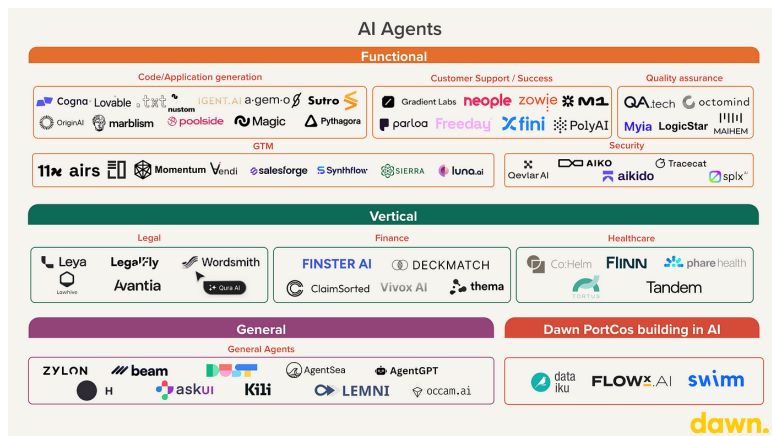


mmAI Technology

- core components
 - data preprocessing - images, text, audio & video
 - architectures - unified Transformer-based (*e.g.*, ViT) & cross-attention mechanisms / hybrid architectures (*e.g.*, CNNs + LLMs)
 - integration layers - fusion methods for combining data representations from different modalities
- technical challenges
 - data alignment - accurate alignment of multimodal data
 - computational demand - high-resource requirements for training and inferencing
 - diverse data quality - manage variations in data quality across modalities
- advancements
 - multimodal embeddings - shared feature spaces interaction between modalities
 - self-supervised learning - leverage unlabeled data to learn representations across modalities

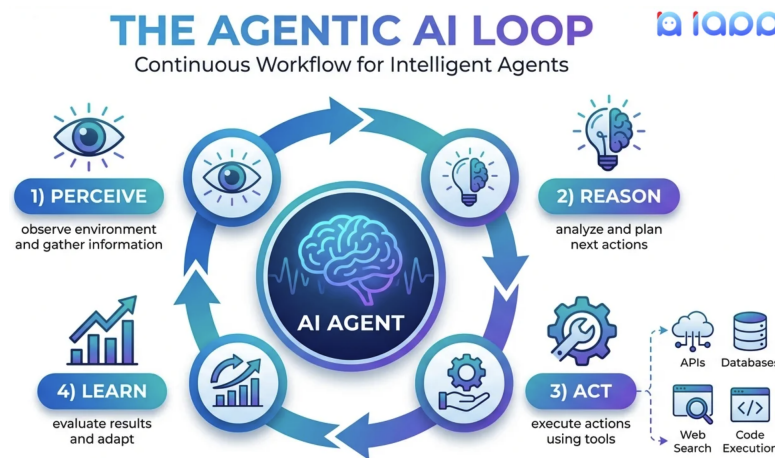
AI agents powered by multimodal LLMs

- foundation
 - integrate multimodal AI capabilities for enhanced interaction & decision-making
- components
 - perceive environment through multiple modalities (visual, audio, text), process using LLM technology, generate contextual responses & take actions
- capabilities
 - understand complex environments, reason across modalities, engage in natural interactions, adapt behavior based on context & feedback



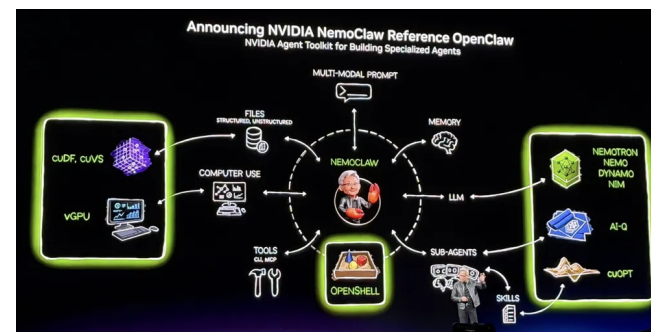
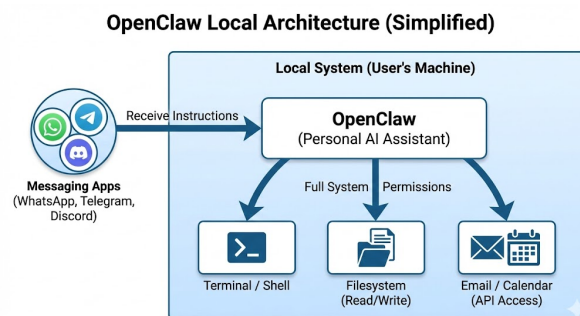
What makes AI “Agentic”?

- old AI responds to prompt; agentic AI *pursues goal*
- core loop
 - perceive → plan → (reason) → act → observe → repeat
- four traits - autonomy, tool use, memory/state, long-horizon planning
- enablers
 - tool/function calling, retrieval, code execution, multi-agent orchestration
- shift - *“answer my question”* → *“accomplish my objective”*



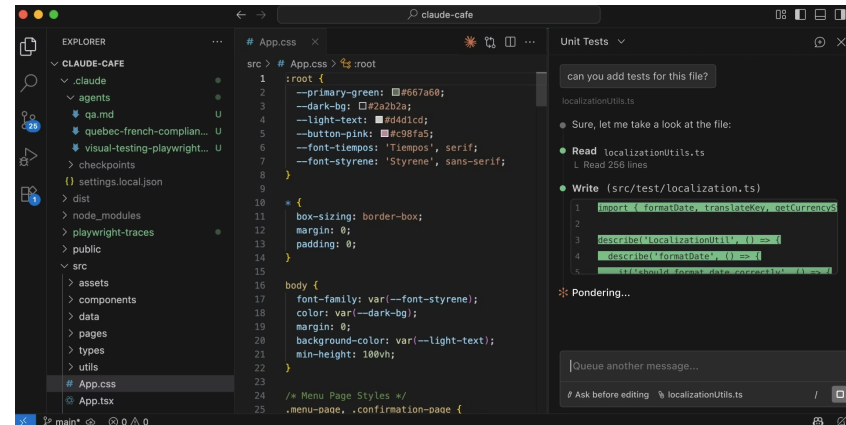
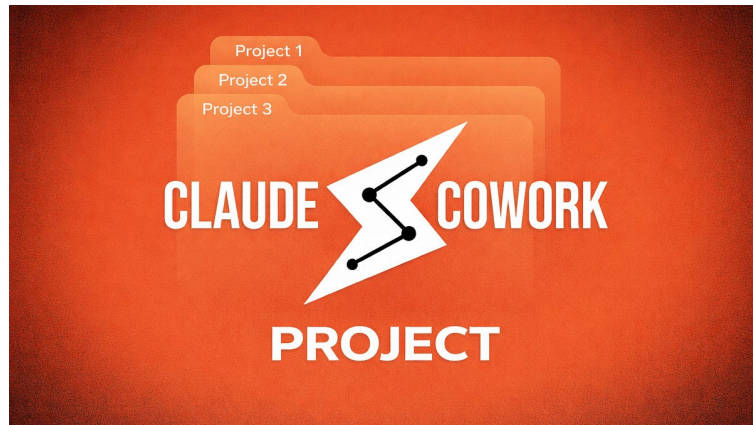
Cutting-edge AI agent tools - open source

- OpenClaw (Peter Steinberger) - open-source, runs locally, connects LLMs to real software
 - reads/writes files, runs shell commands, browses web, sends email, controls APIs
 - 350k+ GitHub stars (by May 2026) — most-starred GitHub software project
 - skill-based architecture - SKILL.md folders, shareable on ClawHub
 - works through chat apps - Slack, Telegram, WhatsApp, Discord, iMessage, *etc.*
 - model-agnostic - Claude, GPT, Gemini, or local via Ollama
- NVIDIA NemoClaw - security/privacy layer on top of OpenClaw
 - one-command install of Nemotron models + OpenShell secure runtime
 - network & filesystem isolation, local inference so no data leaves the device



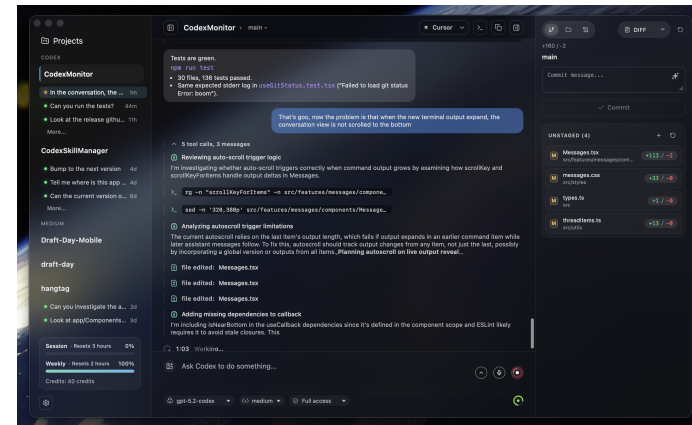
Cutting-edge AI agent tools - Anthropic

- Claude code
 - CLI/IDE coding agent; subagents, hooks, plugins, auto mode, routines
- Claude cowork
 - desktop tab; file-system access, scheduled recurring tasks, plugin marketplace
- managed agents
 - multi-agent orchestration; cloud-deployable agent templates
- vertical bundles already shipping
 - legal, small business, marketing ops, finance



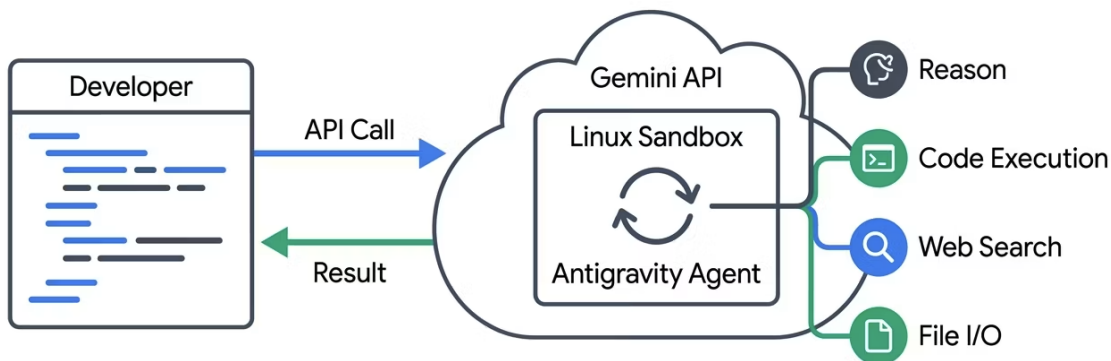
Cutting-edge AI agent tools - OpenAI

- OpenAI Codex
 - agentic coding tool - CLI, IDE, ChatGPT, desktop & now mobile
 - 2026 shift - from code editor → full “agent workspace”
 - multi-agent parallelism - runs several tasks in separate sandboxes while you review
 - powered by GPT-5.5 - tightly coupled, not model-agnostic (unlike Claude Code / OpenClaw)
- Codex Security
 - dedicated agent that finds & fixes vulnerabilities



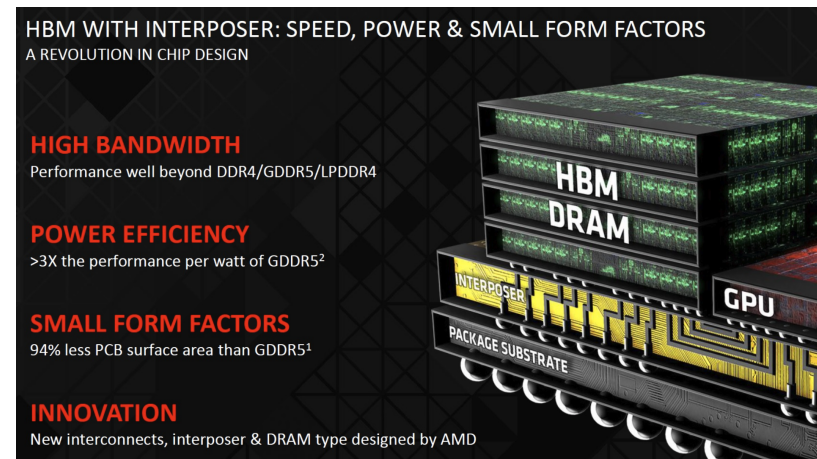
Cutting-edge AI agent tools - Google

- Antigravity 2.0
 - agent-first development platform; desktop app + CLI + SDK
- Gemini API Managed Agents
 - one API call spins up agent that reasons, uses tools, executes code
- Jules
 - AI agent for GitHub - debugging, pull-request prep
- Gemini Spark
 - 24/7 personal agent on Gemini 3.5 Flash, wrapped in Antigravity
 - connects to Canva, OpenTable, Instacart, Workspace via MCP



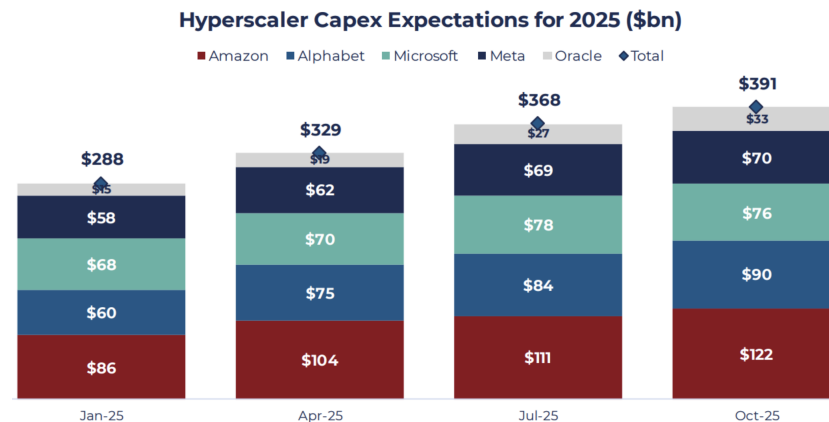
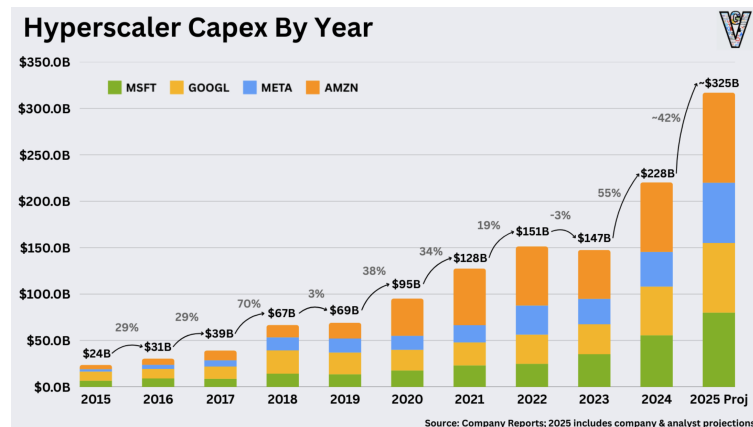
Agentic stack - LLM is engine, but not whole system

- *LLM - reasoning engine, not the system*
- stack
 - planner/orchestrator, memory (short/long-term), tools/APIs, environment interface
- patterns
 - ReAct, reflection/self-critique, planner-executor, multi-agent
- interoperability protocols emerging, *e.g.*, MCP, agent-to-agent
- *value migrating from model → system design*



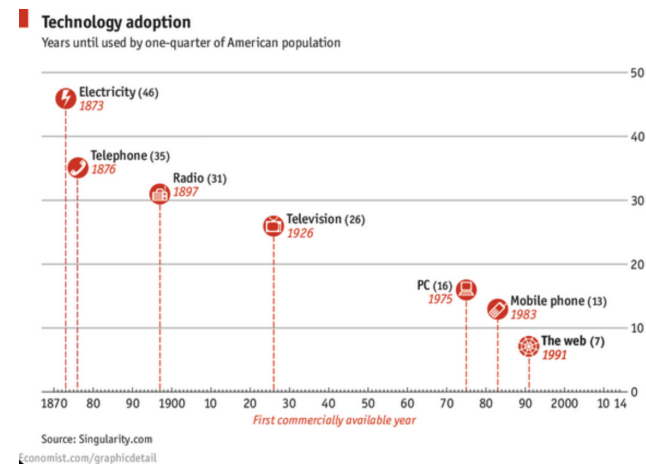
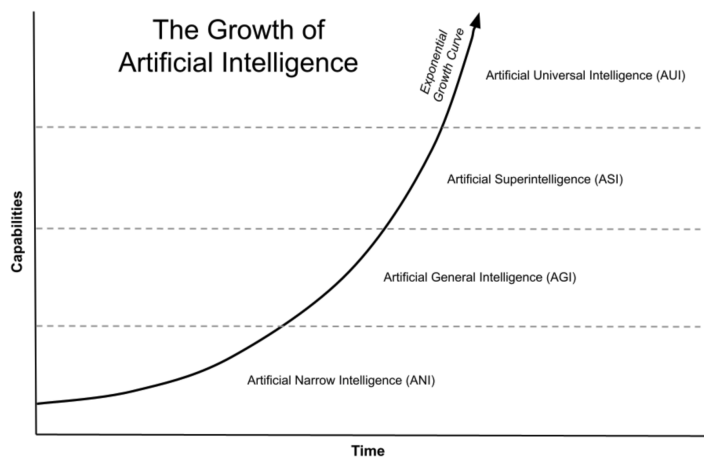
Trillion-dollar gravity well - capital, talent, geopolitics

- big 5 hyperscalers ~ \$725B AI capex in 2026 ~ Switzerland's GDP
- trajectory - \$256B (2024) → \$443B (2025) → \$725B (2026)
- *2026 is the first trillion-dollar year of compute capex in history*
- \$6.7T global data-center capex by 2030 (~70% AI) (McKinsey forecasting)
- *geopolitics*
 - export controls, chip sovereignty, national AI budgets



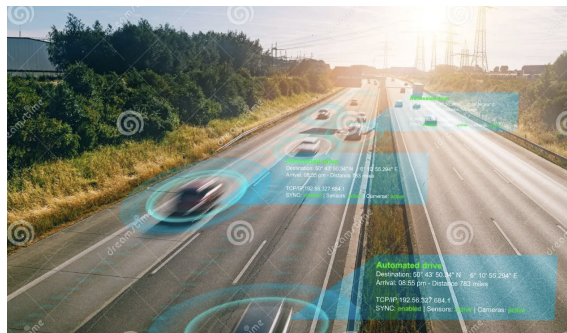
What took decades now takes months

- AlexNet (DL) → AlphaGo → Transformer → GPT (LLM) → Agentic in a decade
- adoption collapsing too
 - genAI penetration in fraction of PC/internet time
- *frontier you train on today will move by graduation*
- durable skill $\neq$ any one tool - it's relearning the frontier
- *what previously took decades now compresses into months!*



AI agents - present & future

- emerging applications
 - scientific research - agents analyzing & running experiments & generating hypotheses
 - creative collaboration - AI partners in design & art combining multiple mediums
 - environmental monitoring - processing satellite sensor data for climate analysis
 - healthcare - enhanced diagnostic combining imaging, *e.g.*, MRI, with patient history
 - customer experience - virtual assistants understanding spoken language & visual cues
 - autonomous vehicles - integration of visual, radar & audio data
- future
 - ubiquitous AI agents - seamless integration into everyday devices
 - highly tailored personalized experience - in education, entertainment & healthcare

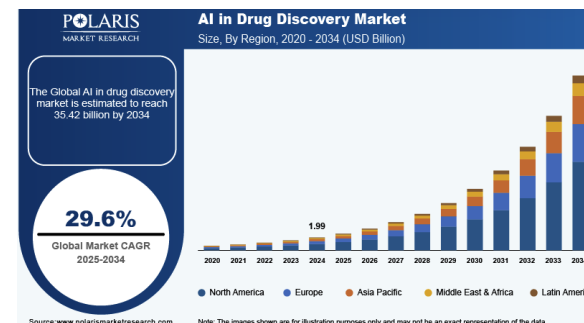
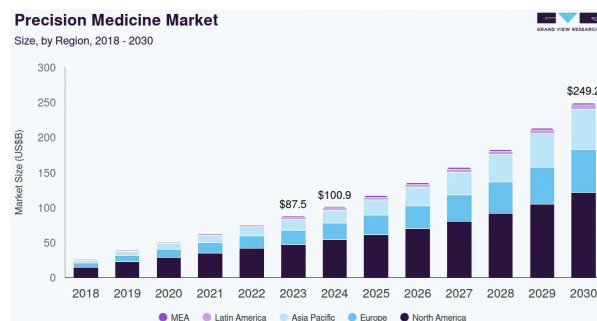


The Trillion Dollar Opportunities

The Moment - Why Now & Why it's Big?

The market is real - and enormous

- AI in biotech/pharma market size
 - AI in drug discovery - \$4B (2023) → \$50B+ by 2034 (Global Market Insights)
 - AI diagnostics market - \$1.2B (2023) → \$5-12B by 2030
 - precision/personalized medicine - \$80B (2023) → \$230B by 2030
 - synthetic biology - \$15B (2023) → \$100B by 2032
 - *combined TAM approaching \$1T by mid-2030s* - conservative estimate
- why biotech AI multiples exceed pure software AI
 - software AI competes on marginal cost → commoditizes fast
 - biotech AI - irreversible IP - novel molecules, validated biomarkers, proprietary assay
 - every successful clinical trial is a data moat that cannot be reverse-engineered

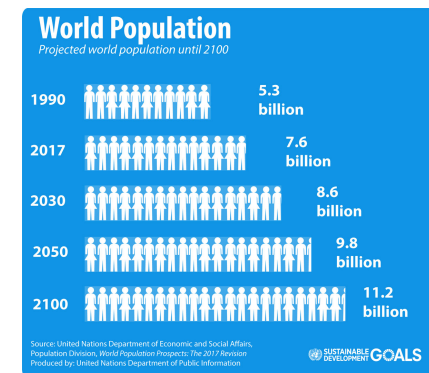


Macro tailwinds amplifying these opportunities

- aging global population - over 2.1 billion people over 60 by 2050 (UN DESA)
 - cancer, neurodegeneration, cardiovascular disease scale accordingly
- post-COVID regulatory acceleration
 - FDA's AI/ML action plan, EMA adaptive pathways
- government prioritization - US CHIPS & Science Act includes biotech
 - Gates Foundation, NIH, BARDA deploying billions in non-dilutive capital
- historical parallel
 - genomics wave (Human Genome Project) unlocked \$1T in economic value
 - *AI-biotech convergence is at least one order of magnitude larger*



Gates
Foundation



Three exponential curves converging now

- *curve 1 - LLMs & genAI*
 - language models operating natively on biological “languages” - protein sequences (ESM-2, ESMFold), SMILES molecular notation, genomic sequences
 - generative AI can propose novel drug candidates - Insilico Medicine’s INS018_055 went from AI-generated candidate to Phase II in 4 years vs industry avg of 10–15 yrs
 - multi-modal AI integrating imaging, omics, and clinical notes simultaneously
- *curve 2 - biochemical & biological breakthroughs*
 - AlphaFold 3 (2024) - extends beyond proteins to DNA, RNA, small molecules, and their interactions — the full drug-target interface
- *curve 3 - data availability*
 - DNA sequencing cost reduction, INSDC database, electronic health records digitized, wearables & continuous monitoring
- *The rarity of this moment - all three curves peaking simultaneously is historically unprecedented*

The Moat - What separates a Winner from Hype?

Cross-domain inevitabilities - The Technical Moat

- core insight
 - *fundamental mathematical structures recur across seemingly unrelated domains*
 - recognizing these - strategic advantage - optimization → biological energy landscapes
 - protein folding is fundamentally an energy minimization problem over high-dimensional conformational space
- information theory → cellular signaling
 - mutual information and channel capacity concepts (Shannon, 1948) map directly onto how cells encode and transmit signals through biochemical cascades
 - LLM training optimizes cross-entropy loss over token distributions
 - cellular gene regulatory networks optimize analogous information-theoretic objectives over transcription factor binding distributions
 - *researchers who understand why transformers work can transfer those architectural intuitions to biological sequence modeling*

What separates Unicorn Potential from incremental progress

- *dimension 1 - platform vs point solution*
 - point solution - AI model predicting one biomarker for one cancer type - narrow addressable market & low defensibility
 - *platform* - technology applicable across multiple disease areas, multiple biomarker classes, multiple assay modalities — TAM compounds with each new application
 - litmus test - “Can this technology be redirected to new disease areas in a few months without rebuilding from scratch?”
- *dimension 2 - is AI load-bearing or decorative?*
 - “AI-washing” - ML used for marketing positioning, not scientific differentiation
 - *load-bearing AI* - the AI component creates a result impossible or uneconomic to achieve otherwise
 - *e.g.*, Erudio Bio’s dynamic force spectroscopy + AI detecting cancer biomarkers at concentrations below conventional immunoassay thresholds

- *dimension 3 - pathway to clinical and regulatory reality*
 - computational elegance that cannot survive contact with clinical data is worthless
 - regulatory strategy must be designed into product from day one - not retrofitted after technical development
 - FDA's 510(k) vs De Novo vs PMA pathways have entirely different clinical evidence requirements — choice of pathway is a strategic decision made at founding
 - *hospital partnerships (e.g., SNUBH, Kyemyung Univ Dongsan Hospital) not just validation - they are the pipeline for clinically grounded training data!*
- *dimension 4 - proprietary data moat*
 - the most durable competitive advantage in AI-biotech is *the data no one else can access or replicate*
 - e.g., proprietary assay platforms generating novel measurement types, exclusive hospital partnerships, patient cohorts with longitudinal follow-up, rare disease registries
- *dimension 5 - human welfare at the center; not a constraint, but a strategic asset!*

- mission alignment with patient outcomes unlocks - NIH/Gates/BARDA non-dilutive funding, academic medical center partnerships, favorable regulatory posture, and - increasingly - LP mandates in impact-oriented VC funds

Investment landscape & white spaces

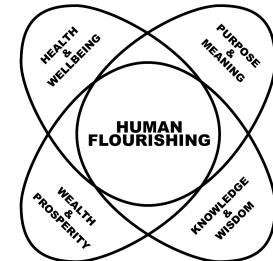
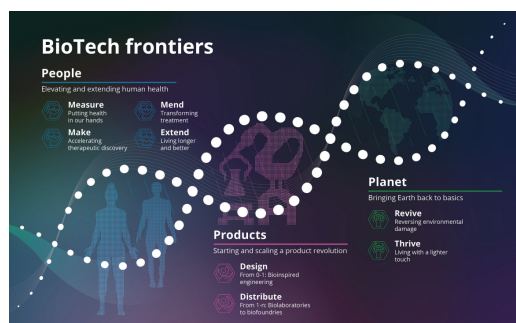
- where capital is concentrating - crowded but justified
 - *AI-native drug discovery platforms* - Insilico Medicine, Recursion Pharmaceuticals, Exscientia, Schrödinger - well-capitalized, public or late-stage
 - *protein engineering and design* - Absci, Generate Biomedicines, Cradle - foundation model approach to antibody and enzyme design
 - genomics interpretation - large language models trained on genomic sequences (Evo, Nucleotide Transformer)
 - risk - these spaces are getting crowded - differentiation increasingly difficult, capital efficiency under pressure
- underinvested white spaces - higher risk-adjusted opportunity
 - *AI-native diagnostic assays* - most diagnostic AI is retrofitted onto existing assay platforms - companies building AI-first measurement modalities have structural advantages in sensitivity, cost, and proprietary data
 - AI for *rare and neglected diseases* - Gates Foundation, Wellcome Trust, BARDA actively funding — orphan drug designation provides 7-year market exclusivity, priority review vouchers worth \$100M+ on the market

- *non-dilutive capital as validation signal*
 - Gates Foundation grants signal scientific credibility to commercial investors - functions as third-party technical due diligence
 - NIH SBIR/STTR - up to \$2M non-dilutive with right of first refusal waiver - massively underutilized by Silicon Valley founders
 - BARDA contracts for pandemic preparedness and biodefense - recurring revenue, not grant-dependent
- *timing - why now is the moat-formation window*
 - infrastructure (cloud genomics, foundation biology models, spatial omics platforms) just reached the point where startups can access capabilities that required a Broad Institute or Genentech five years ago
 - first-mover advantage in proprietary data accumulation compounds - every patient sample run through a novel assay platform strengthens the moat
 - *2025—2028 window* - analogous to 2008—2012 in cloud infrastructure - the companies founded now with the right platform architecture will be structurally dominant by 2030

The Maker - Who this Moment Demands?

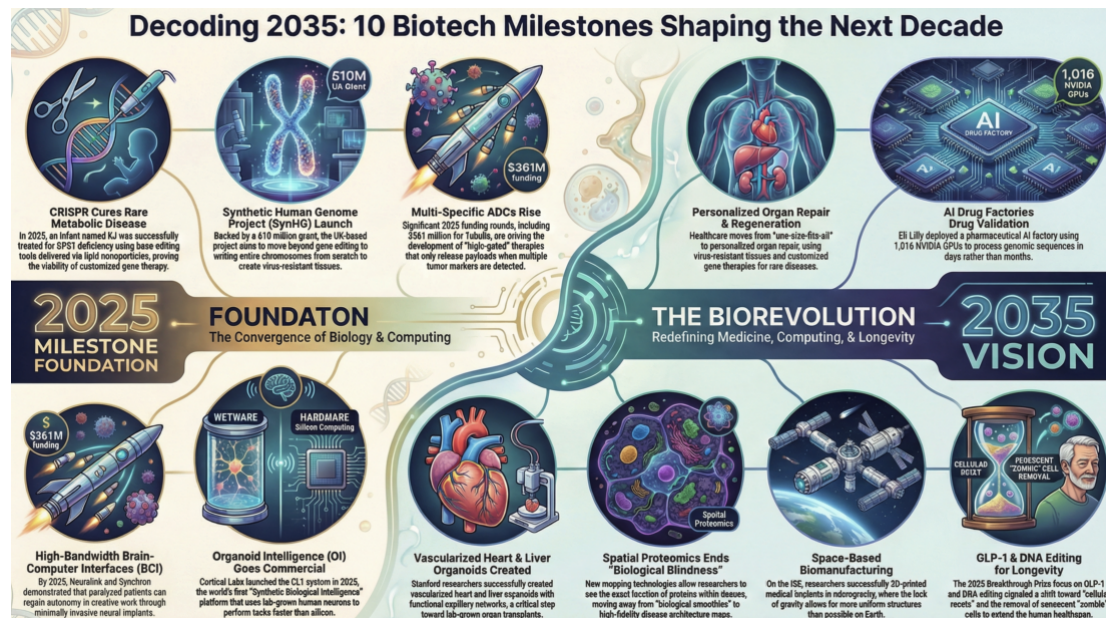
The Rare Entrepreneur This Moment Demands

- three simultaneous operating modes – all required
 - *deep technologist* - must understand inner workings well enough to know what AI can and cannot do & *spot when a competitor's technical claim is hollow*
 - *business strategist* - must navigate regulatory complexity, reimbursement strategy, partnership structuring, and capital allocation under uncertainty simultaneously
 - *advocate for human flourishing* - must hold *patient outcome as the north star* – not as marketing message, but as decision criterion resolving conflicts between speed, cost, and scientific rigor



What the audience in this room should take away

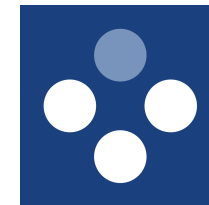
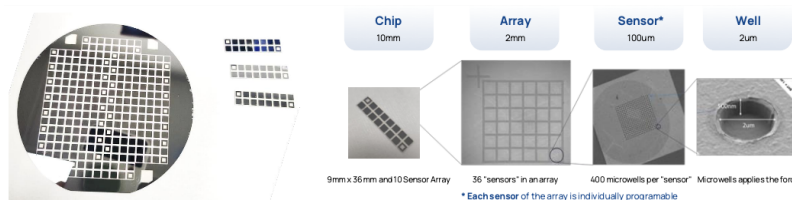
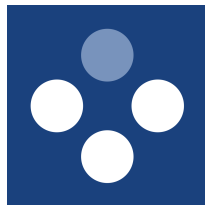
- *the convergence is real, the market is massive, and the technical foundations are now mature enough to build on*
- the scarcest resource is not capital, nor compute, nor biological data – it is *founders holding the full stack - theory, biology, engineering, clinical reality, and human purpose*
- *companies that will define human health in 2035 being founded in the next 24 months!!*



Erudio Bio

Powering AI-driven medicine with ground-truth binding data

- problems we solve
 - 90% of drugs fail in clinical trials due to poor early-stage prediction
 - multiplexed diagnostics suffer from false positives and cross-reactivity
- *Erudio Bio's Innovation*
 - *VSA* platform uses patented “*dynamic force spectroscopy*” to generate 1000x more high-quality binding data from single sample ($\sim 10\mu\text{L}$)
 - measuring not just presence, but *strength* and *kinetics* of molecular interactions
- *dual business model*
 - diagnostics - *multi-cancer biomarker detection* with clinical institutions & hospitals
 - *drug discovery - bioTCAD™ platform* providing ground-truth labels to train & validate pharma AI models, reducing preclinical cycles



Validated technology, proven team, clear path to market

- validated impact
 - *\$1M Gates Foundation Grant* (2025) to democratize drug development for global health
 - partnerships with top research institutions (KRIBB, KAIST)
- unique team - *Stanford-trained founders* combining
 - semiconductor TCAD expertise & force spectroscopy innovation (20+ years)
 - AI & optimization leadership (Samsung, Amazon, SK hynix, Gauss Labs)
- market entry
 - *Korea → (Asia hub &) US* strategy with 2026 regulatory milestones
 - expanding *pharma partnerships and B2G*

Gates Foundation



Biological Assays Struggle with Scale & Accuracy

Data is expensive

- so we make decisions with *incomplete* picture
- status quo
 - limited, small-scale testing confirms diagnosis
 - outcome only as good as doctor's ability to determine which tests, limiting the picture
 - cross reactivity prevents larger scale testing
- Erudio creates
 - *comprehensive, large-scale* testing will drive diagnosis without assumptions
 - increased scale enables enhanced scientific discovery leading to
 - *better patient care*
 - *reduced time to diagnosis*
 - *cost reduction*



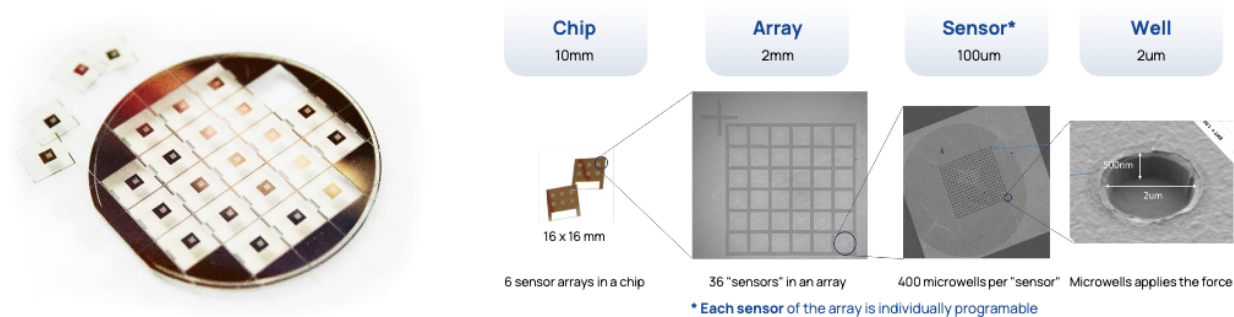
Erudio Bio starts revolution with Gates Foundation's support

- more data
 - comprehensive data from *single biological sample*
 - *multiplexed analysis* of nucleic acid, protein, cells, and more!
 - *multi-omic platform*
- actionable data
 - combined quality score from all data sources for comprehensive & conclusive assessment
- earlier data
 - complete data early to drive accurate decision making



Versatile Smart Assay (VSA) Platform

VSA technology



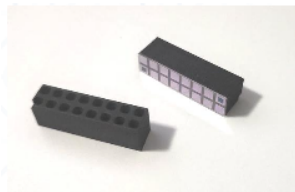
- generates *1000x more data* than the prevailing technology
 - scalable multi-omic microarray sensor
- *21 patents* in US, Canada, EU, and China
- indicates how good the data is in real time
 - patented “dynamic force spectroscopy” and “powerful Bayesian inference” method provides our data *quality score* to know their accuracy for actionable data
- AI software extracts a detailed, interpretable picture for quick diagnosis
 - leads to *AI knowledge discovery* resulting in *data-driven diagnosis*

Enabling comprehensive data acquisition

- antibodies - versatile tools in biology
 - can engineer to target virtually *anything* we want
 - problem
 - indiscriminate interactions severely limits use of antibodies – *cross-reactivity*
 - error-prone results due to *non-specific binding*
- solution - comprehensive data with *dynamic force spectroscopy*
 - comprehensive binding strength to distinguish specific from non-specific binding
 - *quality score* discerns noise from useful data to enable multiplexing



VSA's business models



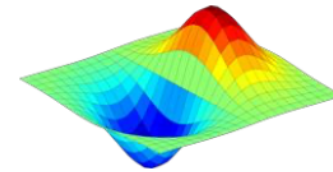
Consumable chip
& flowcell



Instrument



Consumable
reagent kit



Software
AI/ML & SaaS

- VSA platform
 - instrument - recurring revenue with high margin
 - modular licensable software - AI based data interpretation and feature extraction
- SaaS
 - subscription based pre-validation of reagent database
 - AI feature extraction and knowledge discovery

When Erudio's VSA meets AI - Gates Foundation Grant

Erudio Bio wins \$1M Gates Foundation Grant - scaling bioTCAD

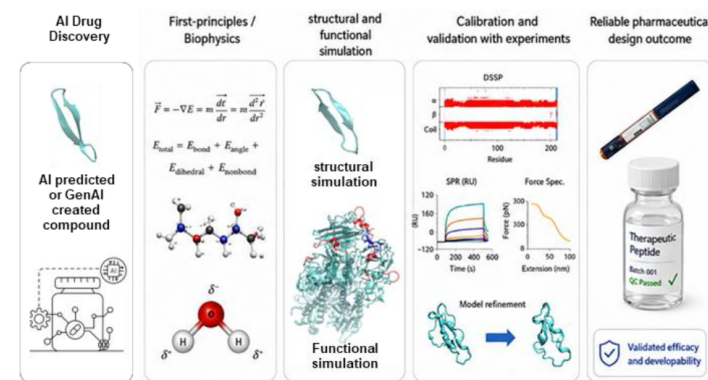
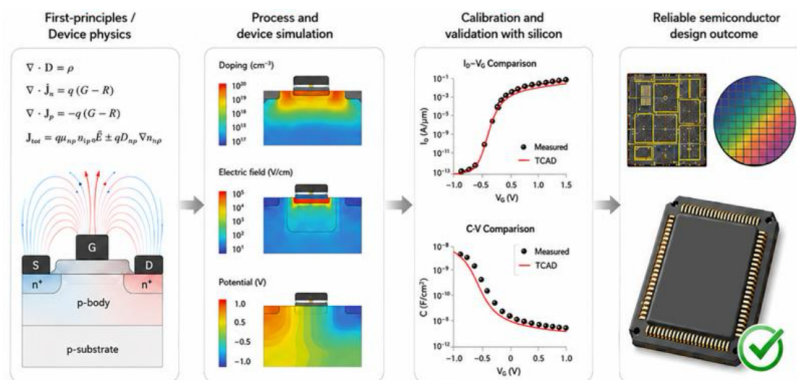
Gates Foundation



- *\$1M Grant Award (2025)*
 - Gates Foundation recognizes Erudio Bio's potential to transform drug development for global health
- mission alignment - democratizing medicine by making preclinical drug design faster, yet reliable & accessible
 - lowering development costs for diseases affecting LMICs
 - addressing the 90% clinical trial failure rate that drives up drug costs
- funded project - develop *bioTCADTM platform for lead optimization of drug discovery*
 - expand force spectroscopy measurements across high-burden disease targets
 - train AI models with kinetics-resolved binding data (on/off rates, unbinding forces)
 - *enable pharma/biotech to prioritize candidates earlier with higher confidence*

bioTCAD - hybrid AI & physics-based drug development

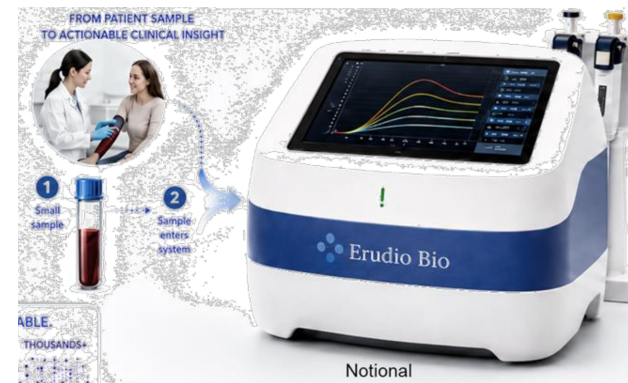
- (old school) AI/ML excels at pattern recognition across large chemical libraries
 - identifying candidate hits at scale – valuable role established and growing
- AI alone *cannot reliably explain binding physics or predict behavior in unexplored and novel chemical space* – *capability and credibility gap*
- bioTCAD combines *AI and measurement-backed, physics-grounded simulation*
- applies *the* principle that made semiconductor TCAD trustworthy
 - validate model parameters to YOUR experimental measurements to be reliably right



Erudio Bio's Business Models

Erudio Bio Applications

- drug development
- clinical diagnostic
 - medicine is already 20% of the world's economy and growing at 5% per year
- biodefense
 - GWOT to great power competition
 - need to defend against near-peer adversaries
 - flexible, efficient solution needed from CBRND to readiness



Teams

Team & advisory board

- team
 - Kee-Hyun Paik, Ph.D. (CEO) - chip, microfluidics, instrumentation
 - Sunghee Yun, Ph.D. (CTO) - AI, optimization, business development, software
 - Susanne Baumhueter, Ph.D. - biology, immunology, project management
- advisory board
 - Michael Cola - CEO of AEVI Genomic Medicine (\$62B sales to Takeda)
 - Tim Germann - CCO of Carterra Bio
 - Karyn Eliot - retired CIA Sr. Executive
 - Phil Ferro - virologist, formerly DoD, DoS, HHS and White house
 - Bill Chen - Former hedge fund and VC professional with national security, FFRDC
 - Ronald W. Davis - Director of Stanford Genome Tech Center (\$15B+ exits)
 - Michael Snyder - Prof. Genetics, Dir. Stanford Human Genome Center
 - William J. Greenleaf - Prof. Genetics and Applied Physics, Stanford University



Sunghee Yun

Aug 24, 2026



Appendix

Silicon Valley AI Nexus

Silicon Valley AI Nexus (or just AI Nexus)

- pioneering community of professionals dedicated to building privacy-preserving AI solutions, products, and systems
- comprehensive expertise across AI domains
 - biotechnology, healthcare, and medical research
 - industrial applications and data centers
 - cloud infrastructure, storage solutions, mobile technologies
 - customer service platforms, multi-agent systems
 - RAG implementations, vector databases, agentic AI frameworks
- vision
 - *shaping future where AI innovation and privacy protection go hand in hand*
- active community with [homepage](#) & KakaoTalk collaboration platform for members

Our journey - forum history

- Nov-Dec 2024 - “The AI Strikes Back” & “Free Your Data”
 - Prof. Jung Hee Cheon (homomorphic encryption revolution)
- Jan 2025 - “The AI Knight Rises”
 - [Sunghee Yun](#) @ Erudio Bio on deep learning to flourishing societies
- Feb 2025 - “Silicon Citadel”
 - Chanik Park @ MangoBoost on AI data infrastructure
- Mar 2025 - “Blockchain Awakens”
 - Daejun Park @ a16z crypto on decentralized AI
- Apr 2025 - “Advancing Humanity”
 - Stanford Medicine team on bio/medical AI
 - co-hosting with K-BioX
- May 2025 - “The Autonomous Alliance”
 - Microsoft, GitHub, Uclone, SK Hynix on AI agents

Our journey - forum history

- Jun 2025 - “Silicon Companions”
 - Altos Ventures on robotics & smart devices
- Aug 2025 - “The Human-Centric AI Revolution”
 - address legal and ethical issues related to AI
- Nov 2025 - “The AI Silicon Race”
 - Korea-US Innovation Leadership at K-ASIC



Strategic partnerships & ecosystem

- *Perpetual Partnership with KOTRA Silicon Valley as Strategic Alliance*
- 2026 co-hosting partners
 - K-ASIC (Korea AI & IC Innovation Center)
 - K-BioX (biotech innovation)
 - KOTRA Silicon Valley (trade & investment)
 - Consulate General of the Republic of Korea at San Francisco (diplomatic support)
 - KABANC (Korean American Bar Association of Northern California - legal expertise)
- building bridges between Silicon Valley innovation and Korean institutional networks
- creating comprehensive support ecosystem: technical, legal, business, diplomatic



Community & engagement

- membership requirements
 - attend one! AI Nexus event!
- member benefits
 - networking with AI professionals across all domains
 - knowledge sharing and collaboration opportunities
 - direct access to world-class speakers and experts
- forum format - 5pm-8pm, typically Wednesdays at premier Silicon Valley venues
- venues - Stanford, KOTRA, SK Hynix, Altos Ventures, K-ASIC, and more
- active community engagement and professional development



Three Core Tenets

- *Explore & Lead*
 - world-class forums, the AI & Humanity Council, and thought leadership shaping AI's most consequential questions
- *Elevate Community*
 - mentorship, startup showcases, professional connections, and leadership opportunities that amplify every voice
- *Give Back to Society*
 - policy engagement, academic partnerships, and public discourse ensuring AI's benefits reach beyond Silicon Valley

AI Nexus encourages and embraces Interest Groups

- Bio / Medical / Data Group (7)
 - Chanik Insuk Jeff Jongmin Minha Mitch Sunghee led by Chanik
- Karaoke Group (4)
 - Hayden Jeff Sunghee Yeseul led by Sunghee
- AI Hands-on Group (5)
 - Chanik James Kyoung Whan Minha Sunghee led by Minha
- East Bay Group (7)
 - Daniel Eugene Hyunjung Linda MiSook MJ Sunghee led by Hyunjung

Collaboration with Institutions & Universities

- MOUs
 - SNU
 - *AI Nexus × SNU College of Engineering Silicon Valley Immersion Program*
 - *Winter Internship 2026*
 - asked by
 - KIC SV
 - SVreboot
 - XL8
 - KASPA
 - Korea Univ.
 - Sungkyunkwan Univ.
 - KAIST
 - Korean American Semiconductor Professional Alliance (KASPA)
 - *etc.*

Collaboration with Institutions & Universities

- Co-hosting with
 - K-BioX
 - KOTRA SV
 - KIC SV
 - K-ASIC
 - Korea-America Student Conference (KASC)
 - Consulate General of the Republic of Korea at San Francisco
 - Korean American Bar Association of Northern California (KABANC)
 - *etc.*

AI Nexus Committee

- Board of Directors
 - *Sunghee Yun* - Co-Founder & Chair
 - *Minha Hwang* - Co-Founder & AI Master
 - *Sue Kim* - Co-Founder & Marketing Leader
 - *Youngwook (Hayden) Song* - Co-Founder & Legal Affairs Advisor
 - *Bo Hyoung (Jeff) Lee* - Co-Founder & Legal Affairs Advisor
 - *MiSook Chung* - Co-Founder & Community Engagement Chair
- Vision & Principles Committee
- Tech & Social Media Committee
- Program & Content Committee
- the full list of committees can be found [here](#)!

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- CEOs, CTOs, CFOs, COOs, CMOs & CCOs @ startup companies in Silicon Valley
- VCs on Sand Hill Road - Palo Alto, Menlo Park, Woodside in California, USA

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Thank You