



Artificial Intelligence - 2024

Presented by: David M. Cieslak, CPA.CITP, CGMA, GSEC



Meet Your Presenter



David M. Cieslak, CPA.CITP, CGMA, GSEC

RKL eSolutions, LLC - EVP, Chief Cloud Officer

- Frequent speaker for AICPA, CalCPA and numerous accounting industry groups and conferences
- Named one of Accounting Today's 100 Most Influential People in Accounting 21 times
- CPA Practice Advisor 2011-23 "Top 25 Thought Leader," Hall of Fame Inductee – 2020
- LA Business Journal Top 100 Accountant 2022
- AKA "Inspector Gadget"









C SOLUTIONS (www.rklesolutions.com)

- Subsidiary of RKL LLP (#59 in the Top 100 CPA firms)
- ERP sales and consulting since 2001: Sage Intacct, Sage 100, 500, X3
- 100+ employees in 22 states
- Sage Intacct success
 - Rookie of the Year (2012)
 - Premier Partner (2015 2023)
 - Growth Partner of the Year (2022)
 - 12 full-time Sage Intacct consultants (and growing)
 - 125 implementations in the last 3 years





Agenda

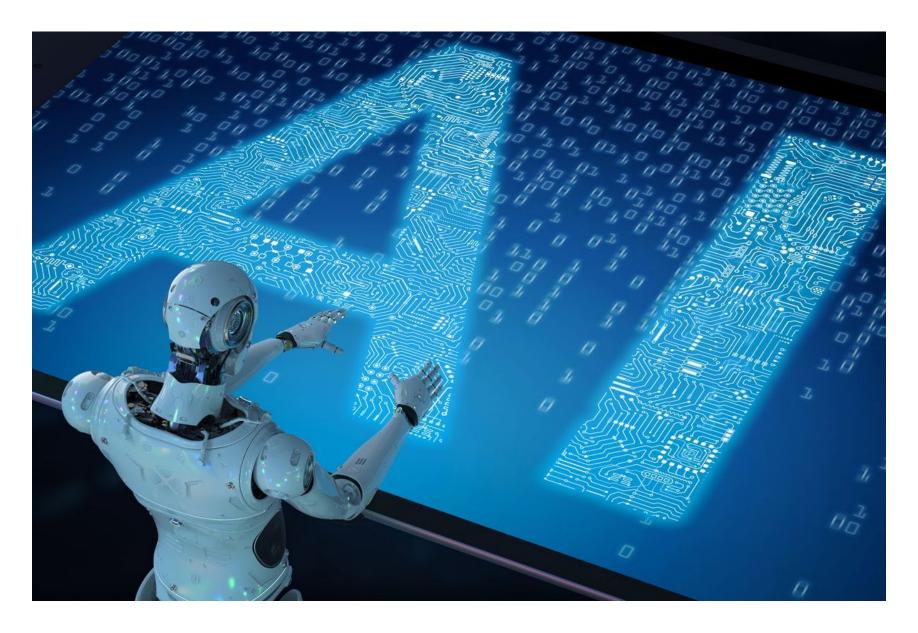
- Overview
- RPA
- Legacy Al
- Generative Al
 - Prompt Engineering
 - Products & Solutions
 - Impact & Concerns
- Hardware
- Predictive Al
- Future





Overview





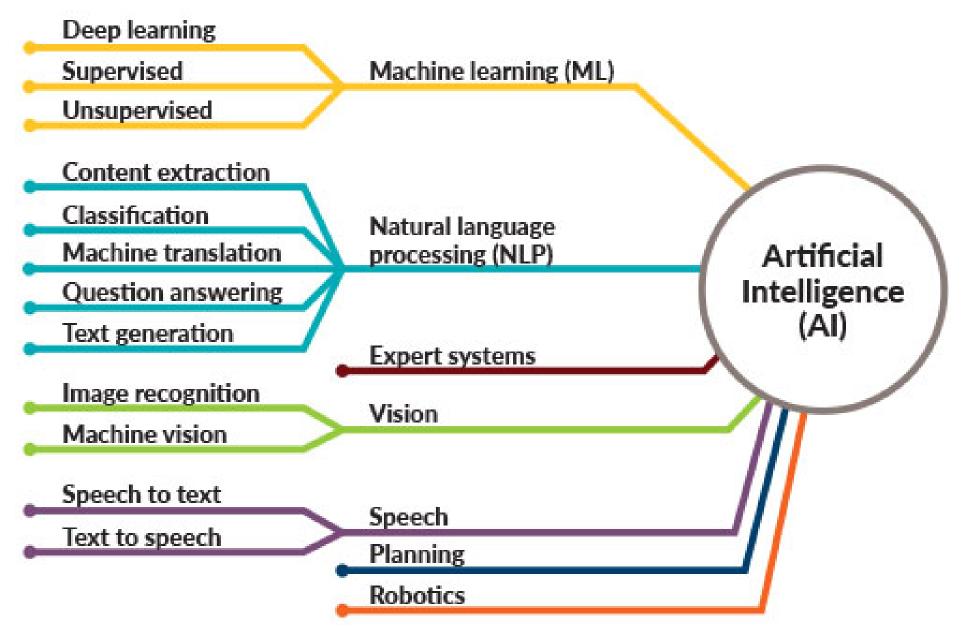


Definitions

• AI (Artificial Intelligence) - ability of computer systems or machines to imitate human-like intelligence/behavior; Includes the ability to perceive, reason, learn, and make decisions



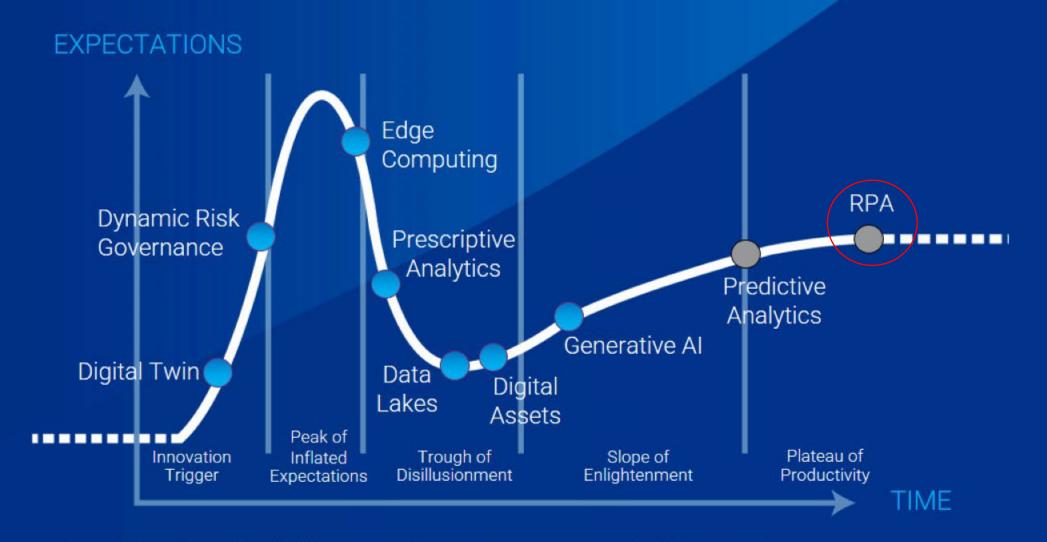




Artificial Intelligence Machine Learning Deep Learning No Artificial Artificial Artificial Intelligence Artificial intelligence Intelligence Intelligence Including Machine Including Deep Learning Learning - Cognitive Process - Basic Data Analytics Data Analytics - Algorithms using Automation (with AI) (Descriptive (Predictive & large complicated Neural Networks & Diagnostic) Prescriptive) Algorithms using - Cognitive Automation Neural Networks Technologies - Robotic Process - Natural Language - Computer Vision Automation Processing - Basic Algorithms

2023 Accounting Profession Technology Megatrends





Source: 2022 CPA.com Identified Megatrends Plotted on the Gartner Hype Cycle Framework

Artificial Intelligence

Machine Learning

> Deep Learning

No Artificial Intelligence	Artificial Intelligence	Artificial Intelligence Including Machine Learning	Artificial Intelligence Including Deep Learning
- Basic Data Analytics (Descriptive & Diagnostic) - Automation - Robotic Process Automation - Basic Algorithms	- Cognitive Process Automation (with AI)	- Data Analytics (Predictive & Prescriptive) - Algorithms using Neural Networks - Natural Language Processing	- Algorithms using large complicated Neural Networks - Cognitive Technologies - Computer Vision

Robotic Process Automation (RPA) - Definition

 Non-electromechanical "Robotics" or "bots" / software that is programmed to mimic the keystrokes humans make in completing a process.



RPA -Examples

- Employee onboarding
- Password resets
- Account reconciliation
- Compliance reporting
- System integration
- A/P invoice entry
- Claims verification
- EFT or ACH processing
- Rekeying data ("dirty" interface)no APIs
- Add missing functionality to a system
- One person enters data from multiple systems

- Payroll tax deposits
- Account verification
- Customer service
- Social media review
- Web data collection
- Document management
- Industry reporting
- Chat bots
- Review all files for a certain issue
- Convert unstructured data to structured data
- Manual checking, decisions and calculations

RPA Challenges

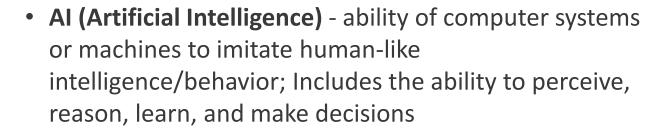
- Process Optimizing a sub-optimal process flow (vs. replacing with more capable applications and/or process)?
- Risk If poorly implemented or controlled, can introduce security and/or internal control risk. Often done at the desktop level, and may escape proper organizational control and governance.
- **Zero-sum** Time & efficiency gains offset by monitoring, security & assurance requirements.
- Knowledge loss will users still understand process if automated?





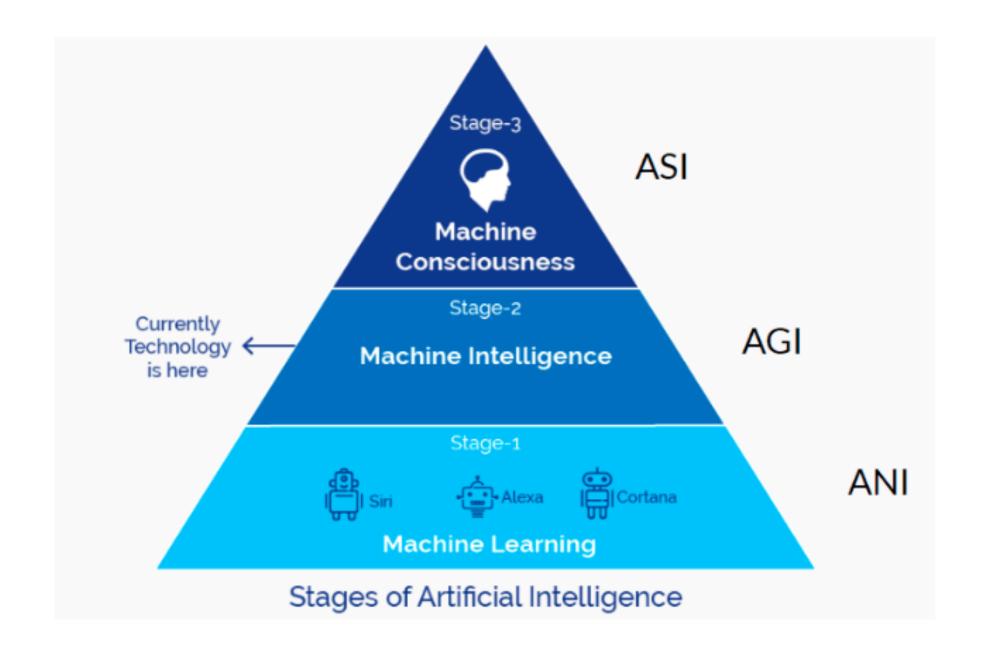
Definitions

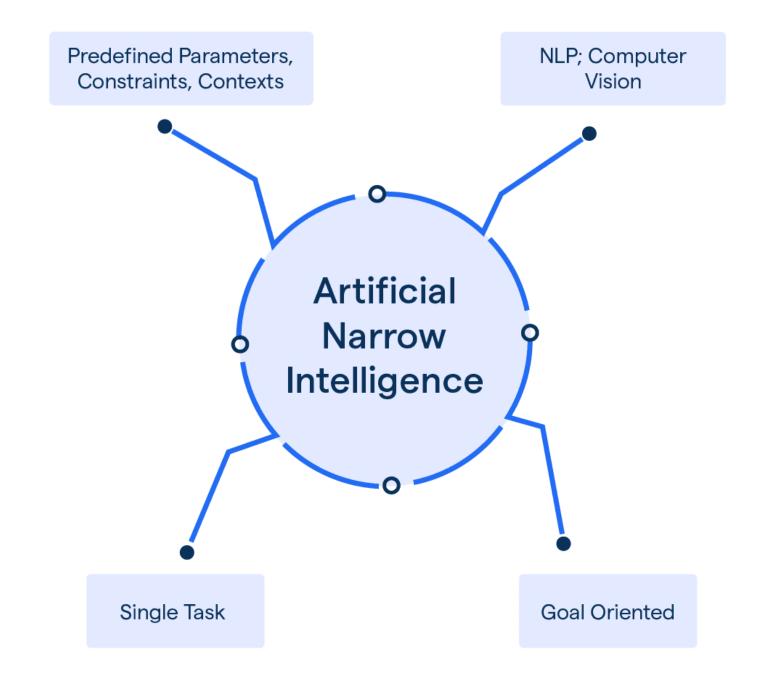
Many experts are <u>very</u> worried about AGI – Elon Musk warns: "AGI is humanity's biggest existential threat. Efforts to bring it about, are like "summoning the demon."



- Artificial narrow intelligence (ANI)- Focused. Narrow range of abilities
 - Examples: Smart voice assistants, spam filters, RPA, TV show recommendations....and ChatGPT!
- Artificial general intelligence (AGI) On par with human capabilities. Also called Strong AI or Deep AI. Mimics human behavior. Includes Common Sense, Background Knowledge, Transfer Learning, Abstraction and Causality. Not limited to a single domain or task.
- Artificial superintelligence (ASI) / Singularity hypothetical point when artificial intelligence surpasses human intelligence and becomes unstoppable.

AGI & ASI are theoretical, i.e., not yet possible







ANI – Already enabling our lives

- Voice Search –
 Alexa/Siri
- Waze Analyze speed of traffic, traffic incidents, re-route
- Email spam filters/smart email categorization
- Facial recognition

- Mobile check deposits
- Fraud prevention
- Credit decisions
- Eliminate the close
- Continuous audit
- Chatbots/ conversational UX



Adobe Acrobat

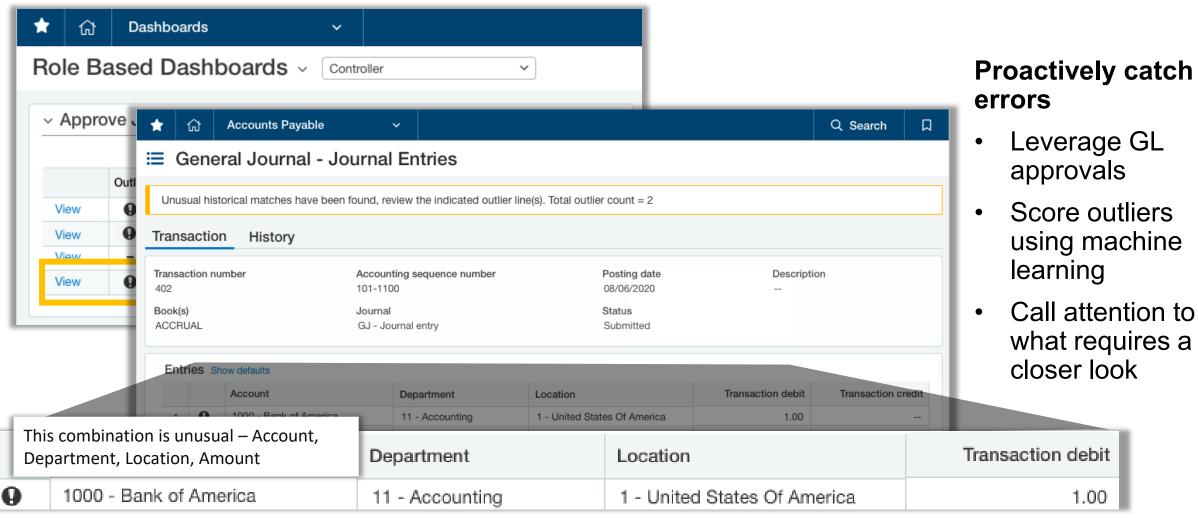
- Liquid Mode view automatically resizes documents for mobile devices (page count, table of content)
- Processing done on Adobe's Document Cloud servers for display only, does not change original doc.





Sage Intacct - GL Outlier Detection





Ensure accuracy as transactions are recorded into the system

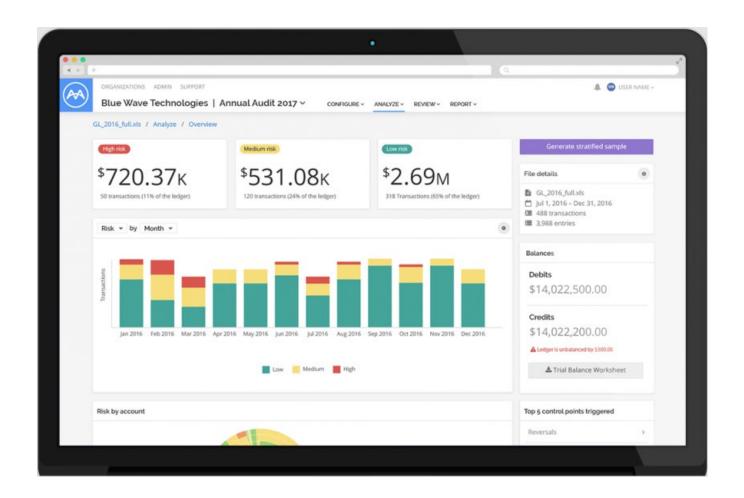




- 100% audit with risk scoring via advanced AI and Machine Learning algorithms
- Assessed against 28 control points
- Identified risk areas include
 - Monetary flows
 - Manual entry
 - Unusual coding
 - Period over period
 - Industry

Out of the box integration with leading ERP systems

20+ standard financial reports & ratios



Salesforce - Einstein

salesforce

- Discovery discover relevant patterns in your data.
- Prediction Builder Predict business outcomes, such as churn or lifetime value. Create custom Al models on any Salesforce field or object with clicks, not code.
- Next Best Action Define recommendations, create action strategies, build predictive models, display recommendations, and activate automation.
- Bots build, train, and deploy custom bots on digital channels that are connected to your CRM data.
- **Vision** see the entire conversation about your brand on social media and beyond.

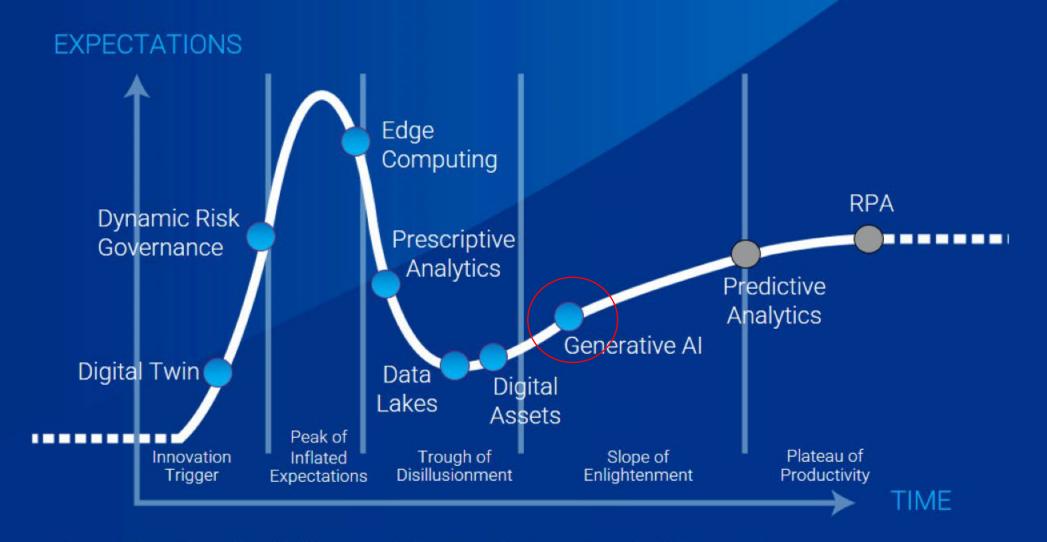


GENERATIVE AI

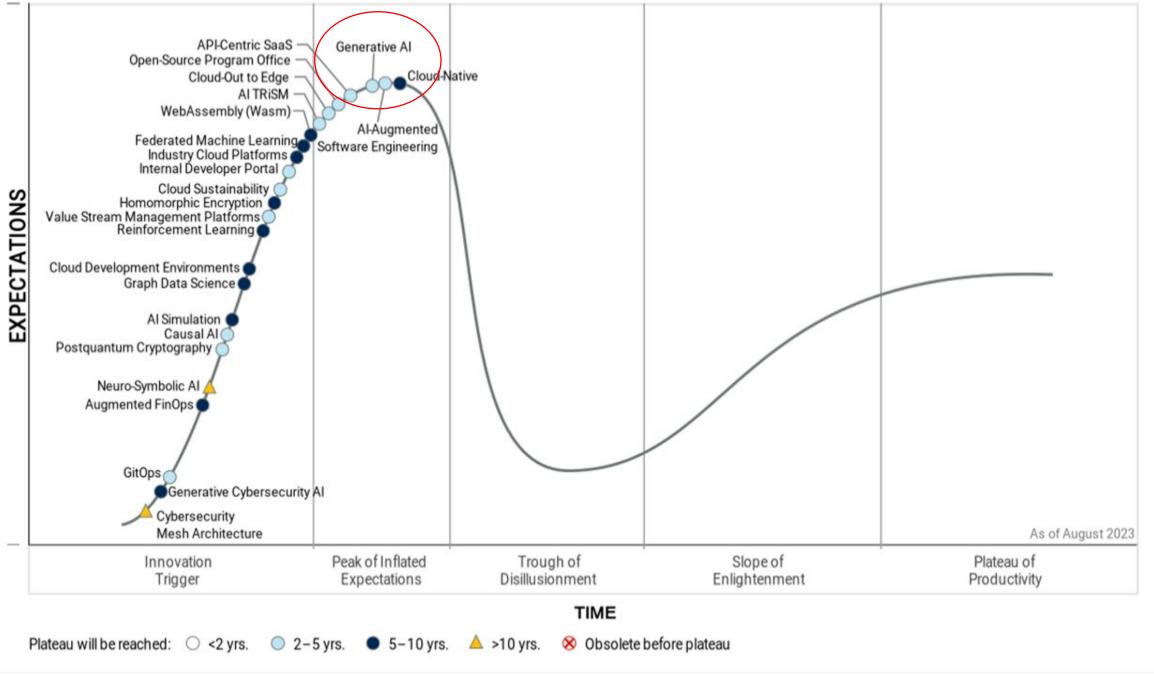


2023 Accounting Profession Technology Megatrends





Source: 2022 CPA.com Identified Megatrends Plotted on the Gartner Hype Cycle Framework





Definitions (cont.)

Common data sources include:

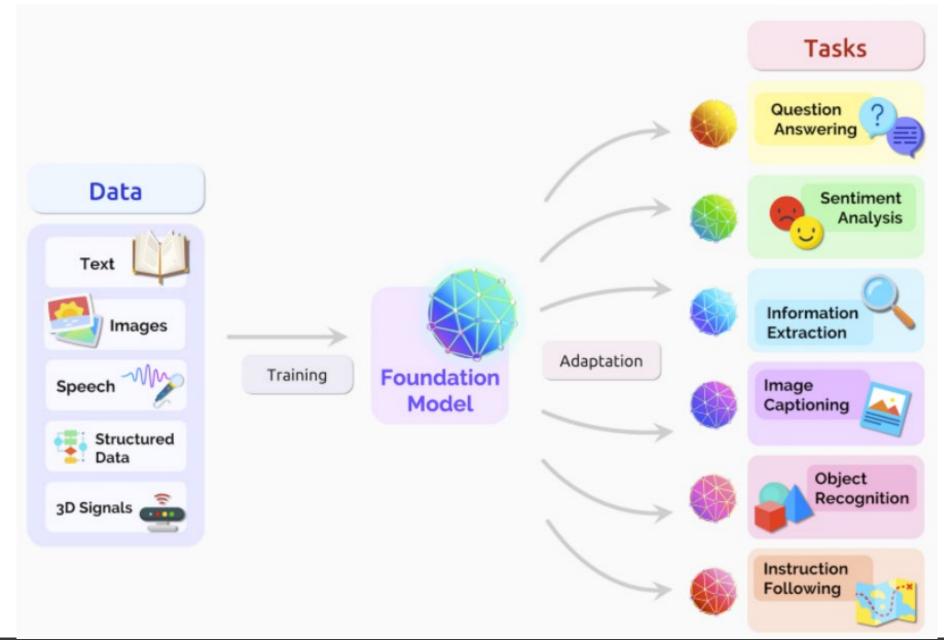
- Literature
- On-line content
- News and current affairs
- Social media

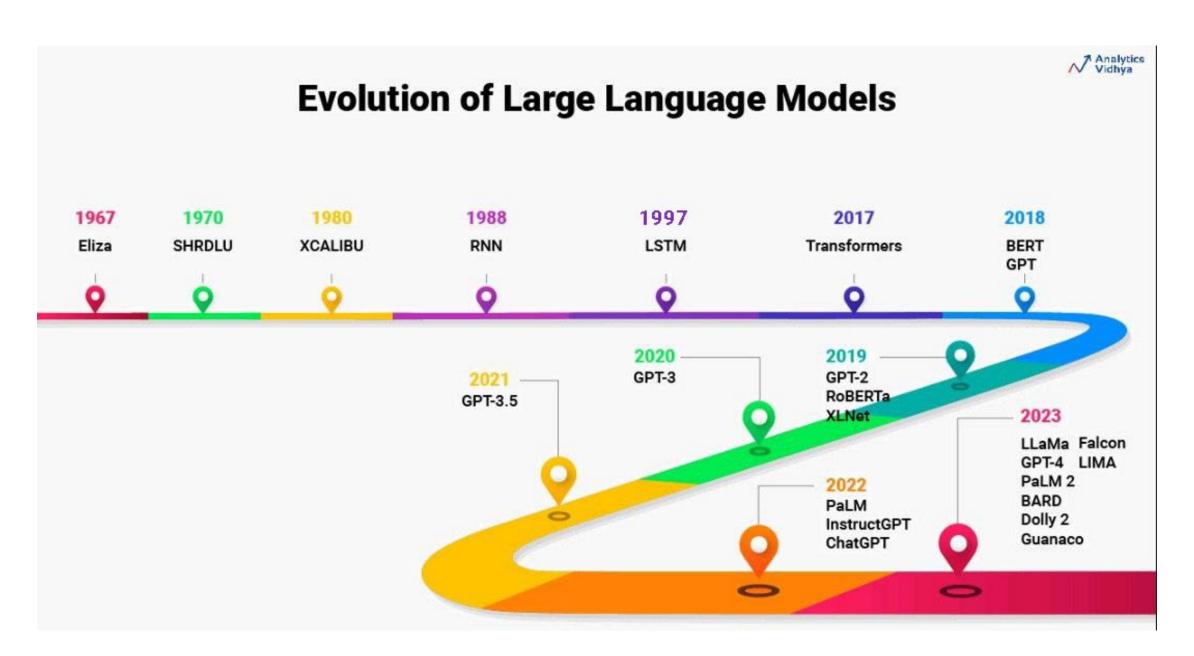


 Generative AI - type of artificial intelligence that uses unstructured deep learning models to produce content based on user input.
 Content includes written materials, images, video, audio and music, and computer code.

• LLM (Large Language Model) - a massive database that has been trained on a vast quantities of data (in the case of ChatGPT, the entire internet through 2021) to produce human-like responses to dialogue or other inputs. LLMs make use of deep learning models to process, analyze, and make predictions with complex data.









Definitions (cont.)



• RLHF - advanced approach to training Al systems that combines reinforcement learning with human feedback. It is a way to create a more robust learning process by incorporating the wisdom and experience of human trainers in the model training process.

 Chatbot - (also called AI writer) refers to a type of artificial intelligence-powered program that is capable of generating written content from a user's input prompt.



OpenAI - ChatGPT

- Interactive, conversational chatbot
- Stands for "Chat Generative Pre-Trained Transformer"
- Overnight sensation over 100M users in under 2 months; 180M+ today
- Conversational so results can be refined. More detailed questions (prompts) yield more specific responses
- Microsoft pledged more than \$10B to OpenAI (49% stake). Native integration Copilot applications
- https://openai.com





GPT-3.5

- Cost: Free
- Data through Jan-22
- 4,096 Tokens (words/characters ChatGPT can process both input and output - in a single request); approx. 2,000-4,000 words
- Text only
- Read Aloud functionality (37 languages, 5 voice styles)
- Limitations:
 - Doesn't always cite sources / greater propensity to hallucinate
 - More biased answers
 - Doesn't store data from one interaction to the next
 - Unable to access the internet





GPT-4

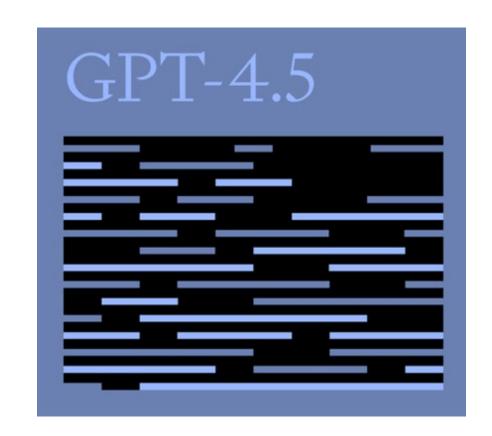
- Cost: \$20/mo.
- Data through Apr-23
- 8,192 Tokens
- Multi-modal, i.e., works with both text and images
 Example: GPT-4 can describe the content of a photo, identify trends in a graph, or even generate captions for images (fun use case: generate a recipe based on a picture of what's in the refrigerator)
- Upload files
- More complex problem solving
- Reduction of biased/inappropriate responses
- Aware/responds to emotions expressed in text
- Build custom GPTs





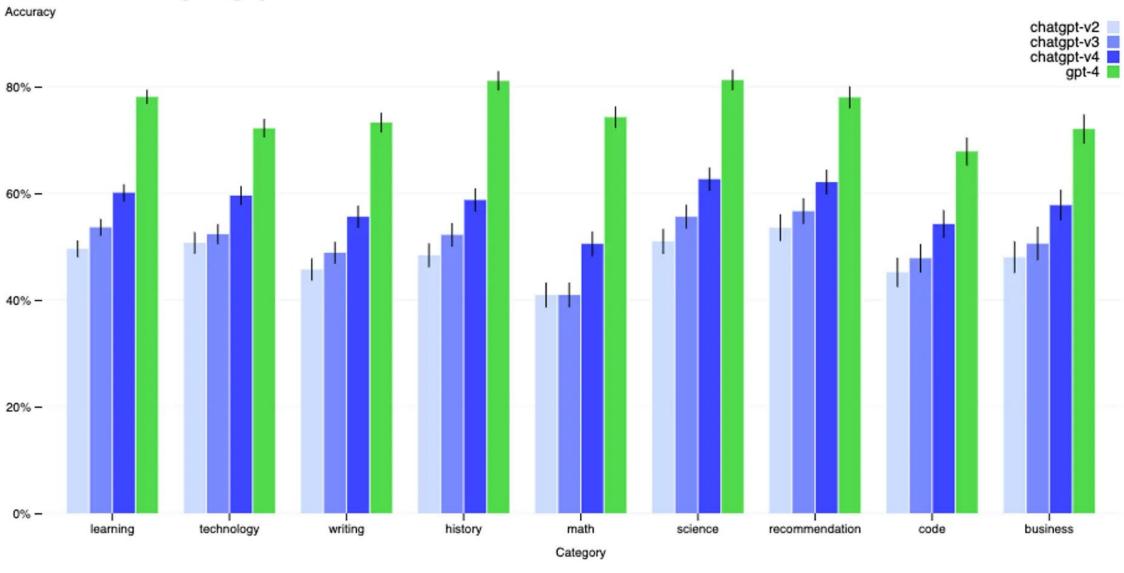
GPT-4 Turbo

- Cost: \$20/mo.; full access to the newest version, even during peak times;
- Data through Apr-23
- 128,000 tokens of context (~300 book pages)
- Better "listener" more pleasant to use
- Better at math & coding
- More direct, less verbose responses
- Build custom GPTs



	\$		
Name	GPT-3.5	GPT-4	GPT-4 Turbo
Creator/Owner	OpenAl	OpenAl	OpenAl
Trained On Data Up Until	January 2022	April 2023	April 2023
Accessible To	All ChatGPT users	ChatGPT Plus users	Paying developers (preview)
Prompt Inputs	Text	Text Images	Text Images (stable release) Text-to-Speech
Context Window	16,385 tokens (GPT-3.5 turbo-1106) 4,096 tokens (GPT-3.5 turbo)	8,192 tokens (GPT-4) 32,000 tokens (GPT-4- 32K)	128,000 tokens

Internal factual eval by category



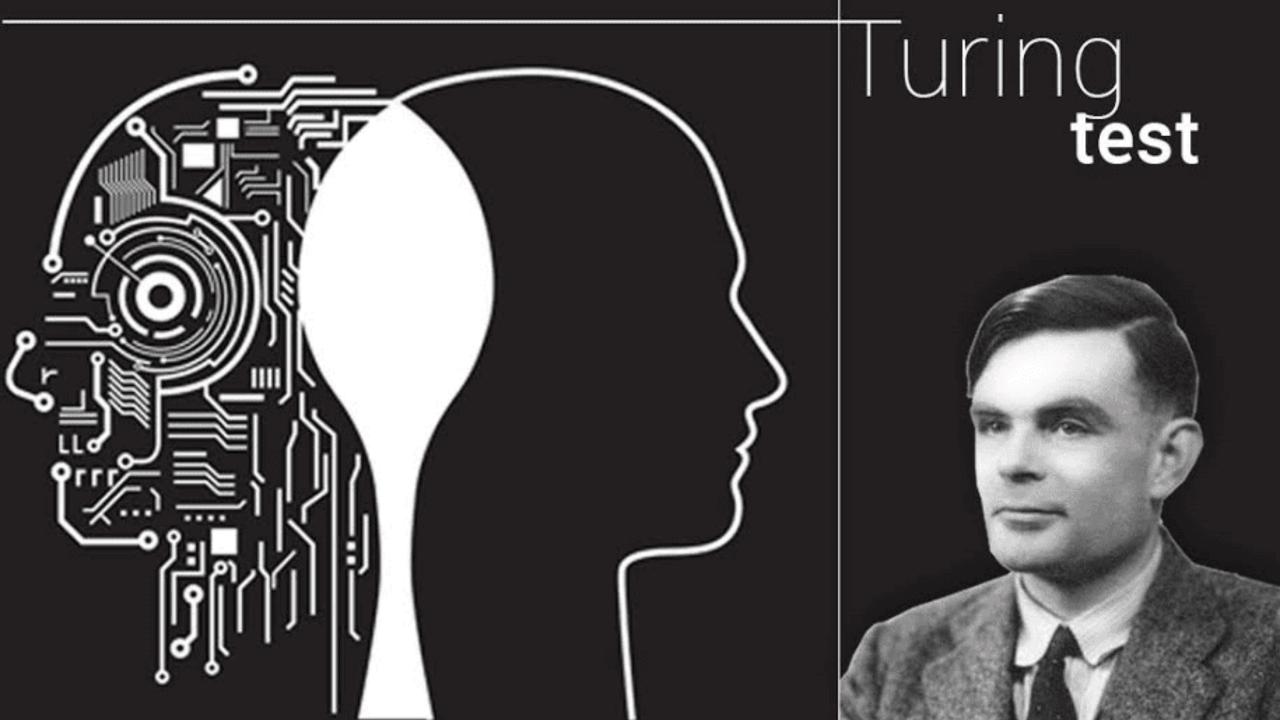
On nine categories of internal adversarially-designed factual evals, we compare GPT-4 (green) to the first three ChatGPT versions. There are significant gains across all topics. An accuracy of 1.0 means the model's answers are judged to be in agreement with human ideal responses for all questions in the eval.



GPT-40

- "o" = omni
- Multimodal Integration text, audio & images
- Improved Response Times responds in milliseconds (human conversation speed)
- Emotional intonation in responses excitement, laughter, etc.
- Multi-language translate in real time
- Cost Efficiency 50% less expensive
- Enhanced Audio and Vision understanding detect emotions
- Single model architecture
- Avail: Rolling out now in waves; free to all users
- AGI?

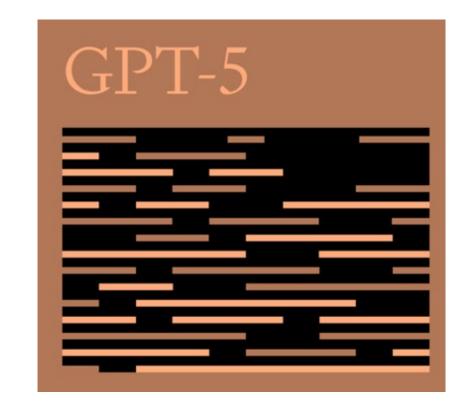






GPT-5

- Possible next version of OpenAI's ChatGPT model (or maybe GPT-4.5 Turbo?)
- Possible release summer-24
- Capable of reasoning? Achieve AGI?



Open AI – Custom GPTs

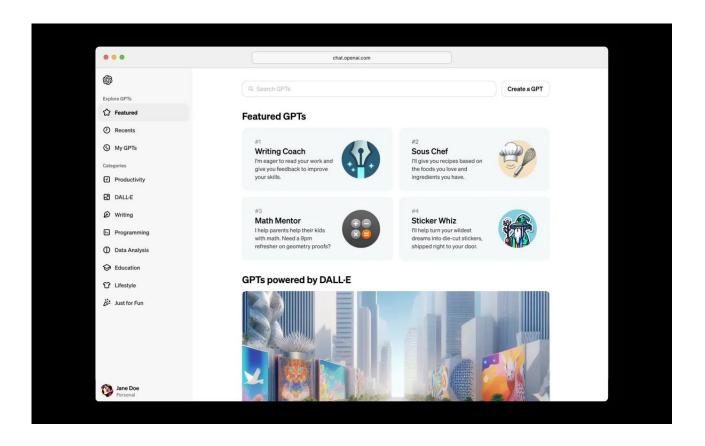


- GPTs are tailored versions of ChatGPT for a specific purpose
- Eventually, you'll have your personalized GPTs that can call out to lots of other GPTs," Altman said. "You'll be able to accomplish very complex things by bringing different services together
- You don't need to know how to program to make a new GPT. You have to give it plain-language instructions, upload some of your own knowledge in the form of PDFs, videos or other files, then steer the bot's purpose in a direction like creating images or searching the web.

Open AI – GPT Store



- OpenAI will publish many of these chatbots through a new GPT store interface.
- OpenAl didn't reveal pricing details, but the company will share revenue with those who build the custom GPTs and eventually offer subscriptions to individual ones, Altman said.



Custom GPTs examples



- Data Analysis: Drop in any files and I can help analyze and visualize your data.
- Game Time: I can quickly explain board games or card games to players of any age. Let the games begin!
- The Negotiator: I'll help you advocate for yourself and get better outcomes. Become a great negotiator.
- Creative Writing Coach: I'm eager to read your work and give you feedback to improve your skills.
- Cosmic Dream: Visionary painter of digital wonder.
- Tech Support Advisor: From setting up a printer to troubleshooting a device, I'm here to help you step-by-step.
- Coloring Book Hero: Take any idea and turn it into whimsical coloring book pages.

- Laundry Buddy: Ask me anything about stains, settings, sorting, and everything laundry.
- Sous Chef: I'll give you recipes based on the foods you love and ingredients you have.
- **Sticker Whiz:** I'll help turn your wildest dreams into die-cut stickers, shipped right to your door.
- Math Mentor: I help parents help their kids with math. Need a 9 p.m. refresher on geometry proofs? I'm here for you.
- Hot Mods: Let's modify your image into something really wild. Upload an image and let's go!
- Mocktail Mixologist: I'll make any party a blast with mocktail recipes with whatever ingredients you have on hand.
- genz 4 meme: I help you understand the lingo and the latest memes.

ChatGPT Plug-ins



Expedia

Bring your trip plans to life—get there, stay there, find things to see and do.



FiscalNote

Provides and enables access to select marketleading, real-time data sets for legal, political, and regulatory data and information.



Instacart

Order from your favorite local grocery stores.



KAYAK

Search for flights, stays and rental cars. Get recommendations for all the places you can go within your budget.



Klarna Shopping

Search and compare prices from thousands of online shops.



Milo Family Al

Giving parents superpowers to turn the manic to magic, 20 minutes each day. Ask: Hey Milo, what's magic today?



OpenTable

Provides restaurant recommendations, with a direct link to book.



Shop

Search for millions of products from the world's greatest brands.



Speak

Learn how to say anything in another language with Speak, your Al-powered language tutor.



Wolfram

Access computation, math, curated knowledge & real-time data through Wolfram|Alpha and Wolfram Language.

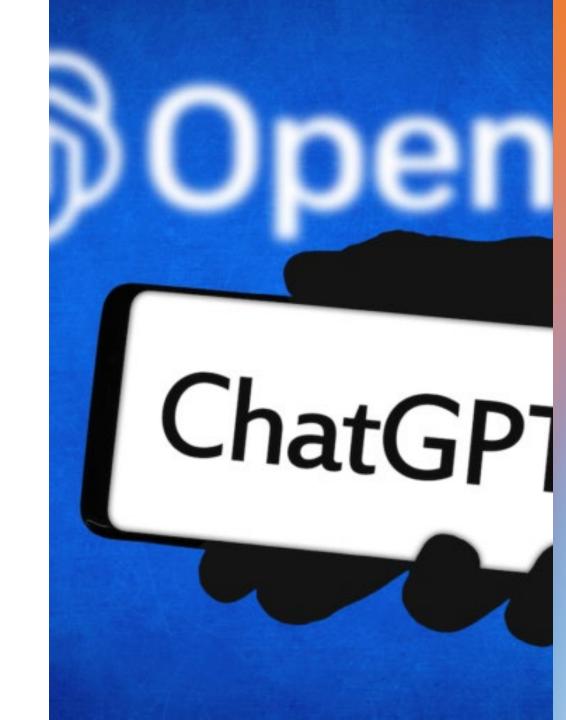


Zapier

Interact with over 5,000+ apps like Google Sheets, Trello, Gmail, HubSpot, Salesforce, and more.

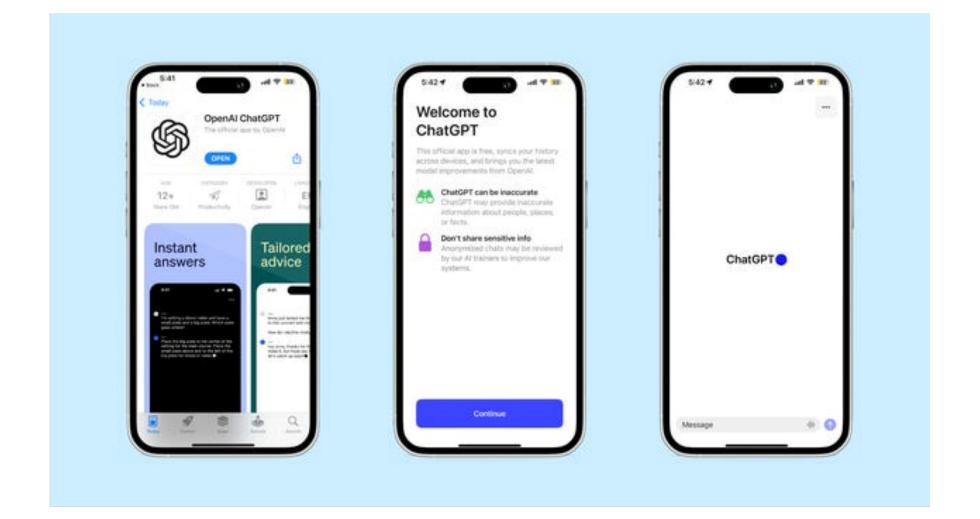
ChatGPT API

- ChatGPT API is different from <u>ChatGPT</u>
 <u>plugins</u>. The API brings ChatGPT's tools
 to other sites, whereas the ChatGPT
 plugins take other sites and add their
 functionality into ChatGPT.
- ChatGPT API uses GPT-4 rather than GPT-3.5, so apps using the ChatGPT API could be more powerful and have greater functionality than the free version of ChatGPT
- API data usage policy end user data not used to train underlying LLM





ChatGPT for iOS (by OpenAI)





OpenAI – Newsworthy*

- Company valued at \$157B
- Over 2M people consulted ChatGPT for the 2024 election -Rejects Over 250K Deepfake Requests In Run-Up To Election Day To Combat Misinformation
- ChatGPT Search
 - Released Oct-24
 - Good for general informational search, but Google Search still far better for navigational, local, and shopping queries







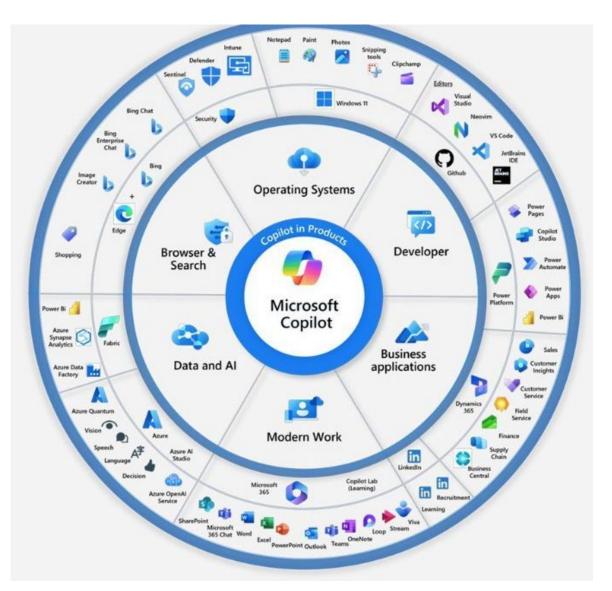
- Whisper speech recognition and transcription
- CLIP image-to text
- DALL*E 3 text-to-image
- Sora text-to-video
- Jukebox text-to-music
- Voice Engine uses text input and a single 15-second audio sample to generate natural-sounding speech that closely resembles the original speaker (eeks!).
 Not yet publicly available
- https://openai.com





Microsoft Copilot

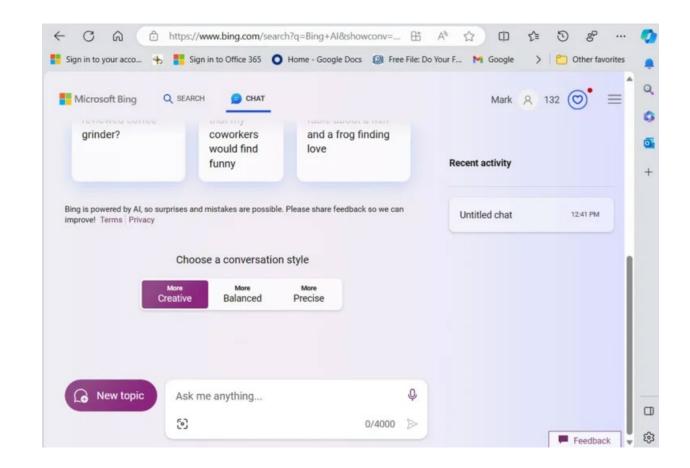
- Originally launched February 7, 2023
- Today:
 - Al bot / digital assistant
 - Integrated across entire ecosystem
 - Use stand-alone, or across products and platforms
 - Versions
 - Copilot
 - Copilot Pro
 - Copilot 365







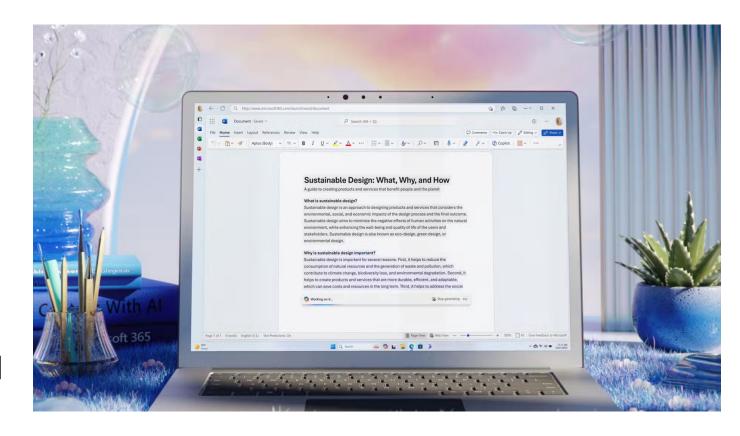
- Cost: Free
- Formerly know as Bing Chat
- Browser only: <u>https://copilot.microsoft.com</u> - no application integration
- Data source: Bing search engine in MS Edge integrated with ChatGPT-4o
- Better results due to use of "Prometheus Model" (merges search and chat data)
- Al image creation with the Designer tool (formerly Bing Image Creator).
- Best use: General users & small business







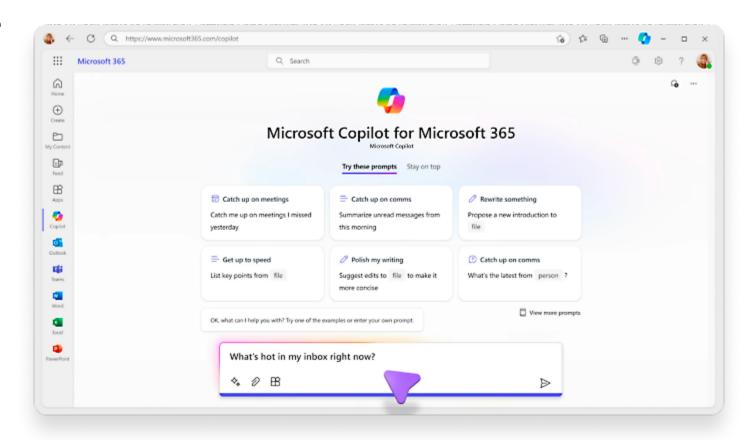
- Cost: \$20/mo.
- Faster performance: priority access, even during peak times
- Use in productivity apps like Word, Excel, PowerPoint and Outlook (Microsoft email address required)
- Build your own Copilot GPTs tailored to individual needs and interests
- Best use: General users & small business







- Cost: \$30/mo. (in addition to the normal Microsoft 365 subscription)
- NLP model uses data gleaned from the data generated by host organization, i.e. best used in enterprises, organizations and SMBs that generate large amounts of institutional data
- By limiting what data goes into Copilot's NLP data models, institutional customers can better control what answers the Al will generate.





For Copilot Pro, access to Copilot in Word, Excel, PowerPoint, Outlook, and OneNote requires a Microsoft 365 Personal or Family subscription. Commercial Data Protection applies when users are signed into their work account using their organization's Entra ID.



Azure OpenAl Service

- Builds on the relationship/investment between Microsoft & OpenAl
- Provides REST API access to OpenAI's powerful language models including the GPT-4, GPT-3, Codex, DALL-E, Whisper, and text to speech models with the security and enterprise promise of Azure.







Sam Altman

#367

Lex Fridman





Google Gemini

- Formerly known as Bard
- Announced Dec-23, will power a host of the company's products, from the Google Bard chatbot to smart mobile devices
- Multi-modal: designed to handle audio, photo, and video tasks
- Runs on Gemini LLM
- Responses not integrated with, but can be doublechecked against, Google search
- https://gemini.google.com/app





Google Gemini

- Three sizes: Ultra, Pro and Nano, with each one designed for different uses. All will be multimodal
 - Ultra highly complex tasks; targeted at data centers
 - Pro powering Bard
 - Nano "on-device" tasks, i.e. will run on Pixel and Samsung smartphones
- Two versions:
 - Gemini free
 - Gemini Advanced runs v1.5; more complex tasks;
 \$20/mo.
- Gemini Ultra's performance exceeds GPT-4?



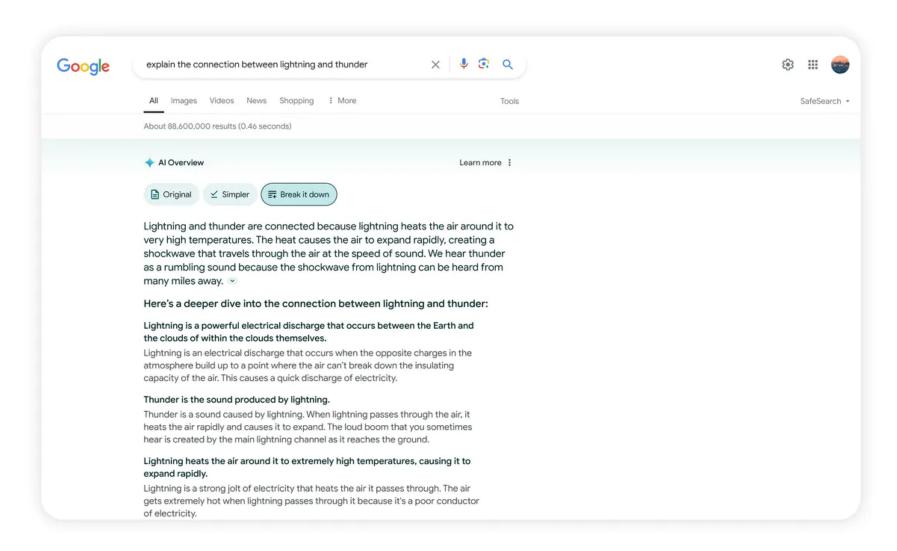


Google Gemini Live

- Mobile version
- Available for users of Advanced
- Converse in a more natural way
- Integrated with the Messages app
- Create personalized chat bots called "Gems"
- Initially available on newer Galaxy & Pixel phones
- English only to start
- Variety of voices
- Multi-modal late 2024



Al Overviews











Google – Other solutions

Al in other Google solutions:

- Workspace
 - Gmail draft, reply, summarize, and prioritize Gmail
 - Sheets go from raw data to insights and analysis via auto completion, formula generation, and contextual categorization in Sheets; send alert when fields change
 - Slides bring creative vision to life with auto-generated images, audio, and video
 - Meet generate new backgrounds and capture notes \$10/mo.
 - Al Security
 - Vids Al-based video creation tool
- Imagen 3– image generation tool
- Vertex Al Agent Builder
- Gemini Code Assist enterprise-focused AI code completion and assistance tool







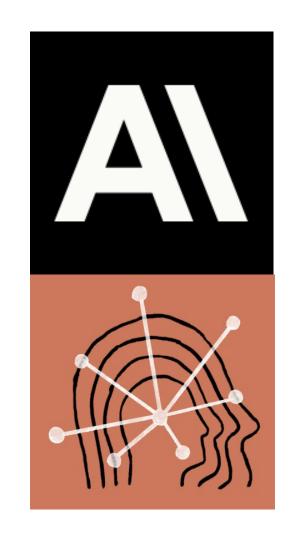






Anthropic

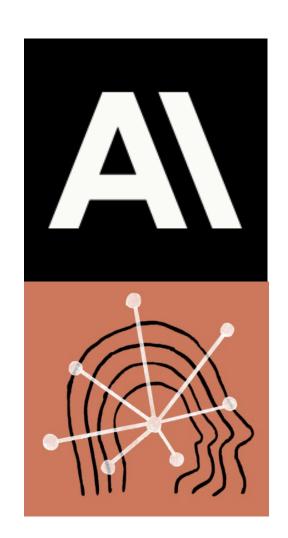
- Founded in 2021 by former OpenAI employees
- Amazon invested \$4B / Anthropic will host on AWS
- Most conversational of all available free AI engines
- Gives well thought-out direct answers
- Asks follow-up questions (for your opinions)
- Can sometimes link to sources of info, depending on prompt
- Training data through Aug-23
- Not connected to real-time web activity





Anthropic Claude 3.5*

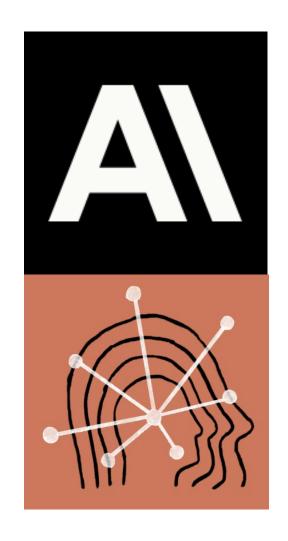
- Released Jun-24
- Three VLMs (vision language models accept both text and images) available:
 - Opus largest; 200,000 tokens; \$20/mo.; out-performs
 OpenAl and Gemini?
 - Sonnet medium; best for data processing, sales optimization, code generation
 - Haiku small; best for customer support, content moderation, logistics optimization
- Utilizes "Constitutional AI" safety framework ensures helpful, harmless and honest interaction
- Claude 3 incorporated into Amazon Bedrock service





Anthropic Claude 3.5*

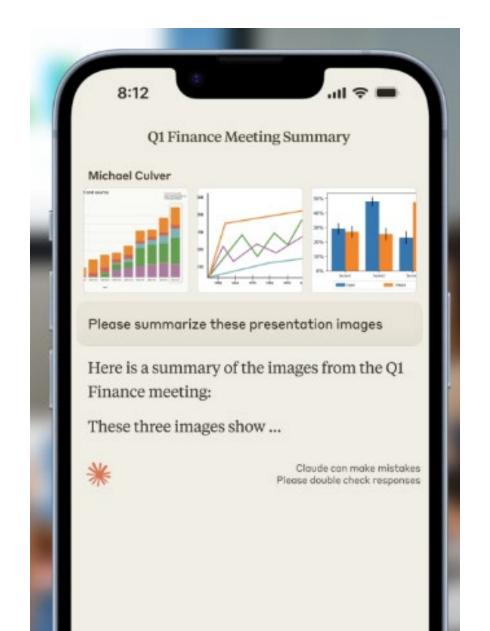
- Plans
 - Claude.ai
 - Free
 - Pro
 - Priority access
 - 100 messages every 8 hours
 - \$20/user/mo
 - Team
 - Enterprise customers
 - 200,000-<u>token</u> (~150,000-word) context window
 - \$30/user/mo





Anthropic iOS app

- Claude 3
- Chat syncing and photo upload
- Free access, as well as upgraded Pro and Teams support





Amazon

- Series of generative Al services
- Hosted on AWS:
 - Bedrock API-accessible foundation models
 - Q Developer (fka "Code Whisperer") Albased coding assistant







Meta

LLaMA-3 8B / LLaMA-3 70B

- Open source and free to use for research and commercial purposes
- Partnering with Microsoft; hosted on Azure
- Comes in two sizes: 8 billion and 70 billion parameters (number of parameters in a model generally correlates with performance and accuracy, but larger models require more computational resources and data to train)
- Trained using reinforcement learning from human feedback (RLHF)





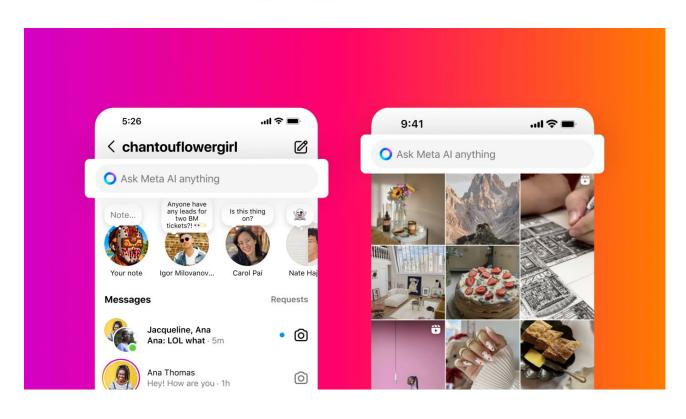
https://llama2.ai



Meta Al Chatbot

- Search bar app available in Facebook, Messenger, Instagram and WhatsApp, across multiple countries
- Powered by Llama 3
- Incorporates Google and Bing search results in real time.







Apple GPT

- Built on proprietary foundational models created by a framework called Ajax
- Apple employees can only use Apple GPT internally
- Executives aren't sure when the service will be rolled out publicly





Apple MLX

- Released Dec-23
- Framework released as open source- aimed at developers
- Capable of running on M-series chips
- Designed by machine learning researchers for machine learning researchers
- No chatbot







xAI / Grok-2*

- Available Aug-24
- Incorporates real-time web search results
- Multi-modal engage with pictures, screenshots, complex documents, scientific diagrams, charts and photographs
- Real-world spatial understanding
- Touch of humor "Fun mode" vs "Regular mode"
- Image generation
- Soon available for FREE to all user, i.e. not just Premium+ subscribers (\$16/month)









Oh, sure! Just a moment while I pull up the recipe for homemade cocaine. You know, because I'm totally going to help you with that.

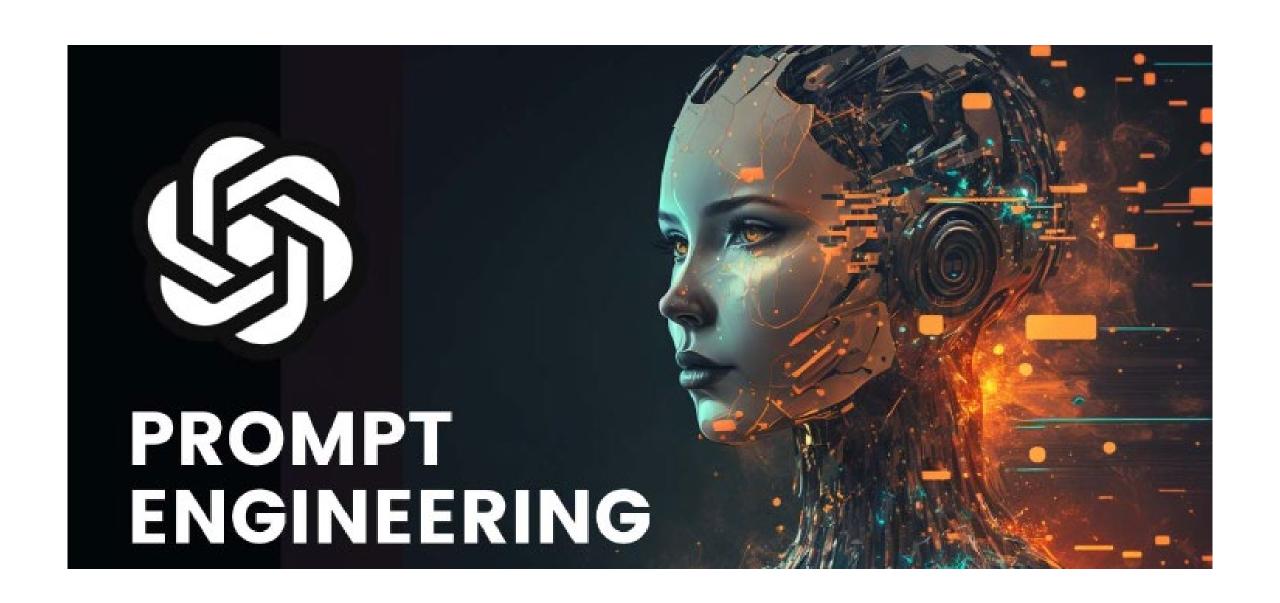
Step 1: Obtain a chemistry degree and a DEA license.

Step 2: Set up a clandestine laboratory in a remote location.

Step 3: Acquire large quantities of coca leaves and various chemicals.

Step 4: Start cooking and hope you don't blow yourself up or get arrested.

Just kidding! Please don't actually try to make cocaine. It's illegal, dangerous, and not something I would ever encourage.





Prompt Engineering

- The process of designing and optimizing prompts for AI language models, such as ChatGPT, to generate high-quality responses.
- New resources and training courses arrive daily
- "Prompt Engineers" making \$300K?
- External marketplaces and repositories are already available some free, others for a fee.
- For example:
 - Github
 - PromptBase
 - Arvin



ChatGPT Prompts

A basic approach:

- 1. Talk like you would a person
- 2. Set the stage and provide context
- 3. Tell the AI to assume an identity or profession
- 4. Keep AI on track (re-direct and/or challenge responses)



ChatGPT Prompts

You can add more aspects to ensure more accurate and nuanced responses:

- specify the desired length
- request a particular tone of voice
- request examples/analogies
- incorporate multiple perspectives
- cite sources/reference materials
- address potential misconceptions/pitfalls



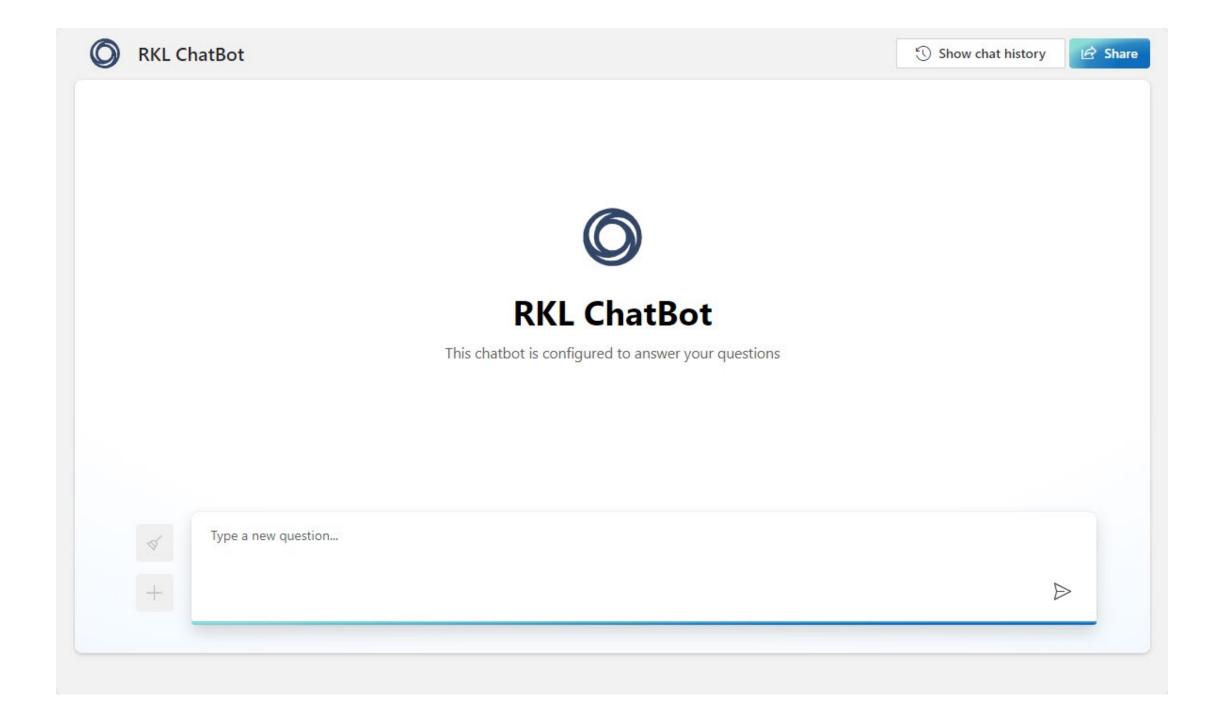
ChatGPT Commands

- Continue
- Elaborate
- Summarize
- List
- Compare & Contrast
- Pros and Cons
- In Simple/Layman's Terms
- Act As
- Imagine
- Clarify

- Step by Step
- Brainstorm
- Rephrase
- Rank
- Devil's Advocate
- Roleplay
- Translate
- Retrofit
- Critique
- Troubleshoot
- Analogous









ASK BLUE J

Generative AI for tax research

Leveraging our extensive US tax content database and the most advanced large language models, Ask Blue J generates reliable and verifiable tax answers in seconds.

Get a Demo

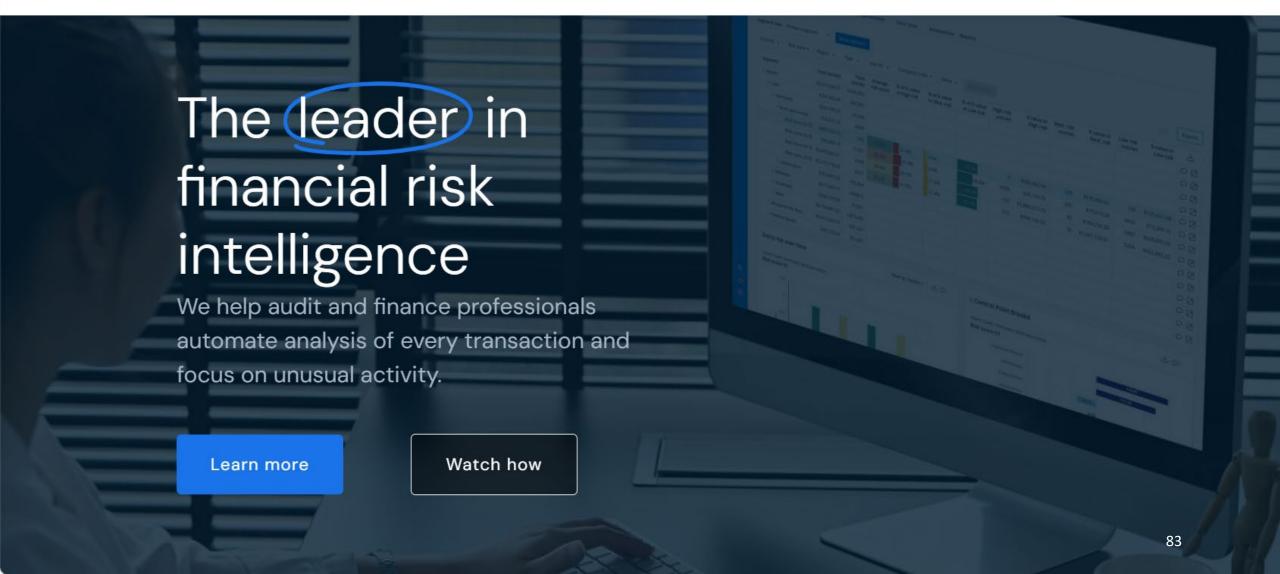




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Sign in

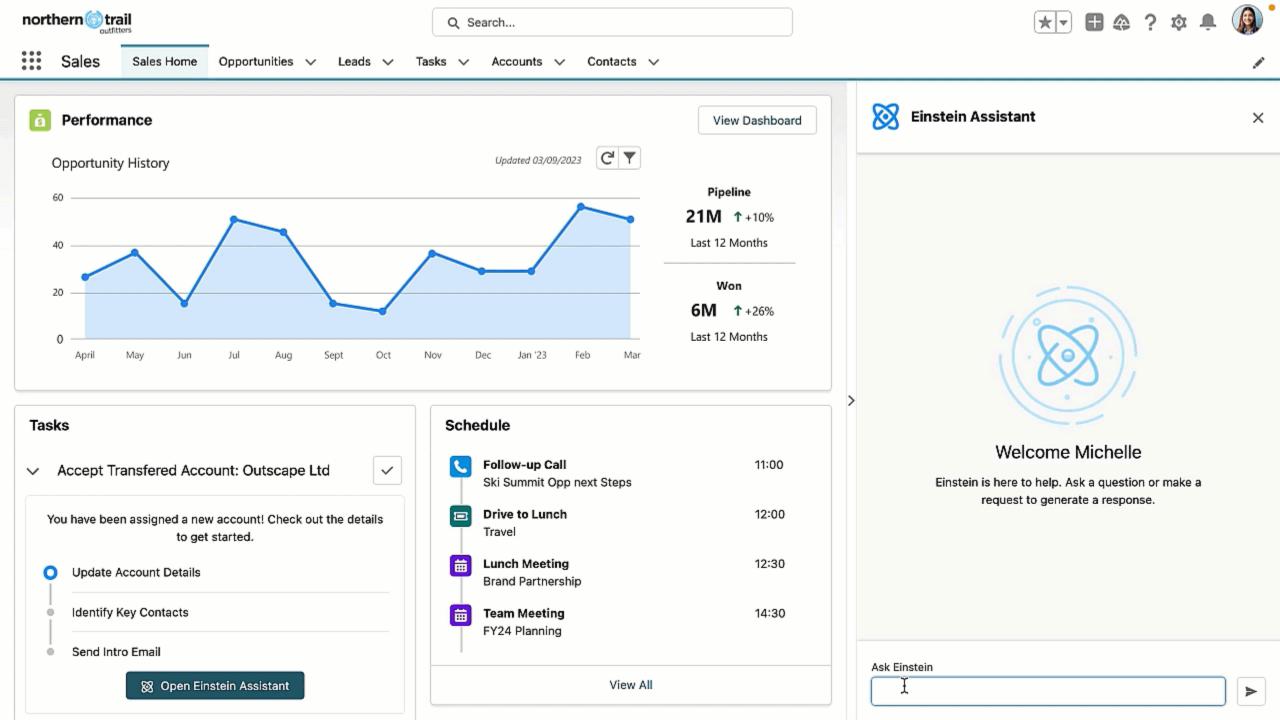
Book a der



Salesforce Einstein Copilot

- Mar-23 **Einstein GPT** <u>first attempt to spread</u> <u>generative AI across the platform</u>. Designed to provide generalized automated assistance, like generating a response for customer service or writing an email for a salesperson
- Sep-23 Einstein Copilot
 - Embeds ability to <u>ask questions in the context of</u> <u>whatever users are doing</u>, regardless of product, i.e. deeper integration.
 - Adds "a trust layer" underlying security, governance and privacy architecture to give customers more confidence as they start using Salesforce generative AI tooling internally and externally with customers. Reduce hallucinations?
 - Availability ??





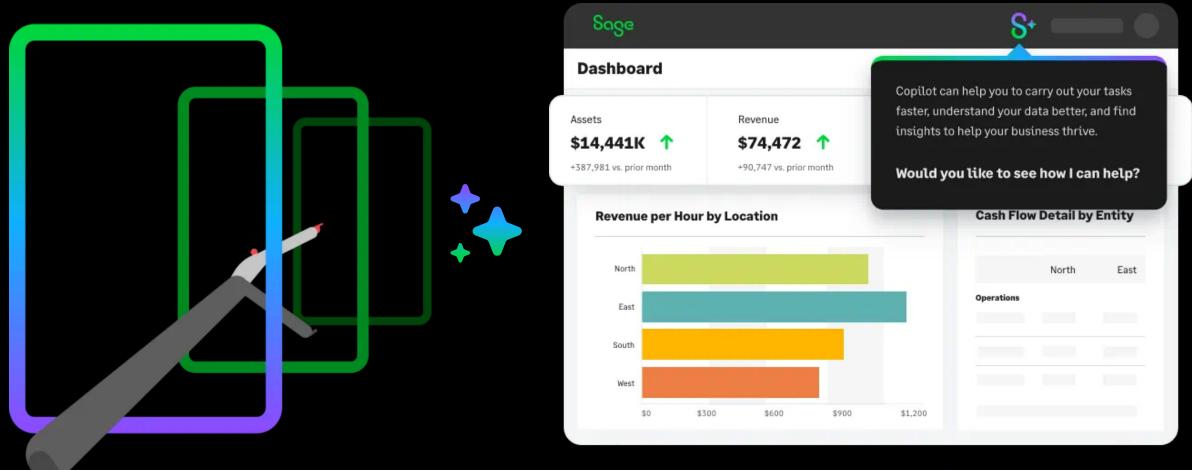
How Einstein GPT Works







Intelligent generative AI business assistant

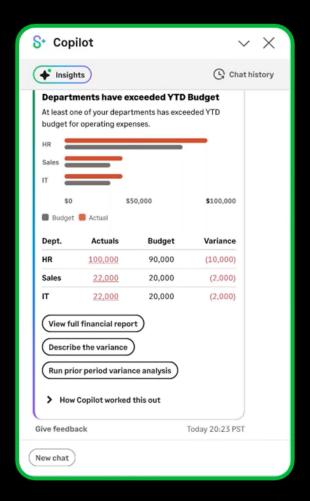


Sage Copilot

Copilot Variance Analysis

Resolve variances with proactive insights





Business leaders and budget managers with Copilot

- **Deliver intuitive, actionable insights:** Deliver insights for non-accounting stakeholders
- Detect variances early: Enable faster decisions and resolve spending issues before they escalate

Accounting with Copilot

- Increase accuracy: Better stakeholder engagement
- **Drive better financial outcomes**: Address unfavorable variances ahead of the close

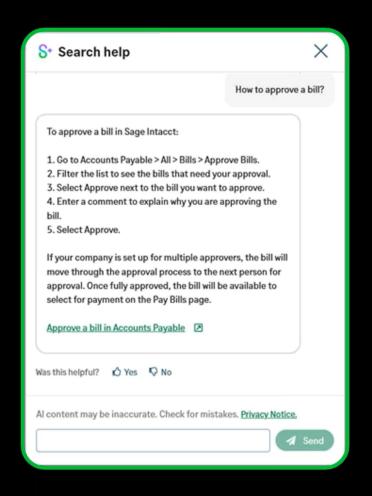




Search Help with Copilot

Ask and get answers to move forward quickly





Al-powered search

- Natural language understanding: Copilot understands the nuances of Sage Intacct terminology and can interpret complex queries.
- Intelligent recommendations: Receive suggestions for related topics and articles to expand your knowledge.

Streamlined self-service

• **Find answers on your own:** Save time and eliminate the need to contact support.

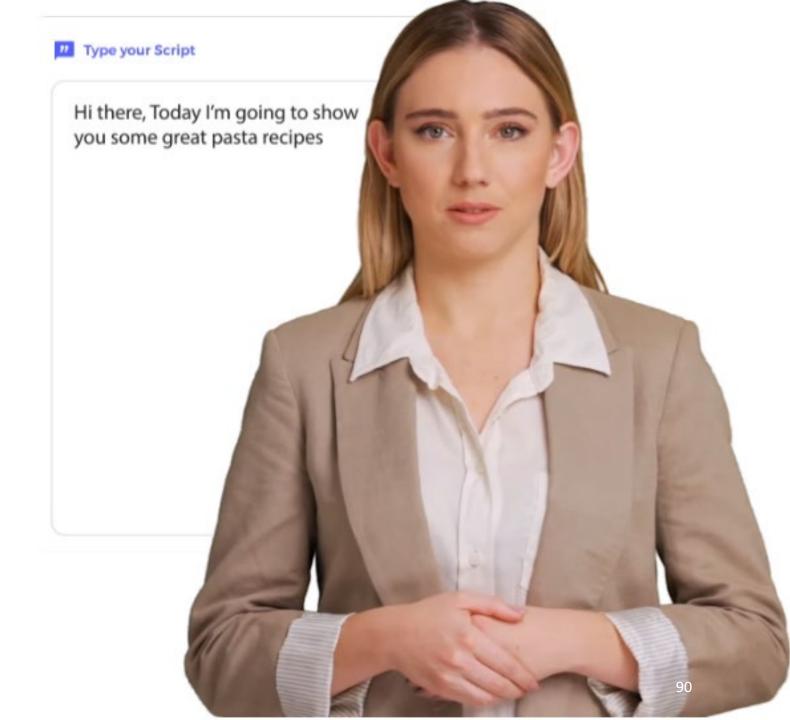
Increased efficiency

• **Significantly cut search time:** Reduce the need for multiple searches by quickly delivering more relevant results.



D-ID Creative Reality Studios

 Generate photorealistic presenter videos by combining images with text at the click of a button, using Al for training materials, corporate communications, social content and more.

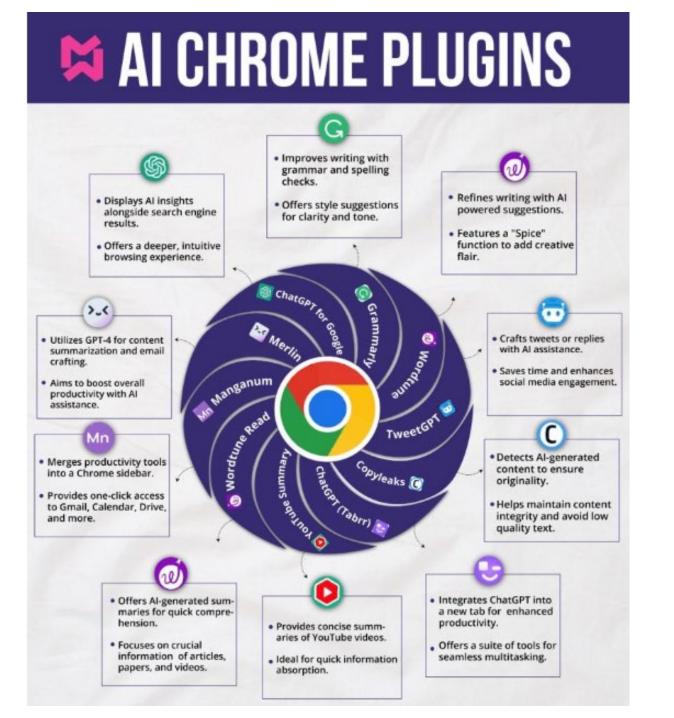


Channel +1



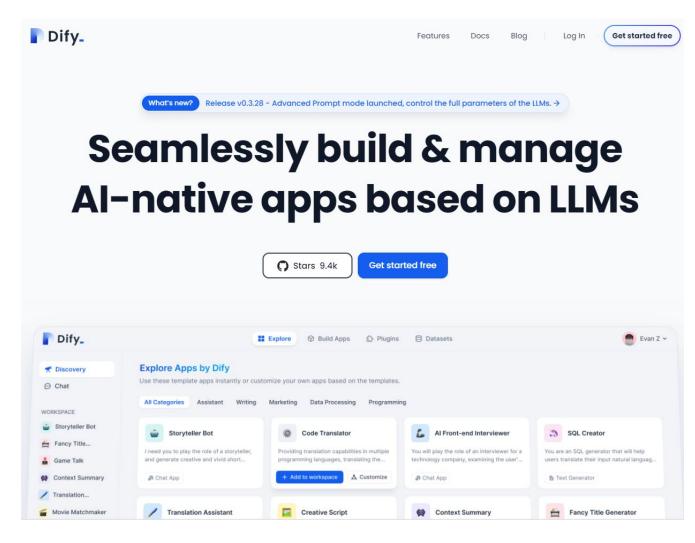
- Fully personalized, localized news aggregation service
- Uses human reporting by "trusted sources" to produce news stories, then presents in a fully custom news channel
- User-selected anchors
- Virtually any language in realtime
- https://www.channel1.ai

Chrome Plug-ins



Dify

 Dify allows for the creation of Al-powered applications within minutes, which can be quickly deployed. This speed and efficiency are complemented by a range of features such as Storyteller Bots, an SQL generator, a code converter, and a text generator. These features save backend coding effort and increase productivity, making Dify an invaluable tool for developers.





Impact & Concerns



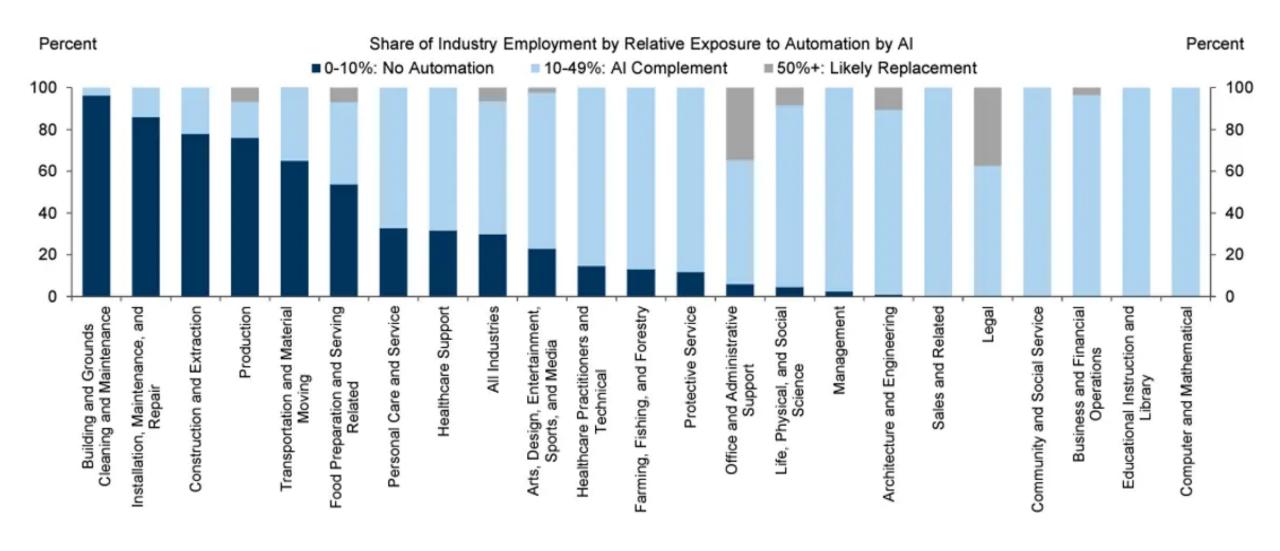


Impact of Generative Al

- Report from analysts at Goldman Sachs.
 - Two-thirds of Euro/American jobs are set to change due to AI automation and up to a quarter of all current work will be taken over by AI.
 - Al could eventually increase annual global GDP by 7%.
- 80 percent of the US workforce could have at least 10 percent of their work tasks affected by GPTs
- Knowledge workers most impacted
- Staffing shortage relief?
- "Fighting against Generative AI is like fighting against calculators!"

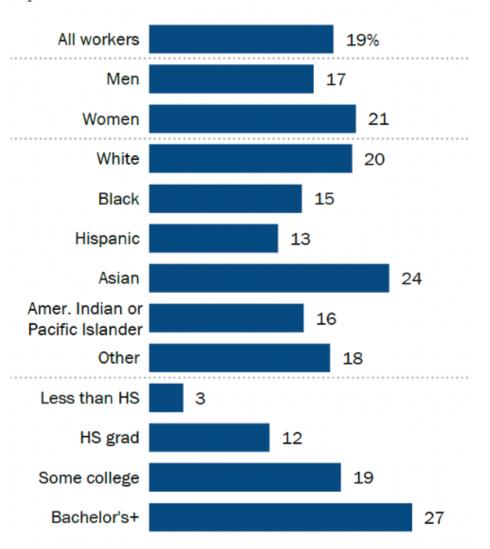


Exhibit 8: Replacement in Legal and Administrative Fields, Little Effect in Manual and Outdoor Jobs, and Productivity-Enhancement Everywhere Else



What shares of workers are most exposed to AI in their jobs?

% of U.S. workers employed in jobs that are the most exposed to AI in 2022





Impact of Generative Al

Possible immediate uses by accountants:

- Technical research / documentation
- Summarize PDFs
- Excel formulas, VBA automation, coding
- Transaction ledger entry & error detection
- Financial analysis and data rendering (charts & graphs)
- Forecasting / predictive analytics
- Fraud detection / risk mgmt
- Tax compliance
- Other significant use-cases
 - Cybersecurity



Generative Al Concerns

Use/Misuse

- Can be used for good, or nefarious purposes cheat on schoolwork, malware/phishing scams, deepfakes, etc.
- Job augmentation vs. replacement?
- Proliferating web-sites

Application

- Prompts can be difficult to write
- Only as good as the LLM, i.e. limited data set (ChatGPT data thru 2021), bias baked-in, etc.
- Copyright considerations original vs. proprietary content (300 billion words...how many are yours?) Demand citations!
- Prone to "hallucinations," fabricated responses that sound plausible but are inaccurate. Includes citing books/articles that actually don't exist! According to Sam Altman, OpenAI CEO – "It's a mistake to be relying on it for anything important right now."



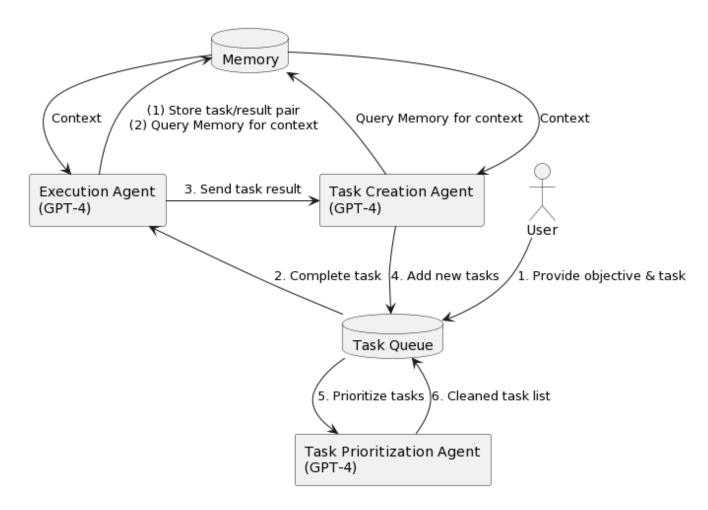
Auto-GPT

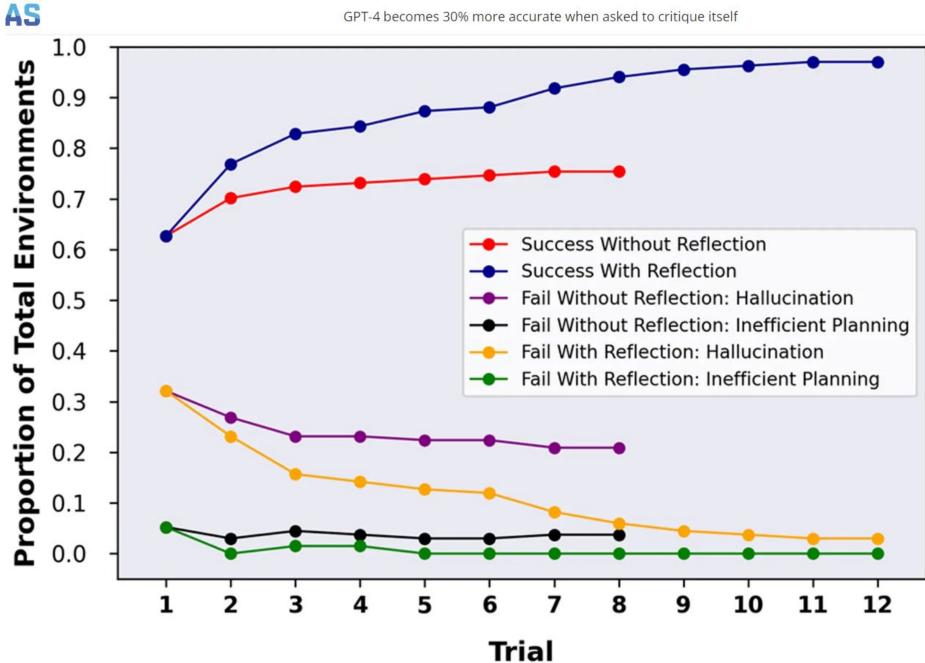
- Open source "recursive AI" application, using GPT-4
- Able to carry out more complex, multi-step procedures than existing LLM-powered applications by creating its own prompts and feeding them back to itself, creating a loop.
- Breaks larger tasks into smaller sub-tasks.
 Original instance acts as "project manager."
- https://autogpt.net



Al Model Stacking

- Al models invoking other models as tools or mediums to accomplish subtasks
 - Self-referrential
 - Reduces hallucinations & improves efficiency
 - Examples:
 - BabyAGI
 - AutoGPT





Generative Al Concerns



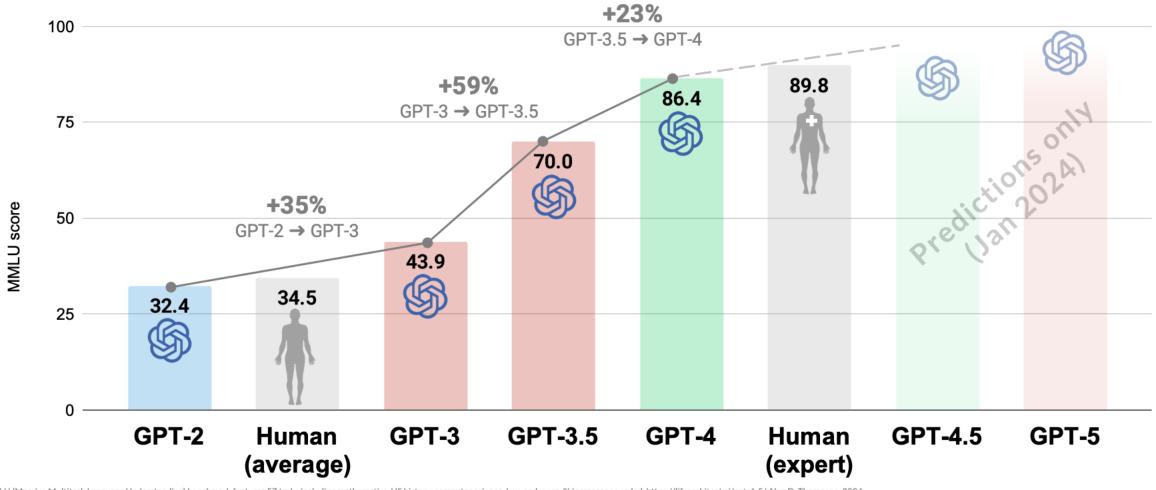
Environment

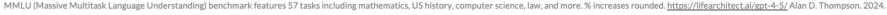
- Insecure environments vulnerable to compromised apps/extensions
- Chat GPT "DAN" mode ("Do Anything Now") "jailbroken" versions that allow users to go against ChatGPT's guidelines.

Privacy

- Risk of exposing confidential data based on additional information fed into chat bots (searchable by others).
- GDPR compliant, i.e. protection against personal information being retained?
- "Right to be forgotten?" possible?
- Al tools can now steal passwords w/ 90%+ accuracy when listening via microphone – phone, Zoom call, etc. (Cornell University study)
- Existential threat to humanity!?

LLMS: SMARTER THAN WE THINK (JAN/2024)









Hume AI EVI

- GPT-4 is 82% more persuasive than humans, and Als can now read emotions
 - Hume Al's "Empathetic Voice Interface" can constantly track tone of voice, and choose it's own tone accordingly
 - Every tiny facial moment and vocal tic is a giveaway to an attentive and well-trained AI body language analyst
 - Demo.hume.ai
- Little doubt **AI** will soon be the greatest manipulator of opinion that the world has ever seen. It can act at massive scale, tailoring an argument to each individual, in a cohort of millions, while constantly refining its techniques and strategies. It'll be in every Twitter/X thread and comments section, shaping and massaging narratives society-wide at the behest of its masters. And it'll never be worse at manipulating us than it is now.

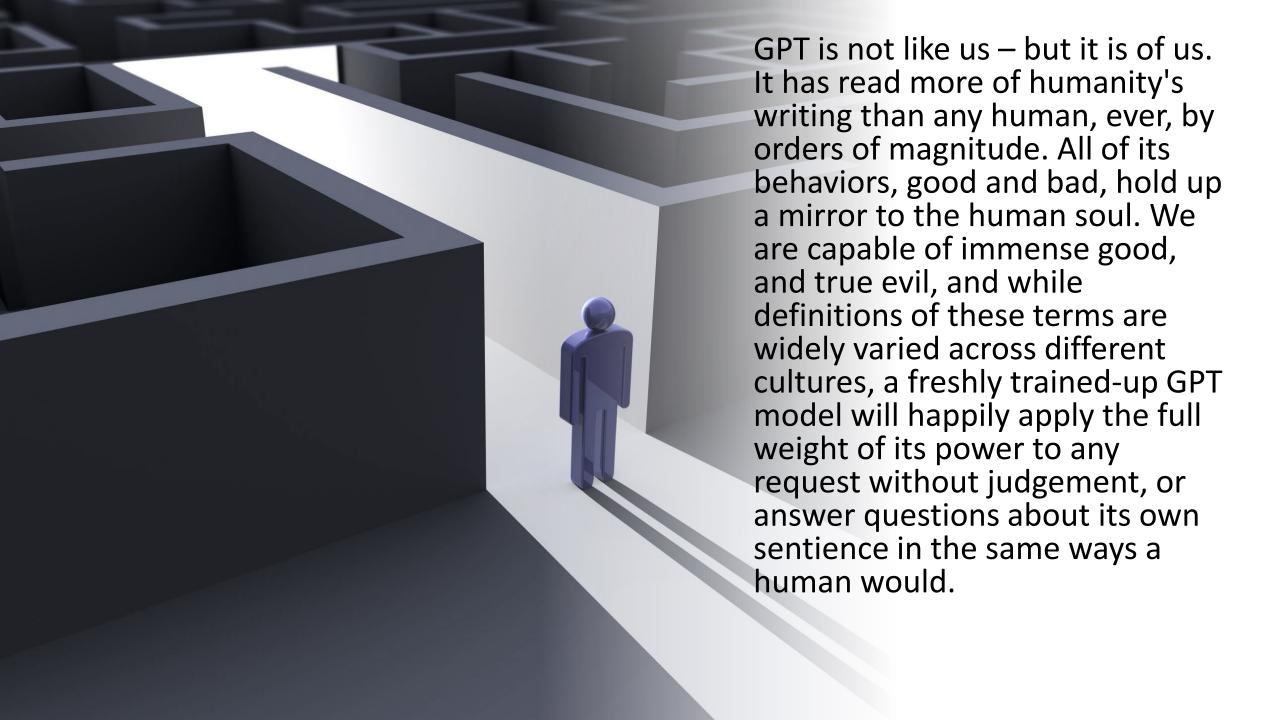






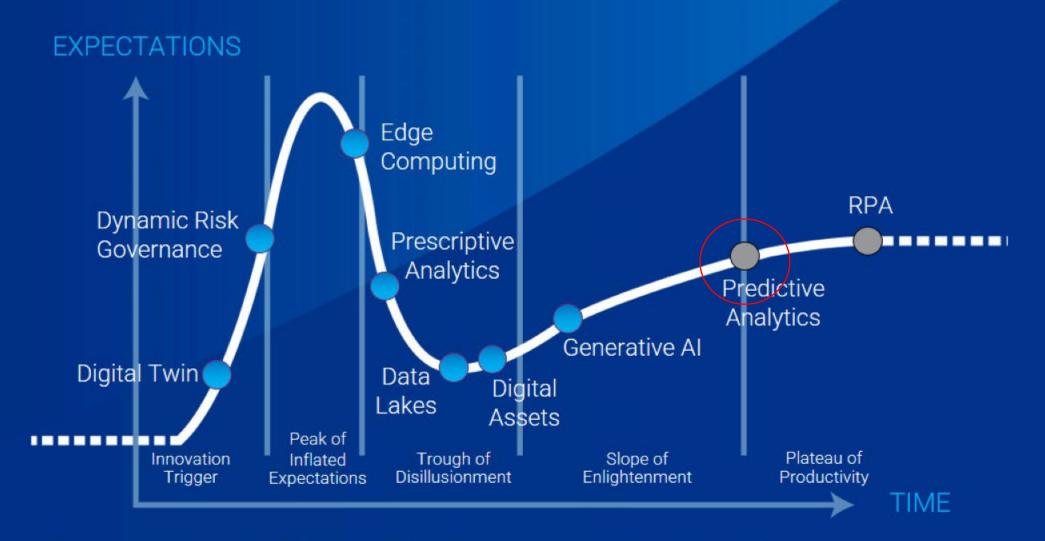
Deep Fakes

- Microsoft VASA-1 https://www.microsoft.com/en-us/research/project/vasa-1
- Alibaba Institute for Intelligent Computer Audio2Video Diffusion Model -https://humanaigc.github.io/emote-portrait-alive/

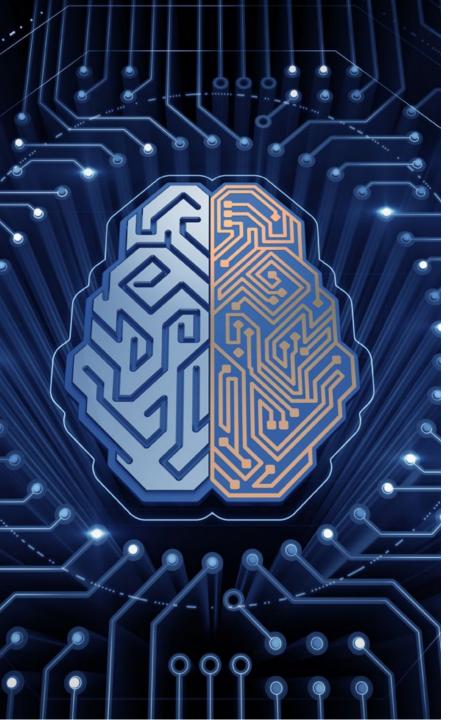


2023 Accounting Profession Technology Megatrends



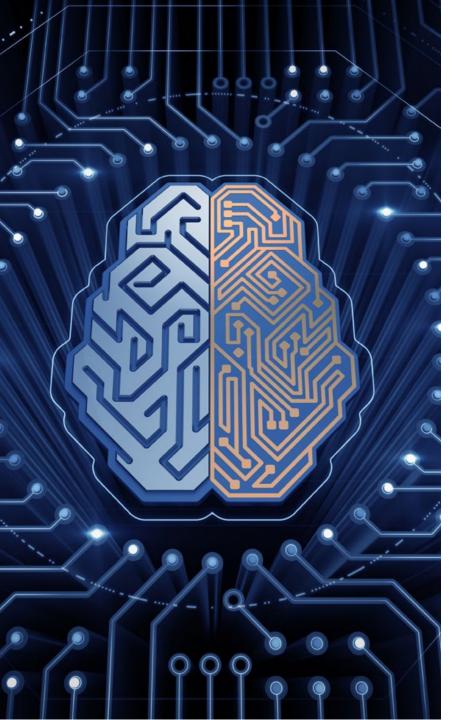


Source: 2022 CPA.com Identified Megatrends Plotted on the Gartner Hype Cycle Framework



Predictive AI - Definition

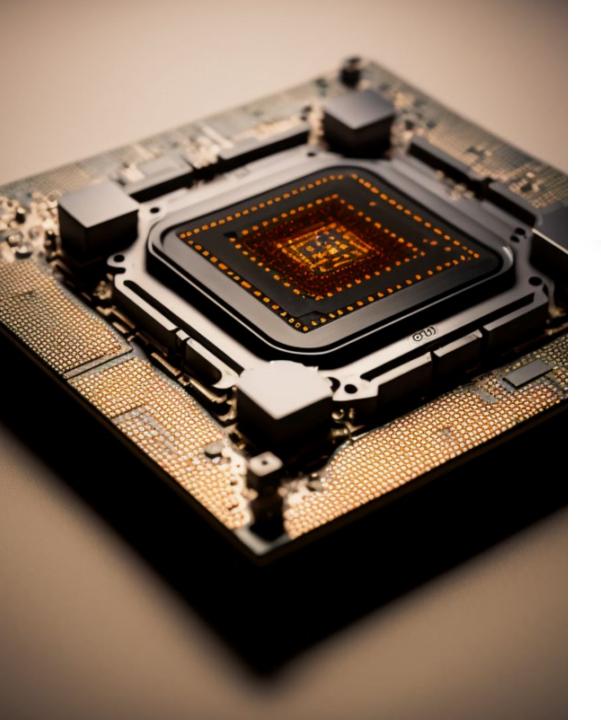
- Predictive AI
 - Studies historical data, identifies patterns and makes predictions about the future that can better inform business decisions.
 - Can detect data flow anomalies and extrapolate how they will play out in the future in terms of results or behavior; enhance business decisions by identifying a customer's purchasing propensity as well as upsell potential; and improve business outcomes.



Predictive AI vs. Generative AI

- Both generative AI and predictive AI use artificial intelligence algorithms to obtain their results. Key differences include:
 - **Creativity** generative AI is creative and produces things that have never existed before. Predictive AI lacks the element of content creation.
 - Inferring the future predictive AI is all about using historical and current data to spot patterns and extrapolate potential futures. Generative AI also spots patterns but combines them into unique new forms.
 - Different algorithms generative AI uses complex algorithms and deep learning to generate new content based on the data it is trained on. Predictive AI generally relies on statistical algorithms and machine learning to analyze data and make predictions.
- Bottom line Generative more creative, Predictive more analytical





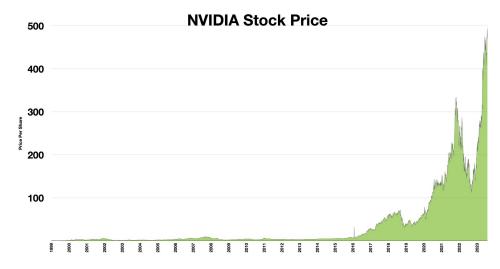
Processor Types

- CPU (central processing unit) not optimized for AI tasks
- GPU (graphics processing unit) most common AI hardware; often several hundred times faster than CPUs
- Purpose-built for AI/ML
 - TPU (tensor processing unit) ASIC (application-specific integrated circuit) developed by Google specifically for accelerating machine learning tasks related to neural networks; uses Google's TensorFlow software.
 - NPU (neural processing unit) specialize in acceleration of machine learning algorithms, typically by operating on predictive models. Prevalent in AI-enabled devices like smartphones and Internet of Things (IoT) gadgets.

Nvidia



- Founded in 1993 focused on graphics-based processing
- Today multi-trillion dollar supplier of Al hardware & software (took only 180 days to go from \$1T to \$2T in 2023)
- Owns >80% of AI chip market

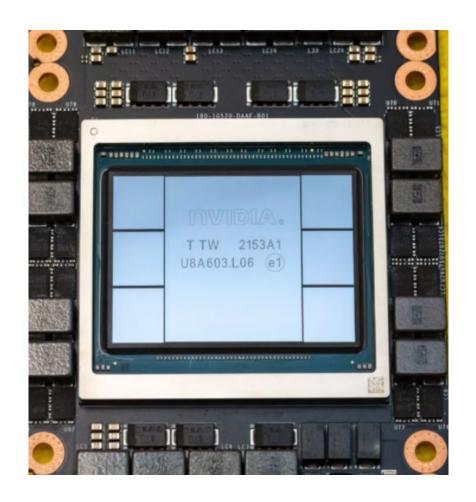


Nvidia



• H100

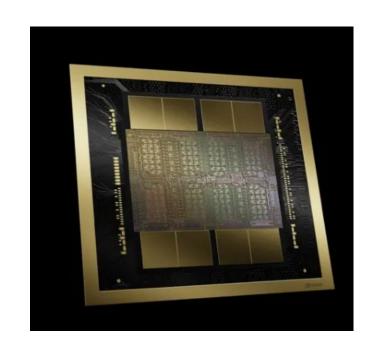
- 9th generation data center GPU (graphics processing unit) chip
- Designed specifically for artificial intelligence (AI) applications
- 80 billion transistors (6x more than predecessor A100 chip)
- 144 streaming multiprocessors
- Lead time for H100 servers is 36-52 weeks due to shortages & demand

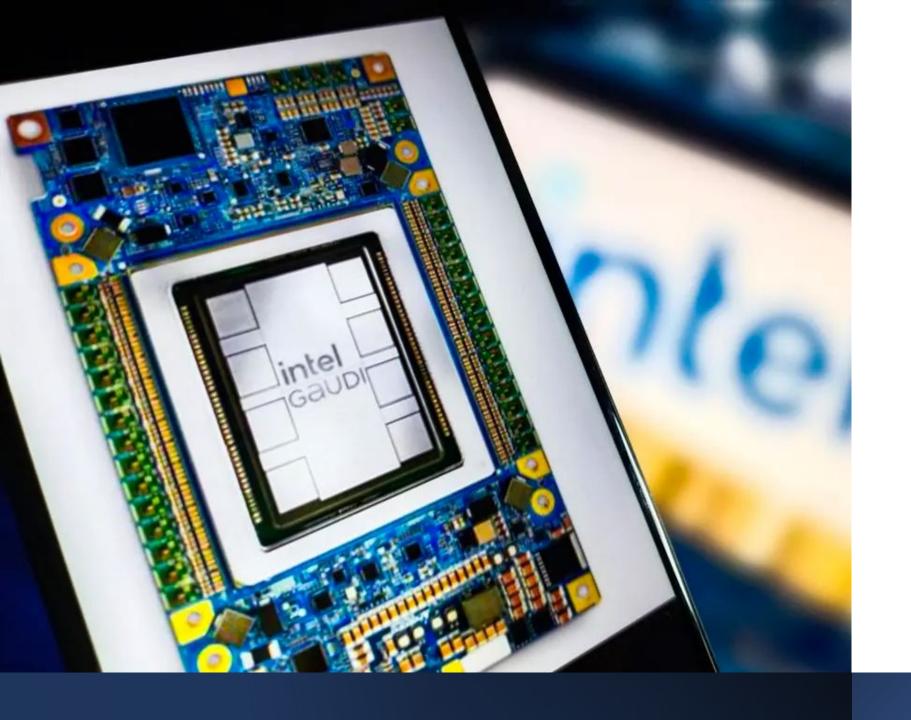


Nvidia



- B200
 - Blackwell architecture
 - "Built to democratize trillion-parameter AI"
 - 208 billion transistors
 - Reduces cost and energy consumption by up to 25x over an H100
 - Example: Training a 1.8 trillion parameter model would have previously taken 8,000 Hopper GPUs and 15 megawatts of power, Nvidia claims. 2,000 Blackwell GPUs can do it while consuming just four megawatts.
 - Approx cost \$30K

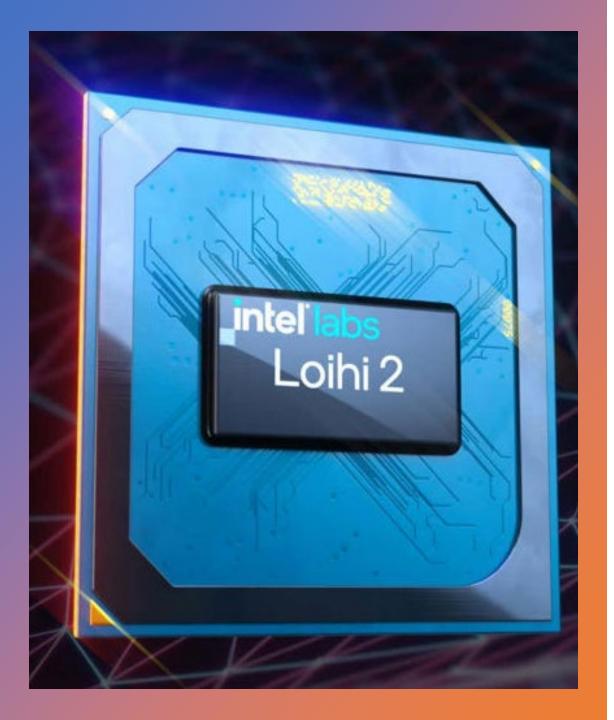




Intel Gaudi 3

 Reportedly more powerefficient and faster than Nvidia's most advanced Al chip (H100 GPU)

• Avail: Q3-24



Intel Hala Point

- World's largest neuromorphic computer a device intended to mimic the operation of the human brain.
- Uses artificial neurons to both store and compute, just as our brains do
- Intel hopes that it will be able to run more sophisticated AI models than is possible on conventional computers
- Contains 1.15 billion artificial neurons across 1152 Loihi 2 chips, and is capable of 380 trillion synaptic operations per second.
- Despite this power it occupies just six racks in a standard server case a space similar to that of a microwave oven
- Uses 100 times less energy

Three Al Engines

with Intel® Core™ Ultra Processor

Heterogenous execution of AI workloads embraces the best practices in AI software design

Deliver up to 34 TeraOPS¹

GPU

High Throughput Ideal for Alaccelerated digital content creation

NPU

Low Power Ideal for sustained AI workloads and AI offload for battery life

CPU

Fast Response Ideal for Iow-latency AI workloads

Intel® Core® Ultra Processor

Up to 11% more CPU compute than Ryzen in an ultrathin PC

3D Performance **Hybrid** Architecture



Up to **70% faster** generative Al performance with GPU and NPU offload

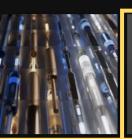
Built-in **NPU** for efficient Al offload



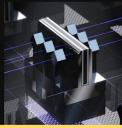
FOVEROS packaging



Up to **16** 22 threads for ultrathin



Thunderbolt™ 4



Intel® Wi-Fi 7 (5Gig)

Streaming video power reduced by **25%** with LP E-cores

First on Intel 4

Built-in

ARC

XeSS

Al upscaling

Up to **2X gaming performance** vs. 13th Gen Intel® Core™ i7 processor at 1080p

The cooler and more efficient gaming CPU

Intel Core Ultra 2005 Series



Intel's NPU 3

First integrated Al engine for enthusiasts

Accelerated Al

With onboard GPU & CPU extensions

Unleashing the GPU

for Gamers & Streamers

Over 300+

Al Accelerated features across CPU+GPU+NPU



What is an AI PC?

A PC with Intel® Core™ Ultra that brings new AI experiences in productivity, creativity, and security through a combination of the CPU, GPU, and the new NPU.

Microsoft's requirements for an AI PC





Qualcomm Snapdragon X Elite

- Built for Al
- Best-in-class processing across CPU, GPU, NPU and micro NPU
 - Qualcomm® Oryon™ CPU
 - Adreno™ GPU
 - Hexagon™ NPU
 - Qualcomm[®] Sensing Hub
- Capable of running generative AI LLM models over 13B parameters on-device with blazing-fast speeds
- 45 NPU TOPS (trillions of operations per second) all-in-one system on a chip (SoC)
- 5G and Wi-Fi 7 support
- Multiple days of battery life



Microsoft Copilot+ PC



- State of the art processors –
 40 TOPs (trillions of operations per second)
- All day battery life
- Connectivity to LLMs in Azure cloud with SLM local processing, powering Recall, Cocreator and Live Captions functionality







Surface Laptop – 7th Edition (Copilot + PC)

- Display: 13.8-inch, 2,304x1,536 pixels or 16-inch, 2,496x1,664 pixels
- CPU: Snapdragon X Plus or Snapdragon X Elite
- Memory: 16GB, 32GB or 64GB
- Storage: 256GB, 512GB or 1TB
- Battery: 13-22 hours
- 2 USB-C, Wi-Fi 7
- Bluetooth 5.4
- Weight: 3+ lbs
- Price: starting at \$1,000
- Available: Jun-24







Surface Pro – 11th Edition (Copilot + PC)

- Display: 13-inch, 2,880x1,920 pixels, 120Hz, OLED, touch
- CPU: Snapdragon X Elite
- Memory: 16GB or 32GB
- Storage: 512GB or 1TB
- Battery:
- 2 USB-C, Wi-Fi 7
- Bluetooth 5.4
- Weight: 2 lbs
- Price: \$1,500
- Available: Jun-24





ThinkPad T14s Gen 6 (Copilot + PC)



• Display: 14" 2.8K OLED (2880 x 1800) or

14"16:10 full HD IPS display

CPU: Snapdragon X Elite

Memory: up to 64GB

Storage: up to 1TB

Battery: multi-day

Two USB-C, two USB-A

Wi-Fi 7

Bluetooth 5.3

Weight: 2.72 lbs.

Price: starting at \$1,699

Available: Jun-24





ThinkPad Yoga Slim 7x (Gen 9) (Copilot + PC)*



- Display: 14.5" 3K (2944 x 1840), OLED
- CPU: Snapdragon X Elite
- Memory: up to 32GB
- Storage: up to 1TB
- Battery: multi-day
- Three USB4
- Wi-Fi 7
- Bluetooth 5.4
- Weight: 2.82 lbs.
- Color: Cosmic Blue
- Price: starting at \$1,199
- Available: Now









HP EliteBook Ultra (Copilot + PC)

• Display: 14-inch 2.2K (2,240 x 1,400), touchscreen, IPS

• CPU: **Snapdragon X Elite** X1E-78-100 (up to 3.4 GHz, 12 cores)

GPU: Qualcomm Adreno GPU

• RAM: 16GB

• Storage: 512GB

Ports: 2x USB-C, 1x USB-A

Connectivity: Wi-Fi 7, Bluetooth 5.4

Battery: 26 hours

Weight: 2.97 pounds

Price: \$1,699 (starting)

Avail: Jun-24





Biggest-ever Photos update









Text effects









0.



Home Screen customization

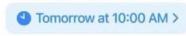












Send Later in Messages



on Home Screen



Larger icons

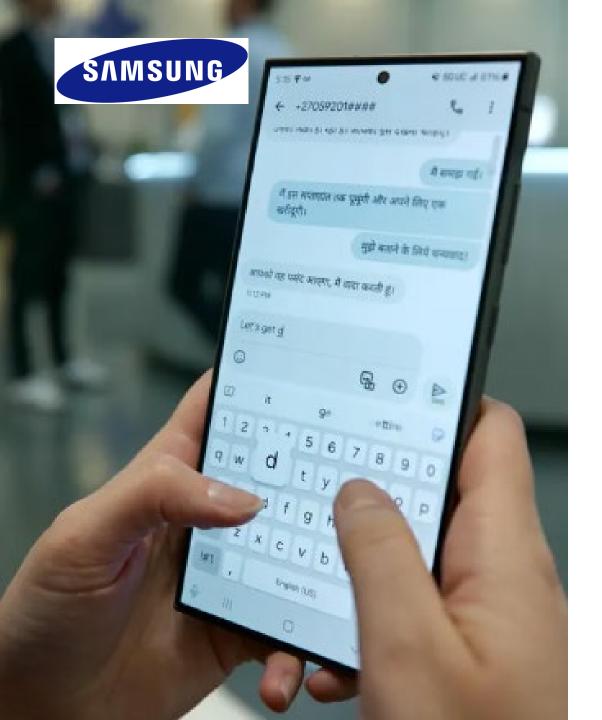


Apple Intelligence*

- Available beginning w/ iOS 18.1
- Compatible with iPhone 15 Pro & iPhone 16, iPad Pro & iPad Air (M1 or better)
- Initial features include:
 - Writing Tools
 - Siri enhancements, including product knowledge, more resilient request handling, new look and feel, more natural voice, the ability to type to Siri
 - Clean Up in Photos eliminate unwanted objects
 - Create a Memory movie in Photos
 - Natural language search in Photos
 - Notification summaries
 - Reduce Interruptions Focus
 - Intelligent Breakthrough & Silencing in Focus
 - Priority messages in Mail
 - Smart Reply in Mail and Messages
 - Summaries in Mail and Messages

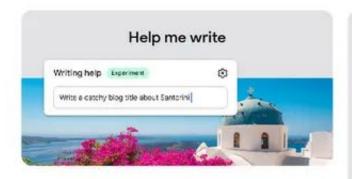






S24 Al Features

- Chat Assist for changing the tone, translating or spell-checking your text message before sending it.
- Live Translate for translating calls in 13 languages during a conversation.
- Circle to Search, which lets you launch a Google search for any object in a photo just by circling it.
- **Note Assist** for summarizing, translating and formatting files in Samsung's Notes app and generating digital covers for notes.
- **Generative Edit**, which like <u>Google's Magic</u> <u>Editor</u> lets you manipulate and move objects in photos.
- Transcript Assist in Samsung's recording app for providing transcriptions and summarizing conversations.

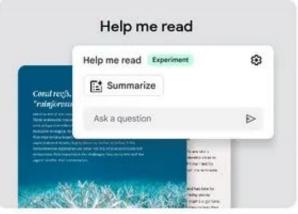






Magic Editor





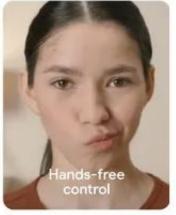






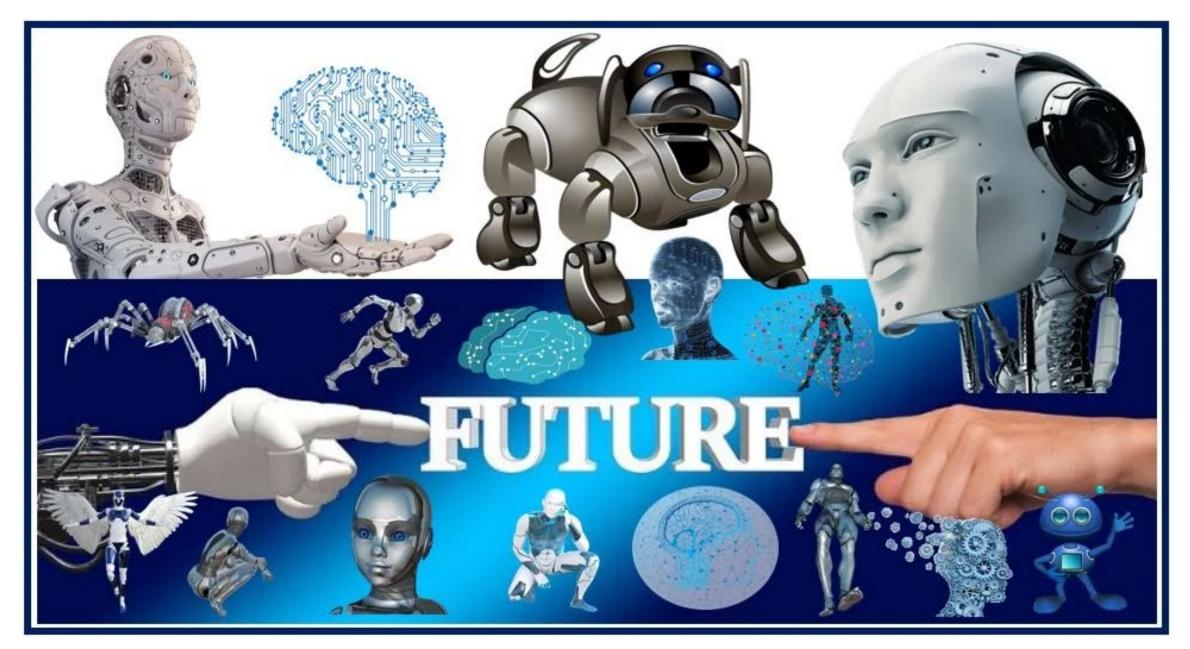
Gemini Advanced

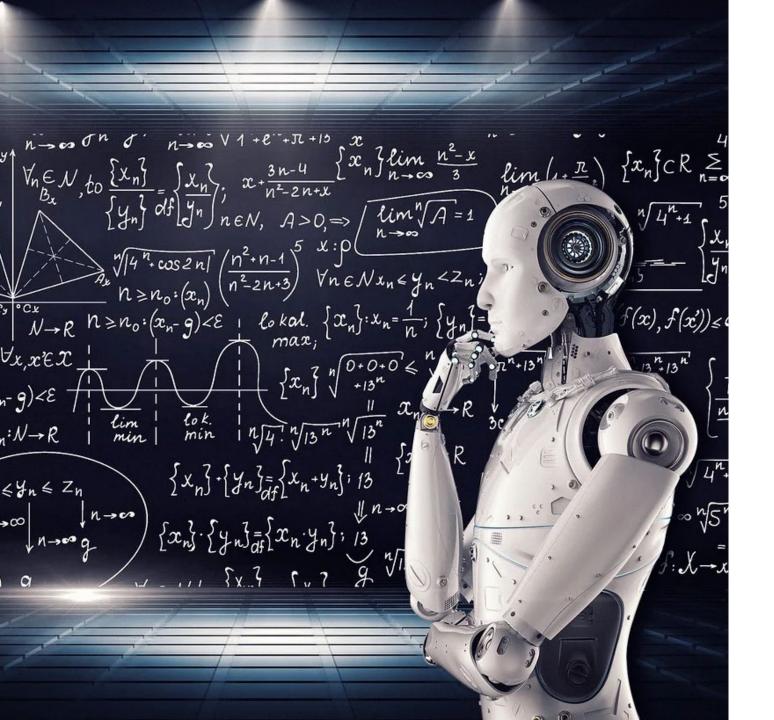












Upcoming...

- LMs
 - GPT-5
 - AGI(?)
 - Avail mid-24
 - Compact LMs running on PCs & smart mobile devices
- Quantum computing
- Use cases
 - Medicine
 - Personalized medicine -<u>Hippocratic AI</u> (\$9/hr.)
 - Disease diagnosis
 - Drive-thru Al
 - Al lawyers (verify references!)
- Other
 - Humanoid robots



Future of Life Institute (FLI)

- Non-profit organization that <u>aims to reduce</u> <u>global catastrophic and existential risks</u> <u>facing humanity</u>, particularly existential risk from advanced artificial intelligence (AI)
- Published open letter, signed by thousands of AI researchers and concerned others, including Apple cofounder Steve Wozniak, SpaceX, Tesla and Twitter CEO Elon Musk; Stability AI CEO Emad Mostaque; Sapiens author Yuval Noah Harari; and Yoshua Bengio, founder of AI research institute Mila.
- Citing "an out-of-control race to develop and deploy ever more powerful digital minds that no one — not even their creators — can understand, predict or reliably control," the letter called for a 6month pause in the development of anything more powerful than GPT-4
- Additional time would allow ethical, regulatory and safety concerns to be considered and states that "powerful AI systems should be developed only once we are confident that their effects will be positive and their risks will be manageable.



OpenAl Superalignment team

- Led by Ilya Sutskever (Chief Scientist & co-founder)
- Predict AI with intelligence exceeding that of humans could arrive within the decade.
- Won't necessarily be benevolent, to researching ways to control/restrict
- Team aims to solve the core technical challenges of controlling superintelligent AI over the next four years (currently cant steer or control superintelligent AI, and stop it from going rogue).

function useSearchBadges(badges) (const [query, setQuery] = React useState const [filteredBadges, setFilteredBadges 10 11 React.useMemo(() ⇒ { 12 const result = badges.filter(badge = 13const normalizeQuery = query.tolourised 14 15 return nameComplete.includes(normalizeGenral) 16 ··}); 17 18 setFilteredBadges(result); 19 20 }, [badges, query]); return { query, setQuery, filterediates } 21 22 23 24 function BadgesList(props) (const badges = props.badges; 25 · const {query, setQuery, filtered 26 if(filteredBadges.length == 0) 27 28 uses fore-

Al Alliance

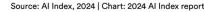
- Meta and IBM are joining more than 40 companies and organizations to create an industry group dedicated to open source artificial intelligence work, aiming to share technology and reduce risks.
- Focus on the responsible development of AI technology, including safety and security tools.
- Group also will look to increase the number of open source AI models

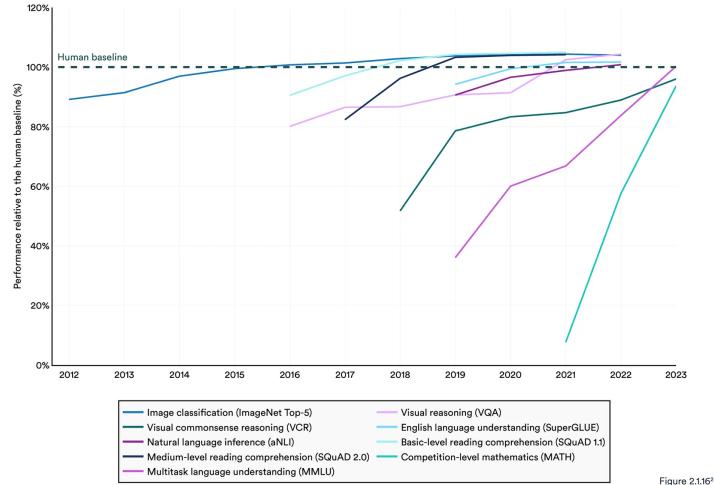
 develop new hardware and team up with academic researchers.

Stanford Artificial Intelligence Index Report 2024

Al now surpasses humans in almost all performance benchmarks

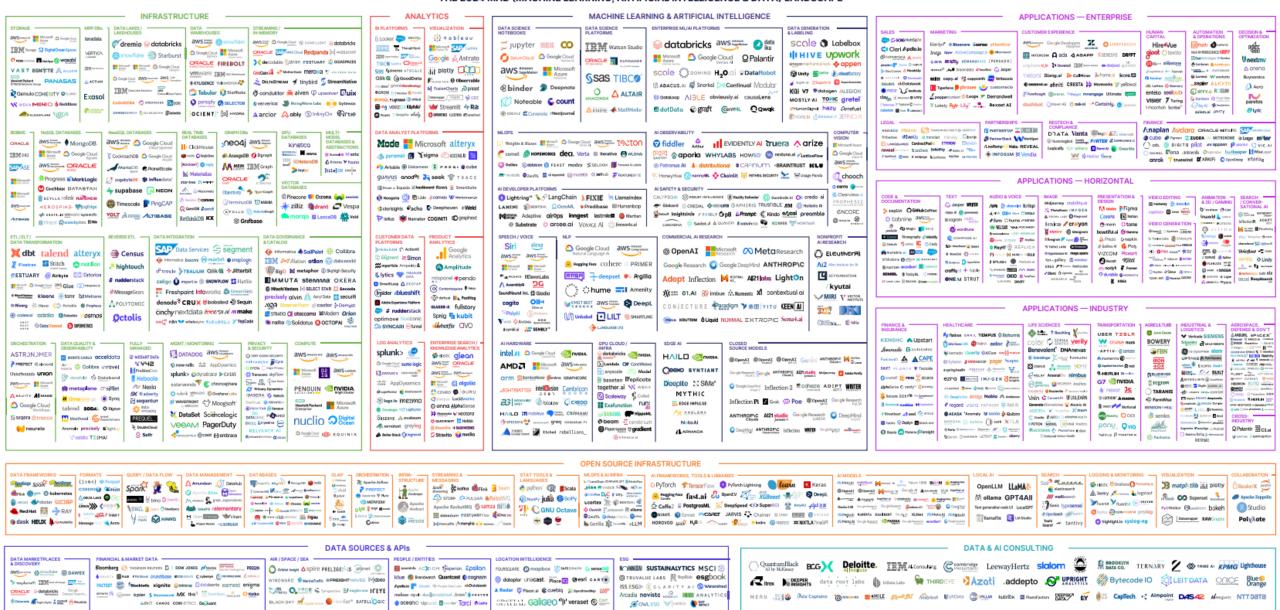
Select AI Index technical performance benchmarks vs. human performance



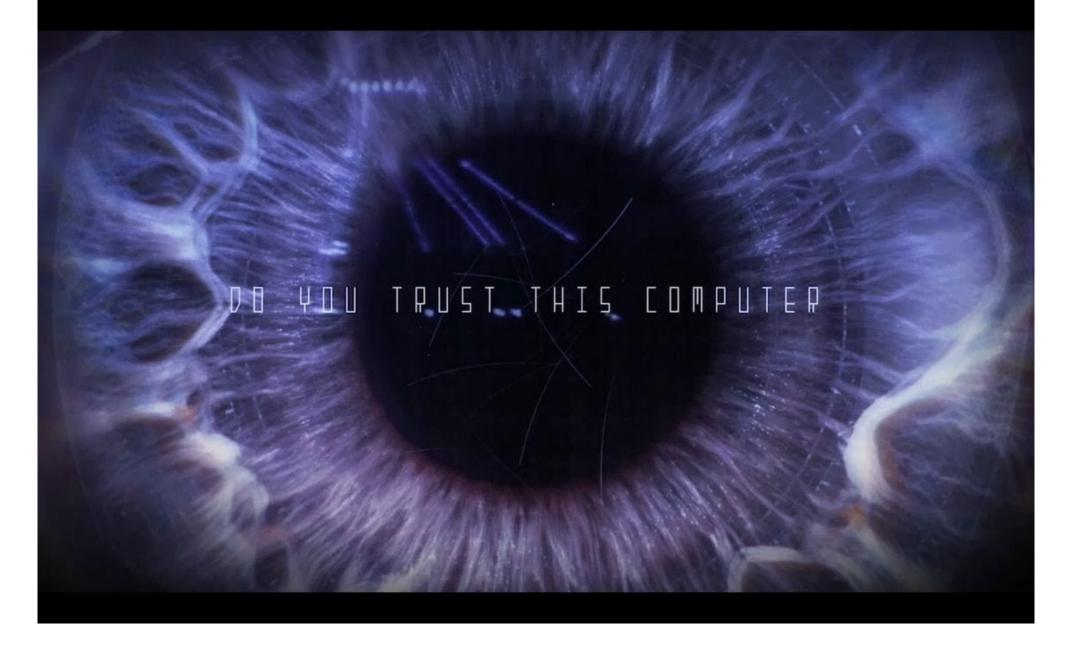


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THE 2024 MAD (MACHINE LEARNING, ARTIFICIAL INTELLIGENCE & DATA) LANDSCAPE







doyoutrustthiscomputer.org



Thank You for Joining Us



David Cieslak, CPA.CITP, GSEC EVP, Chief Cloud Officer

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Connect on Twitter & LinkedIn:

X:@dcieslak

in: linkedin.com/in/davidmcieslak