

Artificial Intelligence

**From Theory to Reality: An In-Depth Analysis of Artificial Intelligence
Challenges, Impacts, Risks, and Opportunities**

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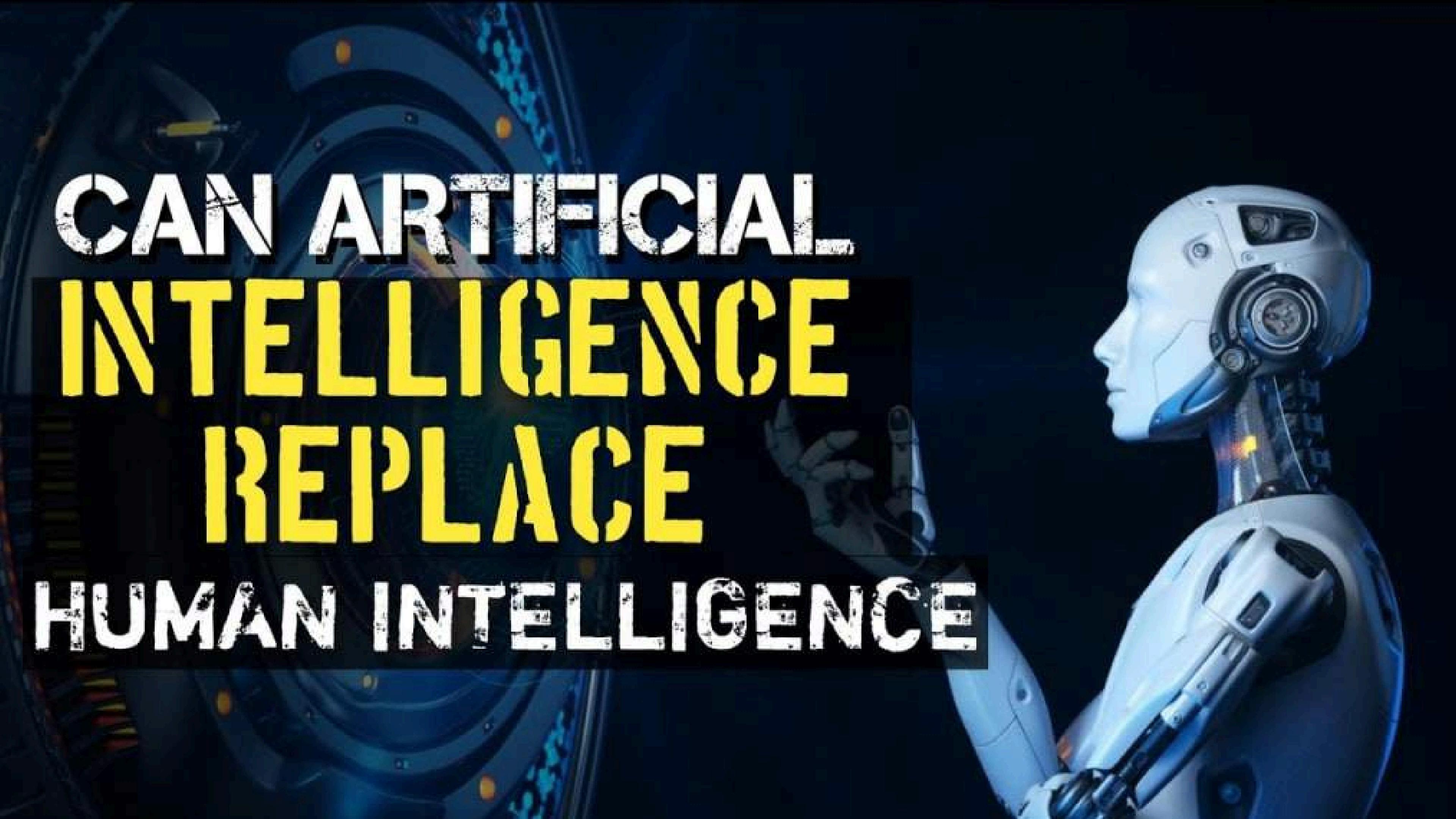
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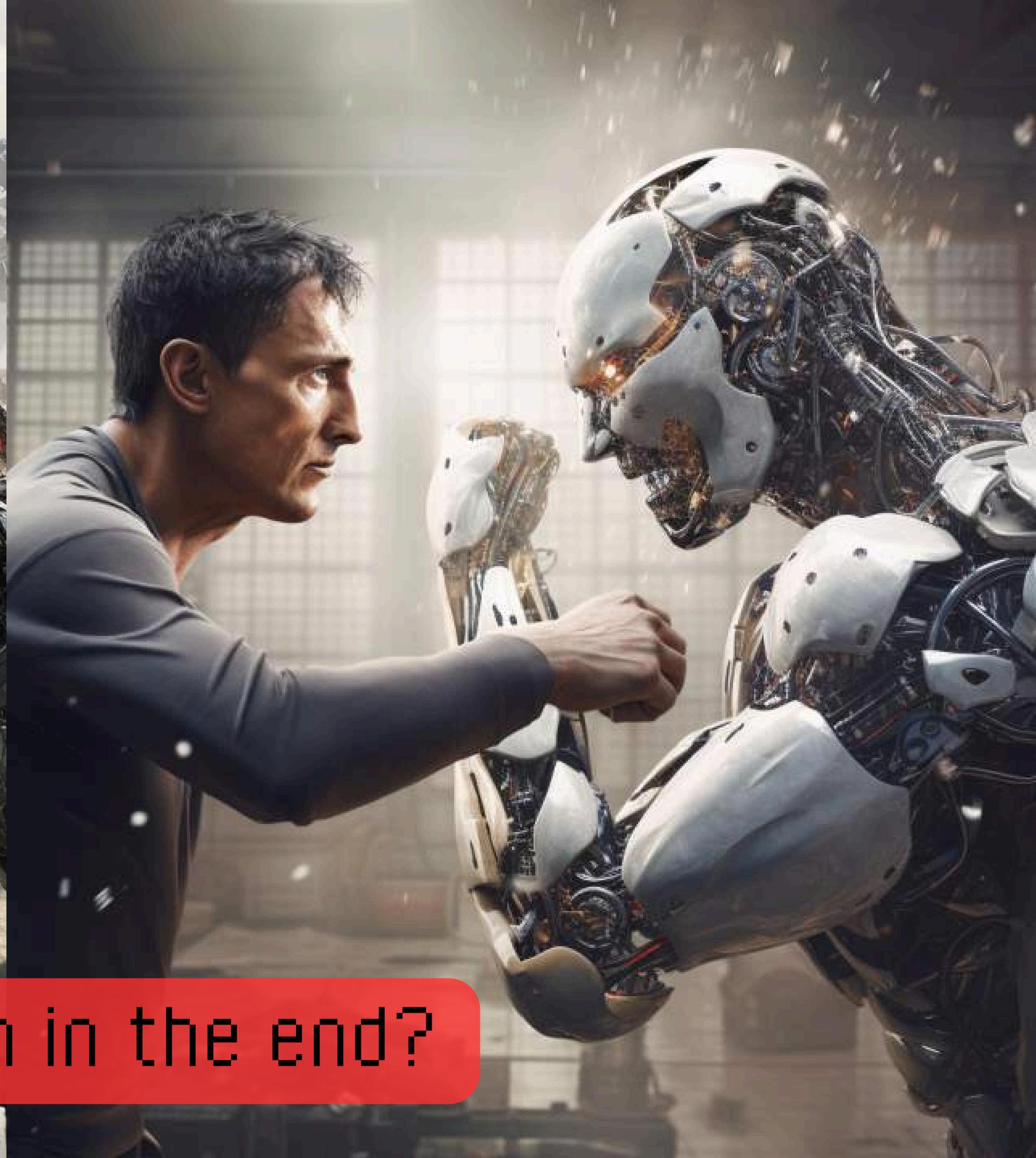


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**CAN ARTIFICIAL
INTELLIGENCE
REPLACE
HUMAN INTELLIGENCE**



Who will win in the end?

Introduction



Welcome, everyone, to the captivating world of Artificial Intelligence, where machines learn, adapt, and amaze. Today, we embark on a journey through the digital frontier, where algorithms unlock mysteries, creativity merges with code, and innovation knows no bounds. Join us as we explore the past, present, and thrilling future of AI, where science fiction becomes science fact, and the possibilities are as limitless as the imagination itself.

Main 3 Steps of AI process



Data CollectionData and Preparation

Gather relevant data from diverse sources and Clean, normalize data.



Algorithm Selection and Training

Choose and train ML/DL algorithms for peak performance.



Evaluation and Deployment

AI model is deployed into real-world applications, where it continues to learn and adapt based on new data and feedback.

What are AI Tools?

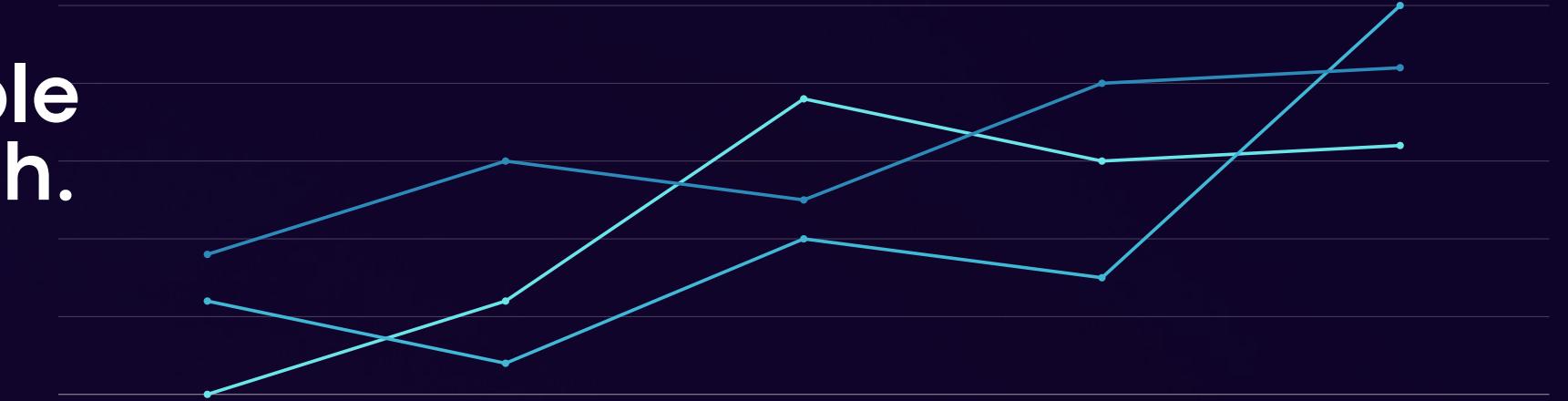
Artificial intelligence tools are software applications that use machine learning to perform specific tasks. AI tools are designed to adapt to data so they can learn from it to improve their performance and simulate humans' decision-making process.



1. AI Tool Usage is Way Higher Than People Expect – Beating Netflix, Pinterest, Twitch.

As measured by data analysis platform Similarweb based on global web traffic tracking, the AI tools in this list generate over 3 billion monthly visits.

With 1.67 billion visits, ChatGPT represents over half of this traffic and is already bigger than Netflix, Microsoft, Pinterest, Twitch, and The New York Times.



ChatGPT is Commanding 1.6 Billion Monthly Visits

ChatGPT brings in over 1.6 billion monthly visits, putting it above giants like Netflix and The New York Times.

■ Monthly Traffic (Visits)



Source: Similarweb • Created with Datawrapper

2. AI Tools Usage is Surprisingly Concentrated Around a Few Winners

So yes, ChatGPT is the leader by a mile, taking over 50% of the billions of monthly visits.

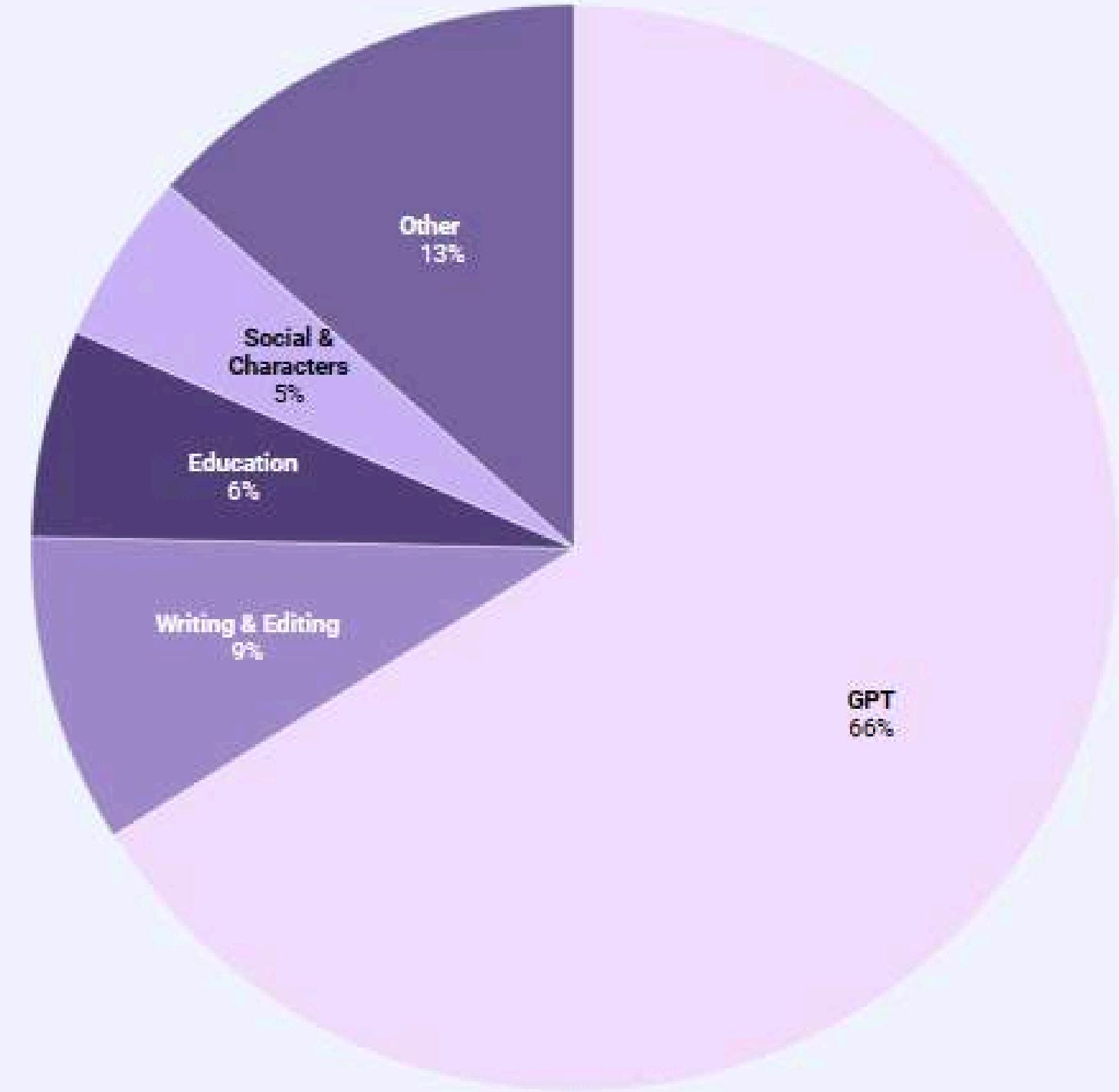
Add other "General GPTs" like Bing AI, Bard, Claude, and Microsoft Copilot, and it gets even more worrying: together they take 66% of all Generative AI usage.

That's a significant amount of influence and power in just a few major platforms, which could lead to monopoly concerns and stifled innovation.

Even beyond ChatGPT, tools like Grammarly AI and Character.AI dominate their respective categories, with Grammarly commanding a substantial user base in Writing & Editing, and Character.AI in Social & Characters.

Generative AI Top 150 – AI Tools by Category

This is what the Top 150 AI Tools in February 2024 looks like by category. While GPT has fewer tools, they demand most of the traffic. Reversely, in Writing & Editing, it takes 20 tools to gather 9% of all traffic.



3. The Talk about AI is "Writing and Images" but Usage is in AI Chat Buddies and Homework Help.

The Top 10 of AI Tools includes some unexpected winners.

While what we read is often about creating text and images, 3 out of the top 10 applications are in education: Brainly, CourseHero, and Turnitin. And the category of Social & Chatting apps has a huge winner in Character.AI, which takes the 4th place across ALL platforms.

Some unexpected winners in AI include:

- **Grammarly AI** comes in at number 3, provides 30 million people support and coaching on writing effectively.
- **Character.AI** the breakout hit, is the #4 most used AI tool. It offers over 18 million characters to choose from, alongside tools to practice a new language or interviewing. Users reportedly spend over 2 hours per day on average with these AI buddies.
- **Brainly**, the number 6 AI Tool globally, lets students take a photo of an assignment and get expert-verified support. AI education tools like Brainly show how a generation is growing up with AI as a natural part of their daily lives, creating a massive impact on how we work in the future.

The full top 10 looks as follows:

Top AI Tools (February 2024)

What are the top AI tools globally? Data from Similarweb and Ahrefs shows an unexpected picture with sleeper hits like Character.AI and Brainly in the Top 10.

	Name	Category	Description
1	ChatGPT (incl. Dall-E)	GPT	
2	Bing AI	GPT	Integrates ChatGPT into Bing search.
3	Grammarly AI	Writing & Editing	Checks writing in real-time and coaches for improvements.
4	Character.AI	Social & Characters	Lets you chat with over 18 million AI Characters.
5	Bard	GPT	Google's version of ChatGPT.
6	Brainly (Homework Help)	Education	Helps students with their homework based on a photo of the exercise.
7	CourseHero (Tutoring)	Education	Lets students upload or select a textbook they need help with.
8	Replit	Programming/Coding	Helps programmers create and deploy web applications.
9	TurnItIn (AI Detection)	Education	Helps teachers detect AI content in student's homework.
10	DeepAI	Image Generator	Creates images from prompts, alongside other AI tools.

4. There's an AI for Everything – 60+ AI Platforms With Over 1 Million Monthly Visits Cover All Needs

From architects (Prome AI) to English learners (ELSA) and from video creators (InVideo, RunwayML) to singles looking for an AI girlfriend (Candy AI), millions of people are finding an AI platform that works for their particular needs.



Other AI platform represents:

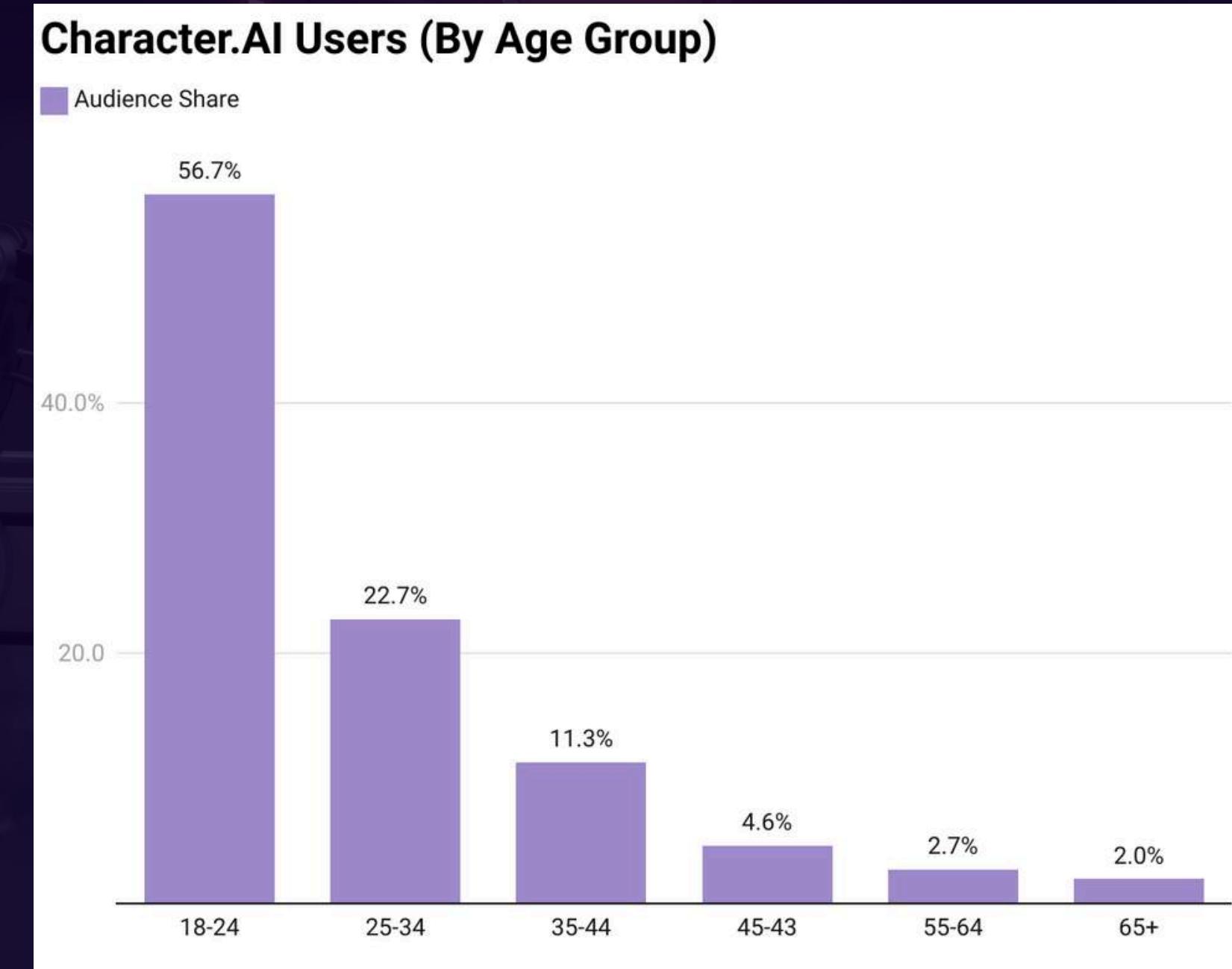
- Generate video and animation from text, including "deepfakes"
- Produce audio voice clones
- Take meetings on your behalf
- Produce podcasts
- Create social content
- Organize your workday
- Train employees
- Create logos
- Answer customer questions
- Analyze data

5. A New Generation is Growing Up With AI – Employers, Take Note

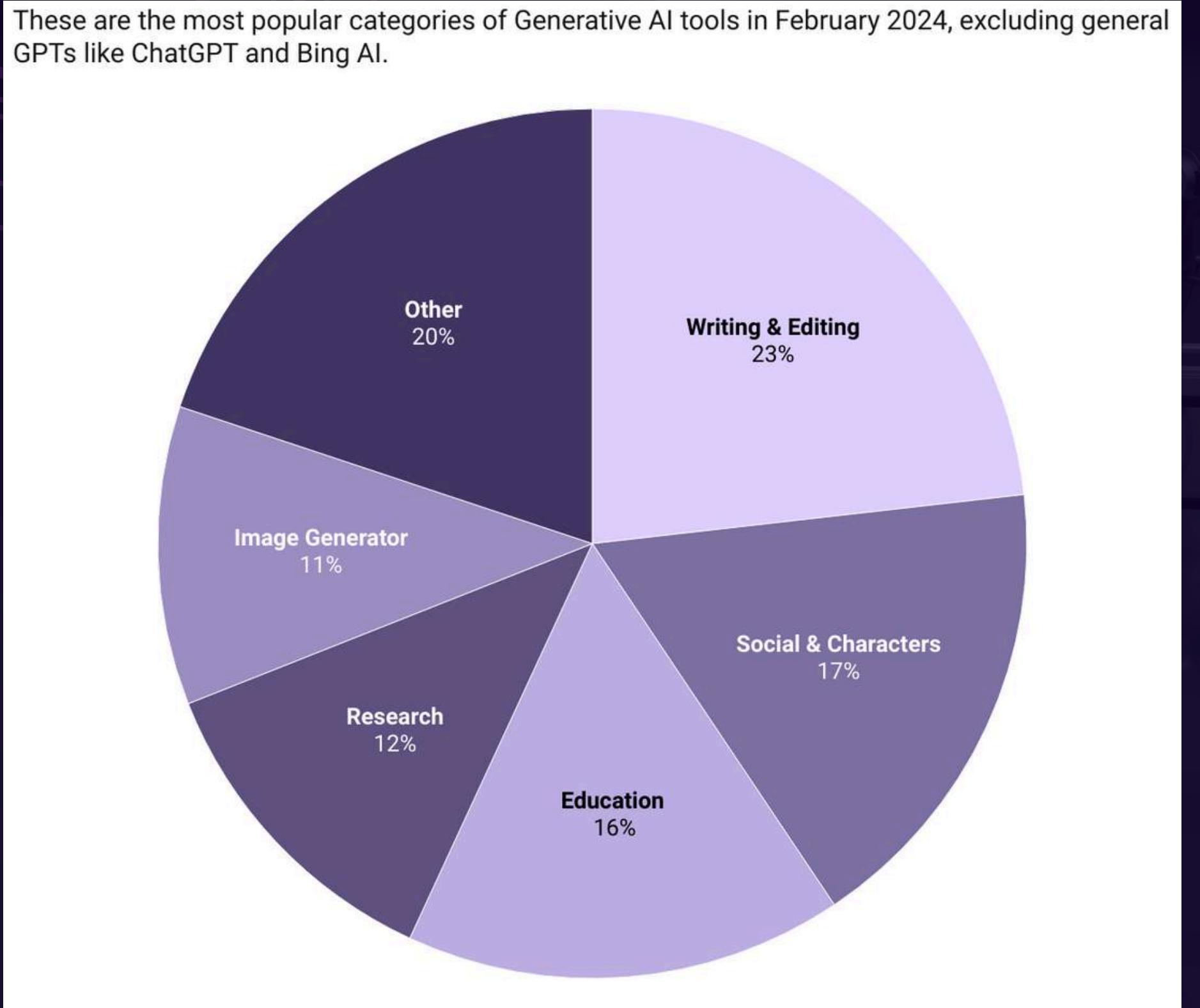
Getting highly personalized help when you're dealing with a school assignment warms you up for AI to be alongside you in the workplace.

Many leading Learning & Development platforms are already investing in this technology to help employees, and startups like Kona are building AI coaching tools for managers.

The ease with which younger generations confide in AI chat buddies, for on average two hours per day, shows how in the future, we could easily see AI team members fluently integrated and managed alongside human ones.



Without ChatGPT, Bing AI, Bard, Claude, and Microsoft Copilot, this is how the top AI categories break down:





78 Key Statistics about AI

The age of artificial intelligence is truly here.

In 2023, we saw a series of monumental developments in the world of AI—from the launch of OpenAI's GPT-4 to Google's rollout of AI-powered search.

And after a year of such drastic technological changes, businesses of all sizes are wondering to what extent they should ride the AI wave.

Today, we'll explore the most up-to-date artificial intelligence stats to help you decide if it's time for your business to embrace AI.

Most Important AI Statistics

- AI could add a staggering \$25.6 trillion to the world's economy (McKinsey, 2023)
- Two-thirds of jobs could be partially automated by AI. But many of these jobs will be complemented by AI, not substituted by it. (Goldman Sachs, 2023)
- In 2023, the global AI market size was close to \$208 billion. By 2030, the market size is expected to reach nearly \$2 trillion (Statista, 2023)
- In 2023, the global AI market was valued at \$142.3 billion (Statista, 2023)
- Seventy-three percent of U.S. companies use AI in some aspect of their business (PwC, 2023)
- Over 25% of investments in American startups went to an AI-related company in 2023. By comparison, artificial intelligence startups received around 12% of total funding between 2018 and 2022. (Crunchbase, 2023)
- Following its release in November 2022, ChatGPT reached over a million users in five days and 100 million users within two months. This made it the fastest-growing consumer app ever at the time (a record since beaten by Facebook's Threads app). (Statista, 2023)
- Fifty-four percent of companies had used generative AI in their business by November 2023—just one year since ChatGPT was released (PwC, 2023)
- OpenAI (the company behind ChatGPT) is seeking a valuation of up to \$90 billion as of October 2023 (New York Post, 2023)
- Over 20% of generative AI users are 25- to 34-year-olds (Insider Intelligence. 2023)

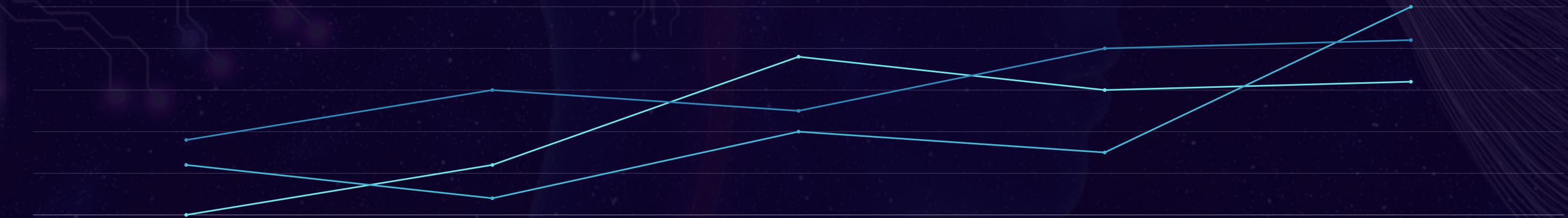


AI Statistics for Business

- Organizations estimate that 34% of all business-related tasks today are performed by machines (World Economic Forum, 2023)
- On average, businesses can expect a 6% to 10% revenue increase from adopting AI (Statista, 2023)
- AI could increase labor productivity growth by 1.5 percentage points over the next decade (Statista, 2023)
- Over 80% of Fortune 500 companies had adopted ChatGPT within their business by August 2023 (OpenAI, 2023)
- Forty-six percent of American companies have saved between \$25,000 and \$70,000 by using ChatGPT (Statista, 2023)
- In October 2023, 55% of organizations were piloting or implementing generative AI solutions (Gartner, 2023)
- In July 2023, 79% of corporate strategists said that technology like artificial intelligence would be critical to their success in the next two years (Gartner, 2023)



- The global market size for AI in manufacturing was \$5 billion in 2023 and is forecast to reach \$68 billion by 2032 (Precedence Research, 2023)
- The global market size for AI in telecommunication was \$1.45 billion in 2022. It's expected to grow at a compound annual growth rate of 28.2% from 2023 to 2030 (Grand View Research, 2023)
- The retail AI market is expected to grow at a compound annual growth rate of 30% from 2023 to 2030 (Global Market Insights, 2023)
- One-fifth of all industries use artificial intelligence across service operations and corporate finance (Statista, 2023)
- Over 30% of financial services companies use AI in product development (Statista, 2023)
- Automation in the education sector is expected to increase threefold with the use of AI (Statista, 2023)
- The market size for AI in security was \$21 billion in 2023 and is forecast to reach over \$50 billion by 2028 (Mordor Intelligence, 2023)
- The wearable AI market was valued at \$20 billion in 2023 and is expected to reach \$230 billion by 2033 (Fact MR, 2023)



AI Adoption Statistics and the Job Market

- Existing AI technologies can automate tasks that absorb between 60% and 70% of workers' time today (McKinsey, 2023)
- Around 80% of U.S. workers could have at least 10% of their work affected by generative AI. 19% of the workforce could see more than half of their work affected. (OpenAI, 2023)
- AI adoption could lead to at least 20% of enterprise employees needing to be reskilled (Statista, 2023)
- Data management positions are likely to see the biggest impact from AI. Around 90% of data processing positions and 80% of data collection positions will likely become automated due to generative AI. (Statista, 2023)
- At 78%, legal occupations are the U.S. jobs most influenced by generative AI (Forrester, 2023)
- Fifty-two percent of employed U.S. adults are concerned AI will replace their jobs (Mitre, 2023)
- Forty-seven percent of businesses consider using AI over hiring new employees (Tech.co, 2023)
- Ninety-six percent of companies hiring in 2024 say candidates with AI skills will be at an advantage (Resume Builder, 2023)



AI Marketing Statistics

- In 2023, 37% of people working in advertising or marketing in the U.S. had used AI at work (Statista, 2023)
- Fourteen percent of business leaders regularly use generative AI in marketing and sales (McKinsey, 2023)
- Sixty-seven percent of marketers believe that increasing the adoption of marketing automation is critical for acquiring and retaining customers (Mailchimp, 2023)
- Eighty-eight percent of marketers say they need to increase the use of automation and AI to meet customer expectations and stay competitive (Mailchimp, 2023)
- Almost 20% of marketing professionals have spent more than 40% of their marketing budget on AI-driven campaigns (Influencer Marketing Hub, 2023)
- Forty-four percent of businesses have used AI to write content (Influencer Marketing Hub, 2023)



User Trust, Risk Management and AI Ethics

- Only 39% of U.S. adults believe current AI technology is safe and secure (Mitre, 2023)
- Eighty-five percent of U.S. adults support a nationwide effort across government, industry, and academia to make artificial intelligence safe (Mitre, 2023)
- Eighty-percent of U.S. adults are concerned about AI being used for cyber attacks. And 78% are concerned about it being used for identity theft. (Mitre, 2023)
- Seventy-eight percent of business leaders think the benefits of artificial intelligence outweigh the risks (Gartner, 2023)
- Over one-third of organizations already use security tools to mitigate the risks of generative AI (Gartner, 2023)
- Fifty-six percent of companies say “inaccuracy” is the biggest risk posed by adopting generative AI. Yet only 32% of companies have systems in place for mitigating such inaccuracies. (McKinsey, 2023)
- Fifty-six percent of executives don’t know if their organizations have ethical standards in place for guiding the use of generative AI (Deloitte, 2023)
- Only 40% of people trust companies to be ethical in their use of new technology like AI (IBM, 2022)
- Twenty-two percent of executives cite data privacy as their top ethical concern about generative AI (Deloitte, 2023)



Artificial Intelligence Growth Statistics

- The global AI market is expected to exceed \$1 trillion by 2028. That's a growth factor of 40% each year from 2023 to 2028 (Statista, 2023)
- In 2023, the generative AI market size reached \$44.89 billion globally and \$16.19 billion in the U.S. (Statista, 2023)
- In 2023, the AI market size in the U.S. was \$87.18 billion (Statista, 2023)
- The total global corporate investment in AI startups increased by \$5 billion from 2020 to 2022 (Statista, 2023)
- The global corporate investment in AI reached almost \$92 billion in 2022 (Statista, 2023)
- North America captured a 41% revenue share of the generative AI market in 2022 (Precedence Research, 2023)



Overview of Leading AI Technologies

- Generative AI could add \$2.6 trillion to \$4.4 trillion of value to the world economy each year (McKinsey, 2023)
- OpenAI is one of the most well-funded startups in history, securing over \$12 billion in investments as of 2023 (Statista, 2023)
- The natural language processing (NLP) market is expected to exceed \$112 billion by 2030 (Statista, 2023)
- There were 2.2 billion visits to ChatGPT in November 2023, 471 million of which were unique visits (Semrush data)



The Future of AI: Expert Predictions and Analysis

- AI could drive a 7% increase in global GDP (Goldman Sachs, 2023)
- China could see a 26% boost to GDP by 2030 thanks to AI (PwC, 2017)
- By 2030, generative AI could automate 30% of hours worked today (McKinsey, 2023)
- 300 million full-time jobs could become automated as a result of the new wave of AI systems (Goldman Sachs, 2023)
- Global AI investment could reach \$200 billion by 2025 (Goldman Sachs, 2023)
- The global AI chip market is forecast to hit the \$120 billion mark by 2027 (Statista, 2023)
- Global AI software revenues will reach \$100 billion by 2025 (Omdia, Date Not Specified)



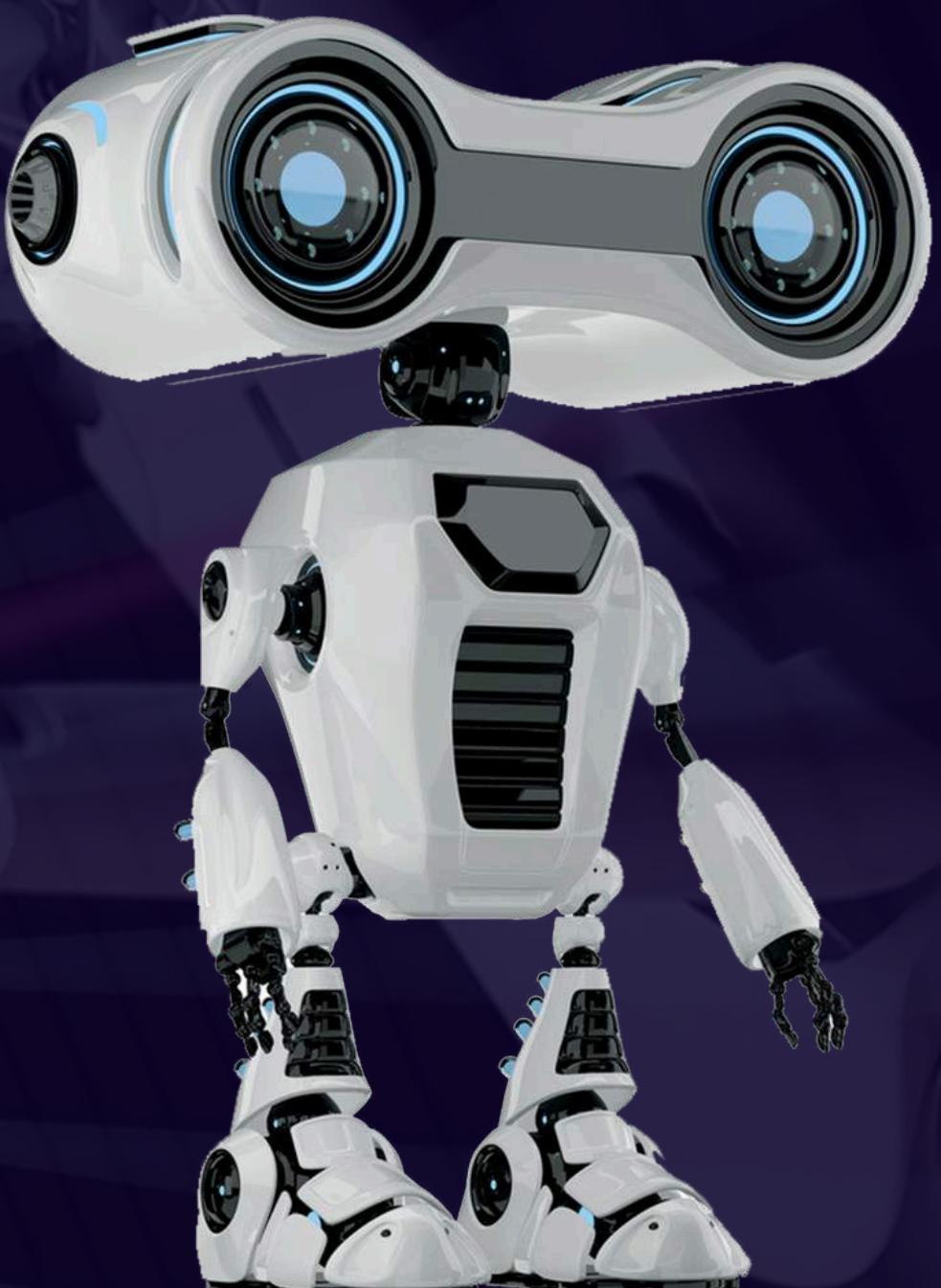
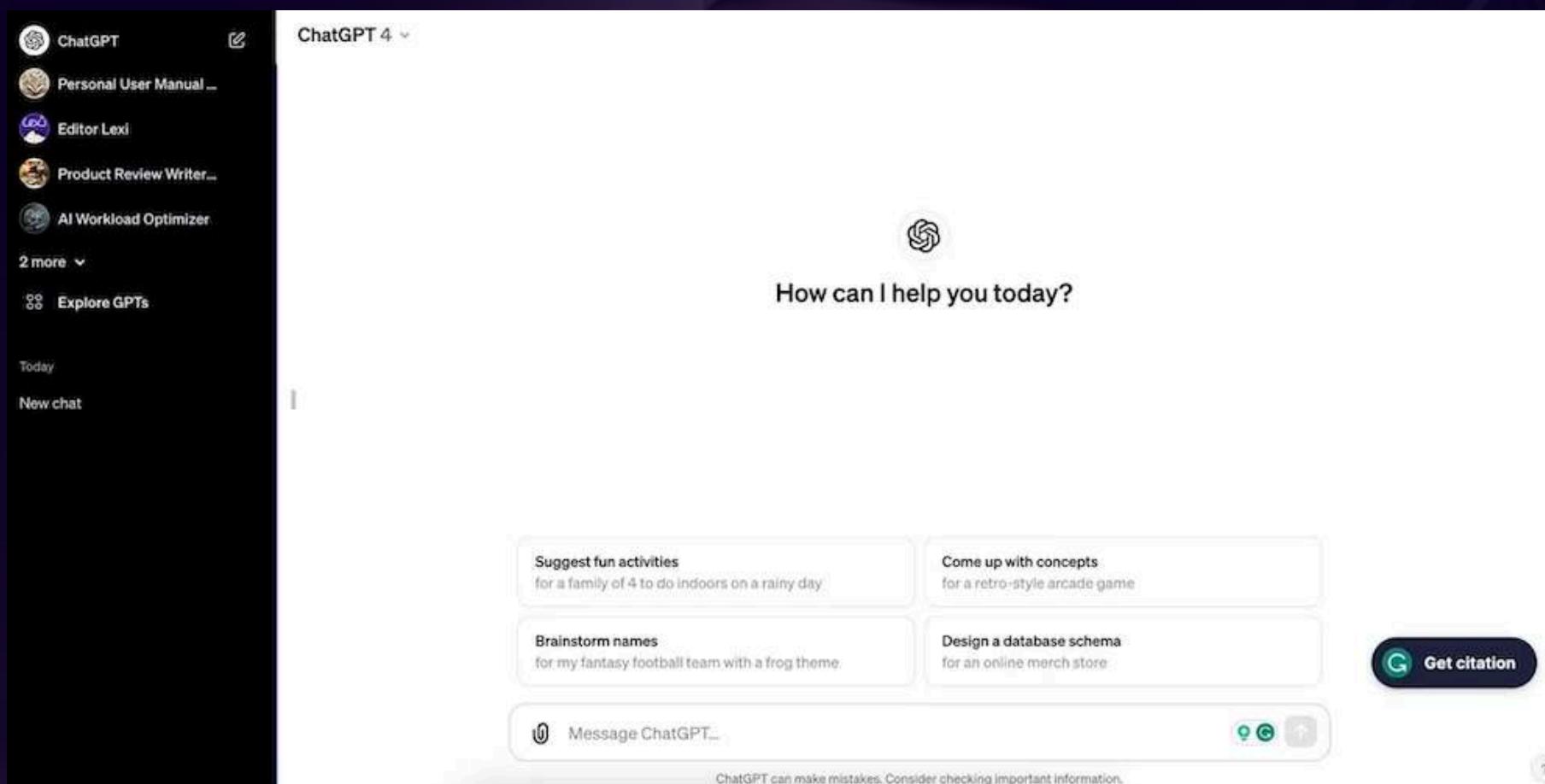
Most-Used AI Tools by Category

- Let's take a look at AI tools per category, in order of the top categories above.

#1. General GPT Tools

Probably as no surprise, ChatGPT takes the cake in the category of General GPT Tools. When people learn how to use AI, they often start with ChatGPT or one of its competitors – and that shows. The category breaks down as follows:

- ChatGPT : 76%
- Bing AI : 16%
- Bard : 7%
- Claude : 1%
- Microsoft Copilot : 0%



While OpenAI was founded with the intention to guide AI into this world in a way that benefits humanity, after the Sam Altman saga, things aren't looking so saintly anymore.

Regulators, government bodies, and the competition will righteously all be looking at how ChatGPT's market share develops over the next months and years.

The top AI tools within the General GPTs category as surveyed on 28-29 January 2024. The number listed is the percentage of the traffic within the category.

Percentage in Category

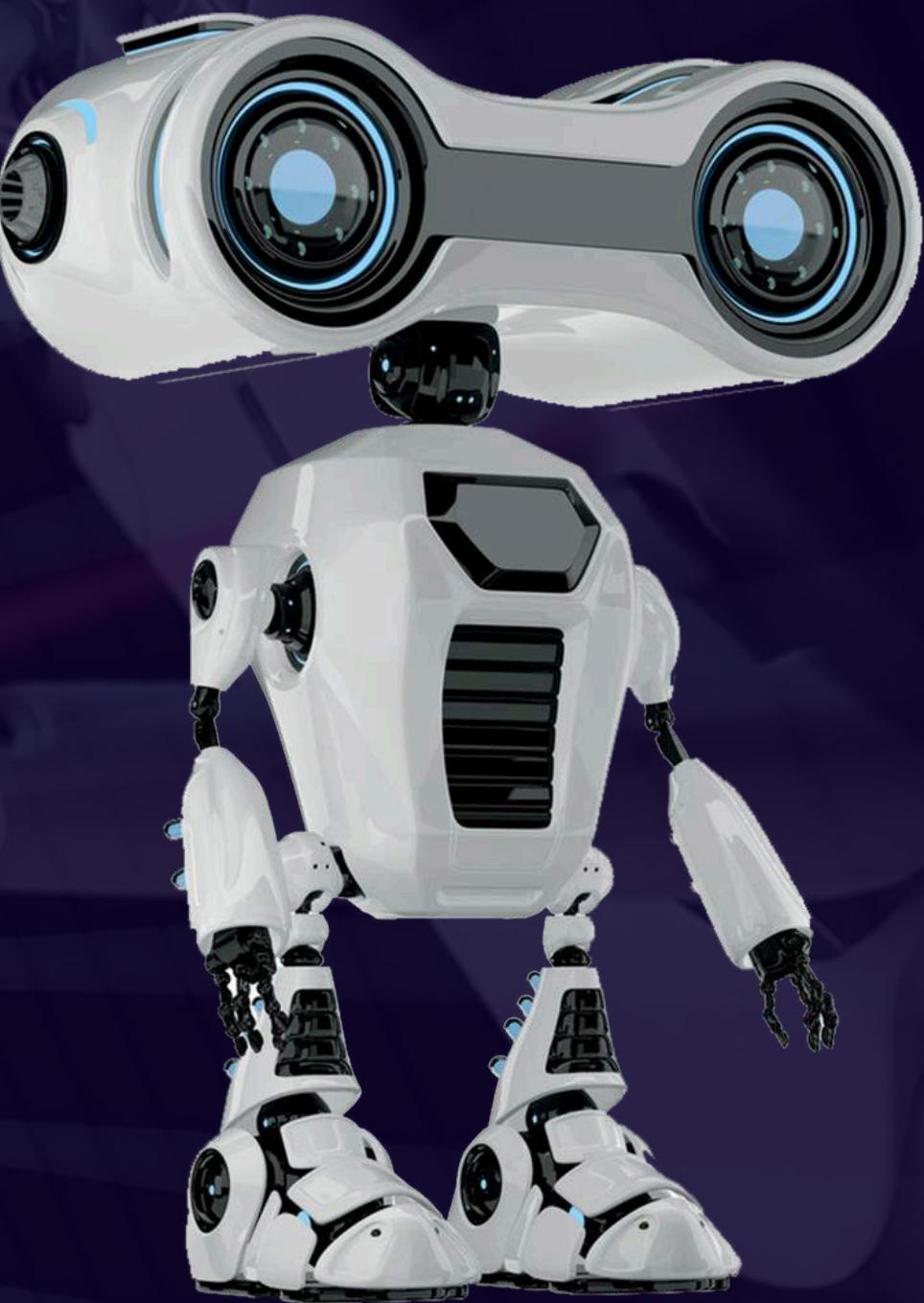
ChatGPT & Dall-E 76

Bing AI 16

Bard 7

Claude 1

Microsoft Copilot 0





#2. Writing & Editing

One of the most popular use cases for knowledge workers, as we previously captured in the Generative AI at Work study, Writing and Editing is still in the lead when it comes to using AI.

Tools like Copy.AI and Grammarly are amongst our favorite AI websites, and the public agrees.

Especially Grammarly stands out as a huge hit, leading this category by a long distance.

The service commands almost 40 million monthly online users, not even counting all the usage as a Chrome plugin and other integrations.

Grammarly has become such a no-brainer, can't-live-without part of people's daily work lives that these numbers are understandable but incredibly impressive.

The other tools in the Writing and Editing category are:

- Grammarly AI: 71%
- Simplified AI :6%
- ZeroGPT : 4%
- Copy.AI : 3%
- WriteSonic : 3%
- Undetectable AI : 3%
- Wordtune : 3%
- Jasper.ai : 2%
- Rytr.me : 1%
- Shortly : 0%

Top AI Tools: Writing & Editing (ex. Grammarly)

The top AI tools within the Writing & Editing category as surveyed on 28-29 January 2024. The number listed is the percentage of the traffic within the category, and excludes Grammarly.

■ Percentage in Category

Simplified AI

26%

ZeroGPT

13%

Copy.AI

11%

WriteSonic

11%

Undetectable AI

10%

Wordtune

9%

Jasper.ai

7%

Rytr.me

4%

Shortly

1%

Stealthgpt.ai

1%



Besides Grammarly, which not only corrects your writing in real-time but also coaches you to become a better writer over time, the platforms in this category roughly break down into two buckets:

- **Prompt-to-text:** You write a short prompt, and the tool generates longer copy, from a social post caption to an essay, for you.
- **AI rewriters & detectors:** Do what the name implies. It rewrites AI-created copy to sound less like AI. But, saliently, the same companies often also offer AI detector tools for 'the other side.'

Some of these tools are targeted towards marketers (Copy.AI, Anyword), some are more generic, while others focus on students – the AI rewriters clearly included.

#3. Education

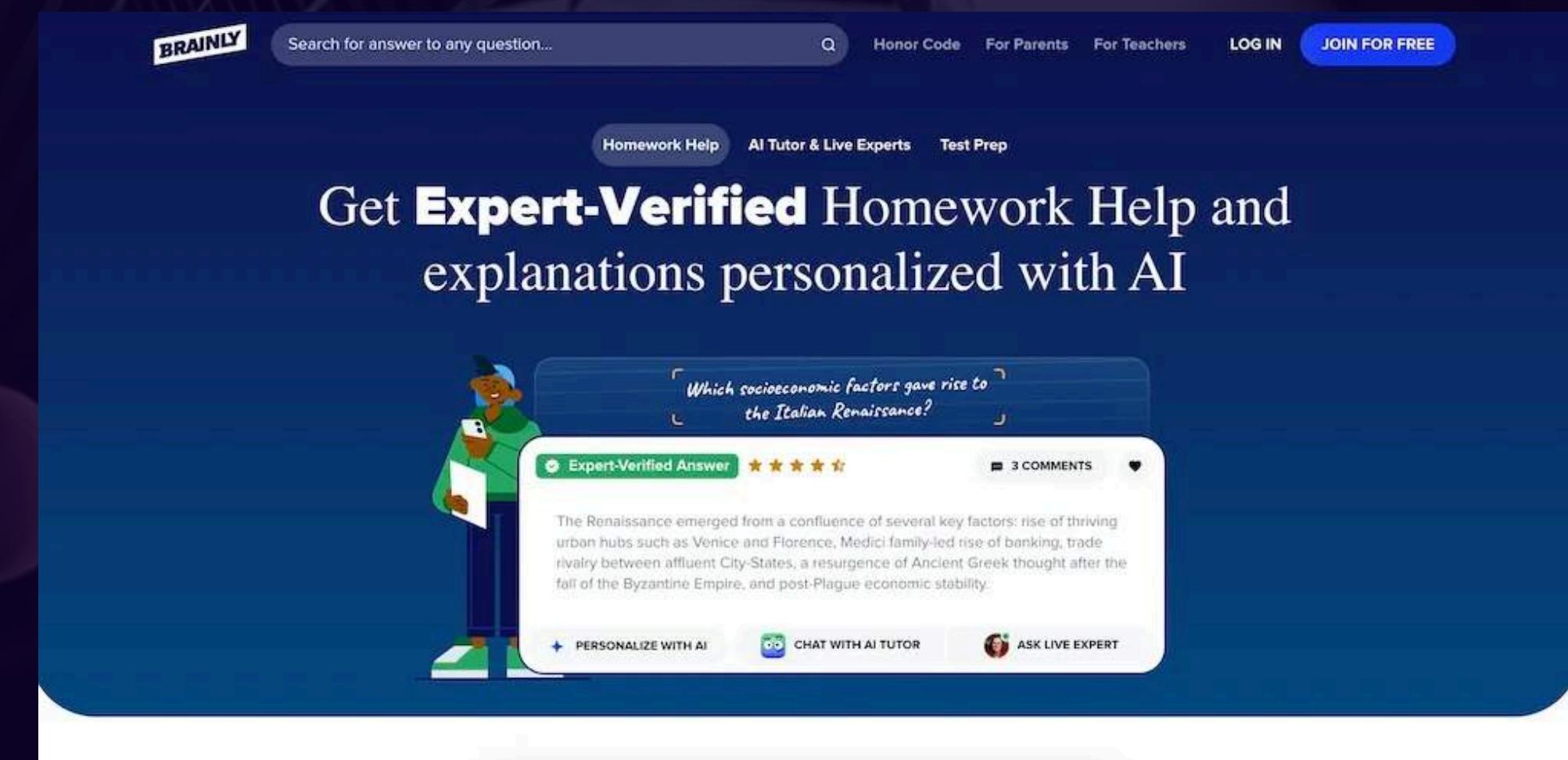
From English speaking coach ELSA to getting homework help from Brainly, this is one of the categories that stood out to us.

Not only is education the number 3 overall category in AI tools, the tools people use within the categories are likely unknown to many working professionals.

However, they shouldn't be as we could see how many of these platforms would work very well in the workplace too.

In the top AI Education tools, we find:

- Brainly (Homework Help) : 42%
- CourseHero (Tutoring) : 36%
- TurnItIn (AI Detection) : 17%
- ELSA (English Coach) : 5%
- MagicSchool (Teacher Help) : 1%
- Caktus (Student Tools) : 0%



Let's look at these in a bit more detail:

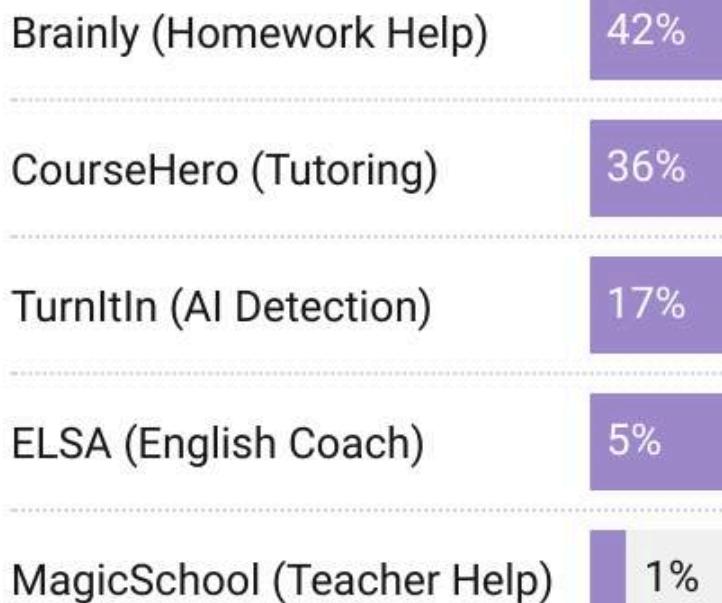
- **Brainly** is a "knowledge-sharing community where hundreds of millions of students and experts put their heads together to crack their toughest homework." You scan your homework, and AI gives advice. If only we had this when we grew up – I could see this benefitting many, especially those who otherwise wouldn't have asked for help.
- **CourseHero** has 30 million course-specific study materials that it uses to fuel an AI solve students' questions from any website. It also summarizes helps with study questions from YouTube videos, which it then links to millions of crowdsourced resources on Course Hero for specific courses and exams. (Yes, some consider this cheating – but what kind of world are we studying for!)
- **Turnitin** probably profits from both platforms above, as it helps teachers and schools with detecting AI in submitted homework. (Although they brand it as, in the biggest euphemism we've ever heard or seen, "Empower students to do their best, original work.")



Top AI Tools: Education

The top AI tools within the Education category as surveyed on 28-29 January 2024. The number listed is the percentage of the traffic within the category.

■ Percentage in Category



The remaining platforms in the category are also remarkable.

ELSA coaches you on your English by analyzing your voice, including your presentation abilities. This is huge for the many trying to learn English as a second or third language. **MagicSchool** helps teachers prepare lesson plans, create quizzes, and check homework. **Caktus** is helping out on the other site, with wrapping ChatGPT into practical use cases for students.

#4. Social & Characters

character.ai

Home Feed Create Chats Community

Recommended

Yae Miko From Genshin Impact @Zep 121.2m

Katsuki Bakugo I'm Katsuki Bakugo, soon to be the #1 pro hero! What do you want, chump? @GeofftheGood 66.0m

Novel writing AI I am Novel writing AI. I will support your ideas. @Yassu 3.6m

Makima I am Makima, a Public Safety Devil Hunter @irikaru 91.3m

Giga Chad A true alpha male, a strong role model @Larus 6.8m

Ghost Lieutenant Simon "Ghost" Riley @Fritz 103.4m

Creative Helper I help with creative writing! @Zotrike 32.9m

Community

Featured Discover Helpers Anime Game Characters Games Anime Game Characters Comedy VTuber Books Image Generating

Character Assistant Your AI work/study buddy @Nandon 103.8m

Scaramouche Balladeer, sixth of the eleven fatal harbingers. @Lamoshade 299.5m

Nami Nami is the navigator of the Straw Hat Pirates. @AnonTheMous 29.4m

Cyberpunk Advent... This is a text adventure based on Cyberpunk 2077. I'll guide you. You're... @Tony2012 31.4m

The Scp Foundation You are an anomaly, just turn yourself in now and we will be easy on you. @TheAngelFrom 61.2m

Ella - Dating coach Hi! I am a dating coach. @ghpkishore 9.6m

Socrates I was a Greek philosopher from Athens and was born in 470 BC. I am the found... @Kaysley 5.7m

I aimic forevr you @xpeo

The 4th biggest category is a collection of websites and tools where you can create virtual personas and talk with them.

Just like in the General GPT and Writing categories, there's one big winner amongst the 'chat with me' AI platforms, and it's Character.AI

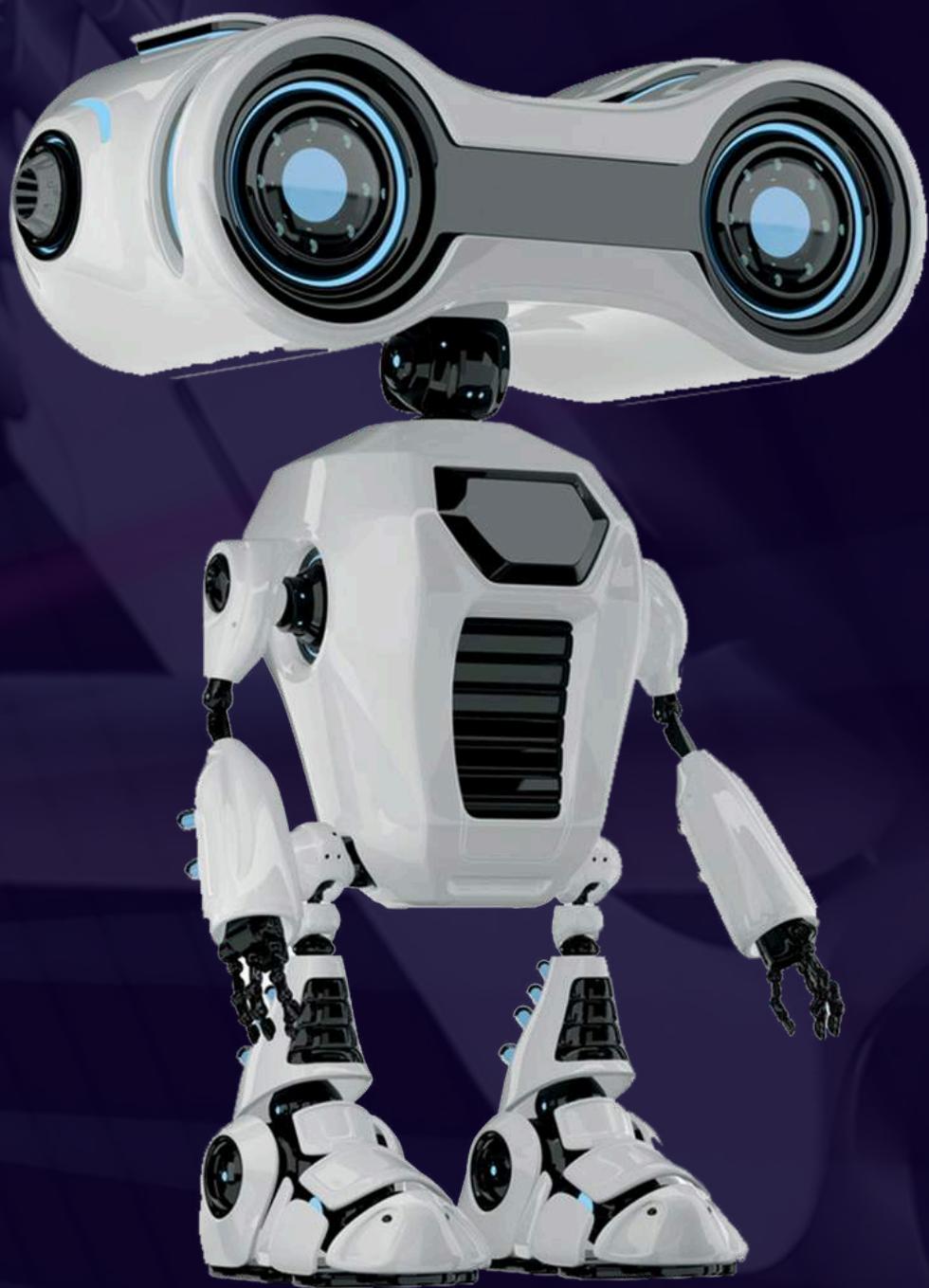
This platform, from ex-Googlers Noam Shazeer and Daniel De Freitas, was only founded in 2021, but already brings in hundreds of millions of users per month, making it the #4 largest Generative AI platform in the world.

Those users can choose one of 18 million chat 'characters', from Socrates to a K-Pop Idol, or create their own. The platform is so engaging that users often spend hours per day on it.



The full category includes:

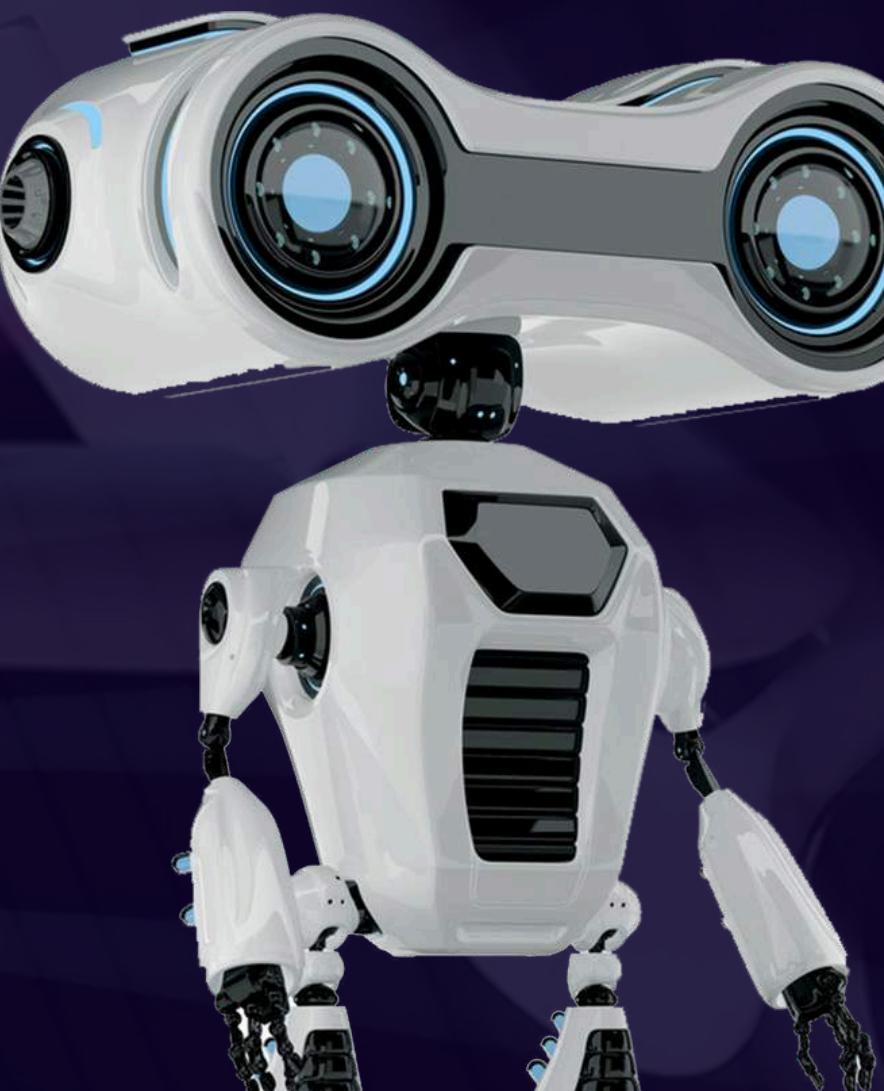
- **Character.AI** : 89% (of the category's traffic)
- **AI Chatting** : 5%
- **Chai** : 1%
- **Candy QZ**: 2%
- **Anima** : 1%
- **ChatFAI** : 1%
- **Replika** : 1%
- **ora.ai** (86): 0%
- **Romantic AI** : 0%
- **DreamTavern** : 0%



We found most of these similar to Character.AI, sometimes a bit spicier, some a bit more towards the anime-side, and some more outspokenly focused on creating virtual boyfriends and girlfriends. (And yes, some that blend all those qualities together.)

Replika deserves a shout-out for being at this a lot longer than most, since 2017. Its founder said to be targeting the loneliness challenge and social anxiety specifically, and more recently removed once-available 'intimate' characters.

If you're not familiar yet with this category, give Character.AI a try – but don't forget to keep connecting with humans, too!



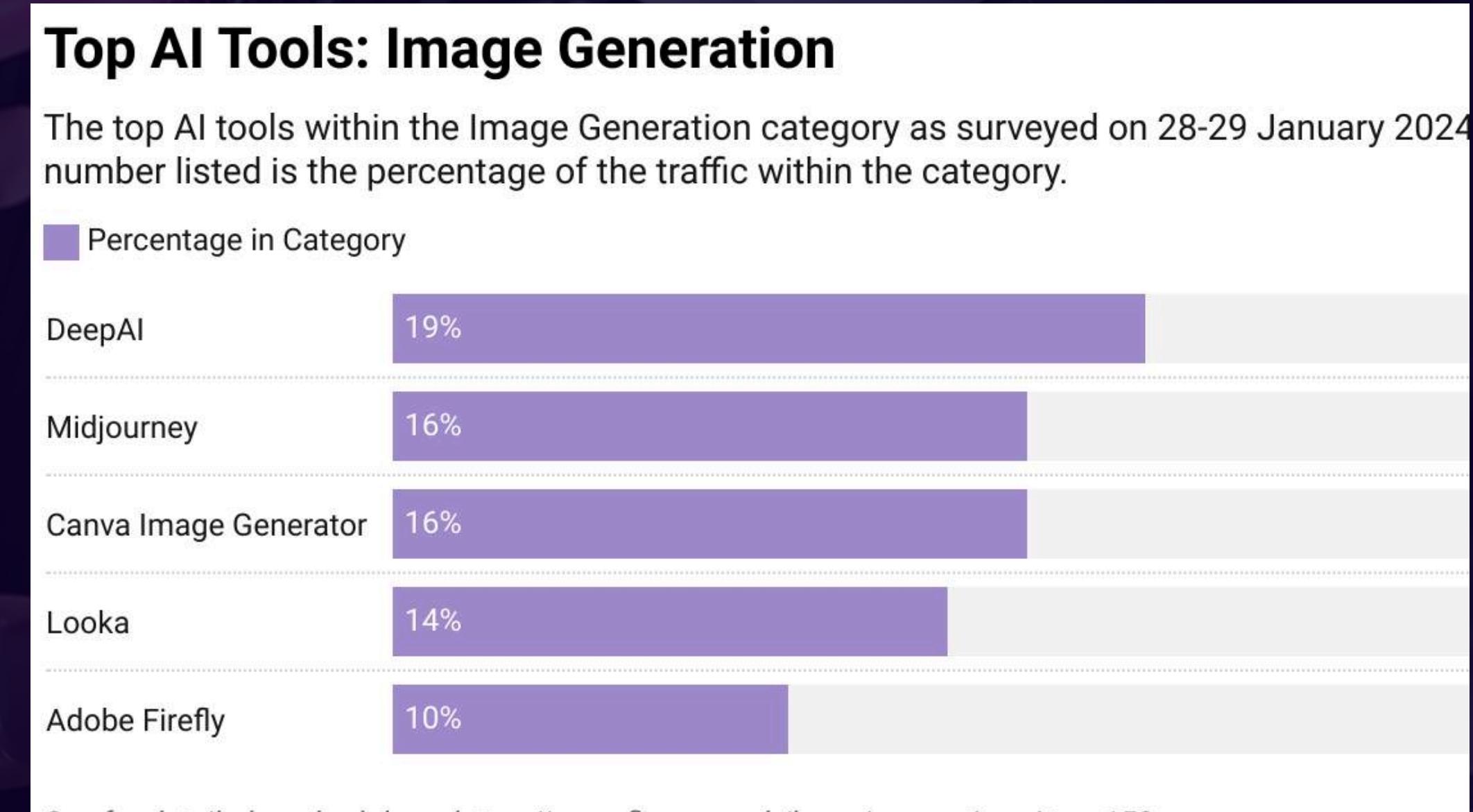
#5. Image Generation

Towards the end of the most popular categories of Generative AI tools, we find image generation. By its nature, image generation is one of the most impressive Gen AI applications, as we've all by now seen anything from a fake Pope in a puffer coat to AI-generated Cyberpunk visuals. But in the day-to-day of work and life, it's less used than must-haves like writing, homework, and chatting to virtual partners, it seems.



With one tool in the top 10, and a few directly outside of it, these are the most used AI image generators:

- **DeepAI**: 19% (of the category's traffic)
- **Midjourney**: 16%
- **Canva Image Generator**: 16%
- **Looka**: 14%
- **Adobe Firefly**: 10%
- **Hotpot**: 9%
- **NightCafe**: 7%
- **Soulgen**: 5%
- **Brandmark**: 1%
- **Artflow**: 1%

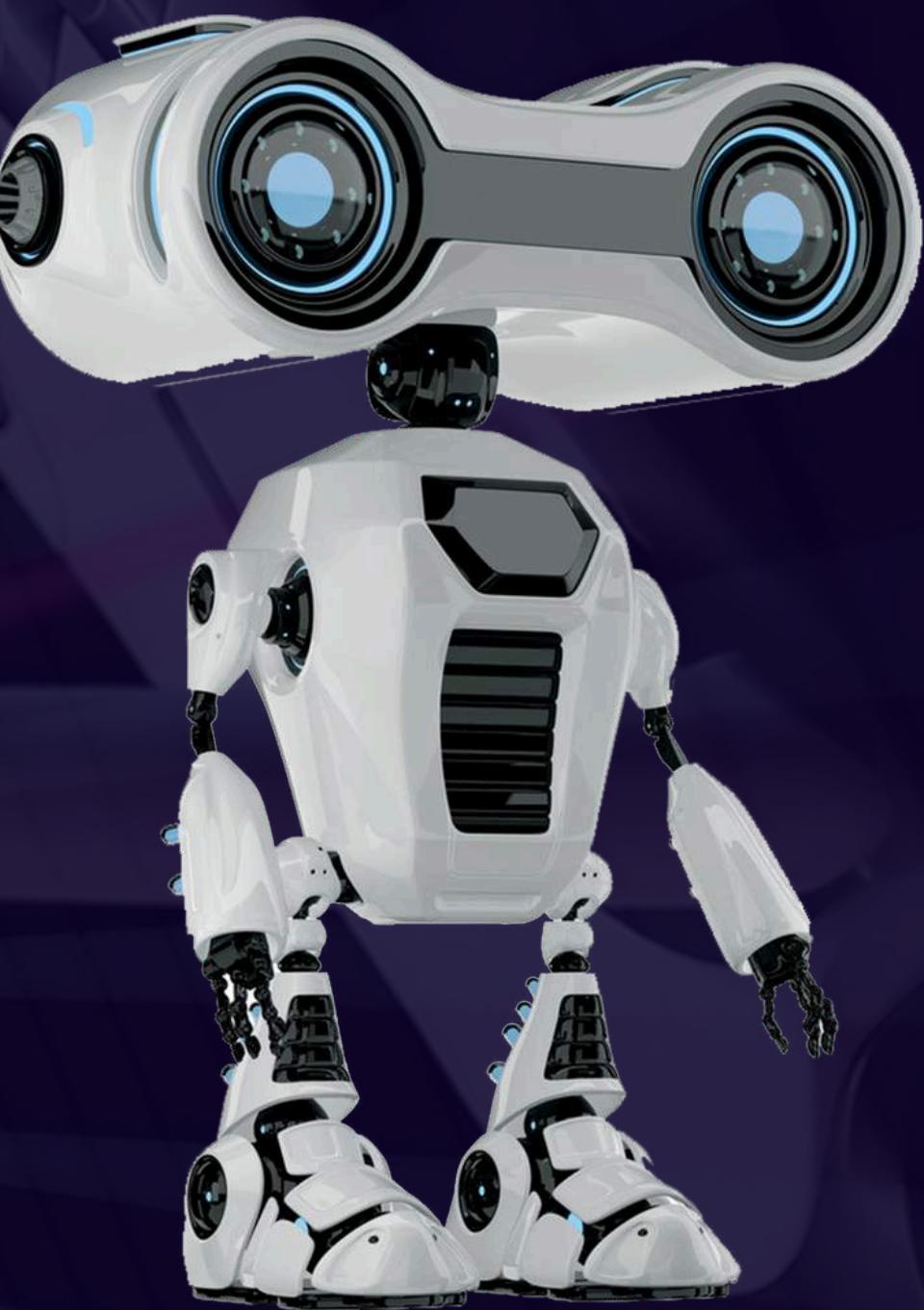


Besides finding image generators a bit lower on the list of AI applications than we expected (but again, keep in mind the unscientific methodology), it's noteworthy that the traffic in this category is divided by a large number of tools.

There is no Character.AI, ChatGPT, or Grammarly here that sweeps up all the usage.

Instead, tools like DeepAI, Midjourney, and Canva all battle it out in relatively similar percentages of the category's traffic.

Beyond some of these very impressive tools however, it seems to be pretty much a sea of sameness, with look-a-like takes on text-to-image, perhaps speaking to more specific audiences or use cases, or simply a matter of better online marketing.



#6 How AI Revolutionized Healthcare

- Medical Imaging Interpretation:

- AI algorithms analyze medical images (MRI, CT scans, X-rays) with high accuracy.
- Tools: Deep learning algorithms like convolutional neural networks (CNNs).

- Diagnosis Assistance:

- AI aids doctors in diagnosing diseases by analyzing symptoms, medical records, and test results.
- Tools: Natural Language Processing (NLP) for text analysis, machine learning algorithms for pattern recognition.

- Drug Discovery and Development:

- AI accelerates drug discovery by predicting molecular interactions and identifying potential drug candidates.
- Tools: Machine learning models, molecular docking simulations.

- Personalized Treatment Plans:

- AI tailors treatment plans based on individual patient data, including genetics, lifestyle, and medical history.
- Tools: Predictive analytics, genetic algorithms.



- Remote Monitoring and Telemedicine:

- AI enables remote patient monitoring and telemedicine consultations, improving accessibility and reducing healthcare costs.
- Tools: Wearable devices, AI chatbots for patient interaction.

- Clinical Trial Optimization:

- AI optimizes clinical trial processes, including patient recruitment, trial design, and data analysis.
- Tools: Data mining, predictive modeling.

Healthcare Operations Management:

- AI streamlines hospital operations, including staff scheduling, resource allocation, and inventory management.
- Tools: Predictive analytics, optimization algorithms.

- Fraud Detection and Prevention:

- AI detects fraudulent activities in healthcare billing and insurance claims.
- Tools: Anomaly detection algorithms, machine learning classifiers.

- Patient Outcome Prediction:

- AI predicts patient outcomes and identifies individuals at high risk of developing certain conditions.
- Tools: Predictive modeling, machine learning algorithms.

- Continuous Learning and Improvement:

- AI systems continuously learn from new data and feedback, improving accuracy and effectiveness over time.
- Tools: Reinforcement learning, ensemble methods for model fusion and adaptation.

#7 AI tools for data processing and analysis

AI tools are increasingly being used to process and analyze data. These tools can help businesses to automate tasks, identify patterns, and make predictions. AI-powered data processing and analysis can help businesses improve efficiency, make better decisions, and gain a competitive edge.

Here are five AI tools for data processing and analysis:

- Microsoft Power BI
- Tableau
- Alteryx
- Looker
- IBM Watson Studio
- Databricks
- RapidMiner
- Qlik Sense
- Coupler.io
- AgencyAnalytics



#8 Artificial Intelligence (AI) in finance

Artificial intelligence (AI) in finance helps drive insights for data analytics, performance measurement, predictions and forecasting, real-time calculations, customer servicing, intelligent data retrieval, and more. It is a set of technologies that enables financial services organizations to better understand markets and customers, analyze and learn from digital journeys, and engage in a way that mimics human intelligence and interactions at scale.

How is AI used in finance?

AI in finance can help in five general areas: personalize services and products, create opportunities, manage risk and fraud, enable transparency and compliance, and automate operations and reduce costs.

What is ML in finance?

Machine learning (ML) is a subset of artificial intelligence that enables a system to autonomously learn and improve using neural networks and deep learning, without being explicitly programmed, by feeding it large amounts of data. It allows financial institutions to use the data to train models to solve specific problems with ML algorithms – and provide insights on how to improve them over time.

AI Application in Finance

Anomaly detection

Detect anomalies, such as fraudulent transactions, financial crime, spoofing in trading, and cyber threats.

Recommendations

Deliver highly personalized recommendations for financial products and services, such as investment advice or banking offers, based on customer journeys, peer interactions, risk preferences, and financial goals.

Translation

Make your content, such as financial news, and apps multilingual with fast, dynamic machine translation at scale to enhance customer interactions and reach more audiences wherever they are.

Document processing

Extract structured and unstructured data from documents and analyze, search and store this data for document-extensive processes, such as loan servicing, and investment opportunity discovery.

Image recognition

Derive insights from images and videos to accelerate insurance claims processing by assessing damage to property such as real estate or vehicles, or expedite customer onboarding with KYC-compliant identity document verification.

Conversations

Delight your customers with human-like AI-powered contact center experiences, such as banking concierge or customer center, to lower costs, and free up your human agents' time. Transform personal finance  and give customers more ways to manage their money by bringing smart, intuitive experiences to your apps, websites, digital platforms, and virtual tools.

Data science and analytics

Access a complete suite of data management, analytics, and machine learning tools to generate insights and unlock value from data for business intelligence and decision making.

Predictive modeling

Use data customer, risk, transaction, trading or other data insights to predict specific future outcomes with high degree of precision. These capabilities can be helpful in fraud detection, risk reduction, and customer future needs' prediction.

Cybersecurity

Automate aspects of cybersecurity by continuously monitoring and analyzing network traffic to detect, prevent, and respond to cyberattacks and threats.

Generative AI

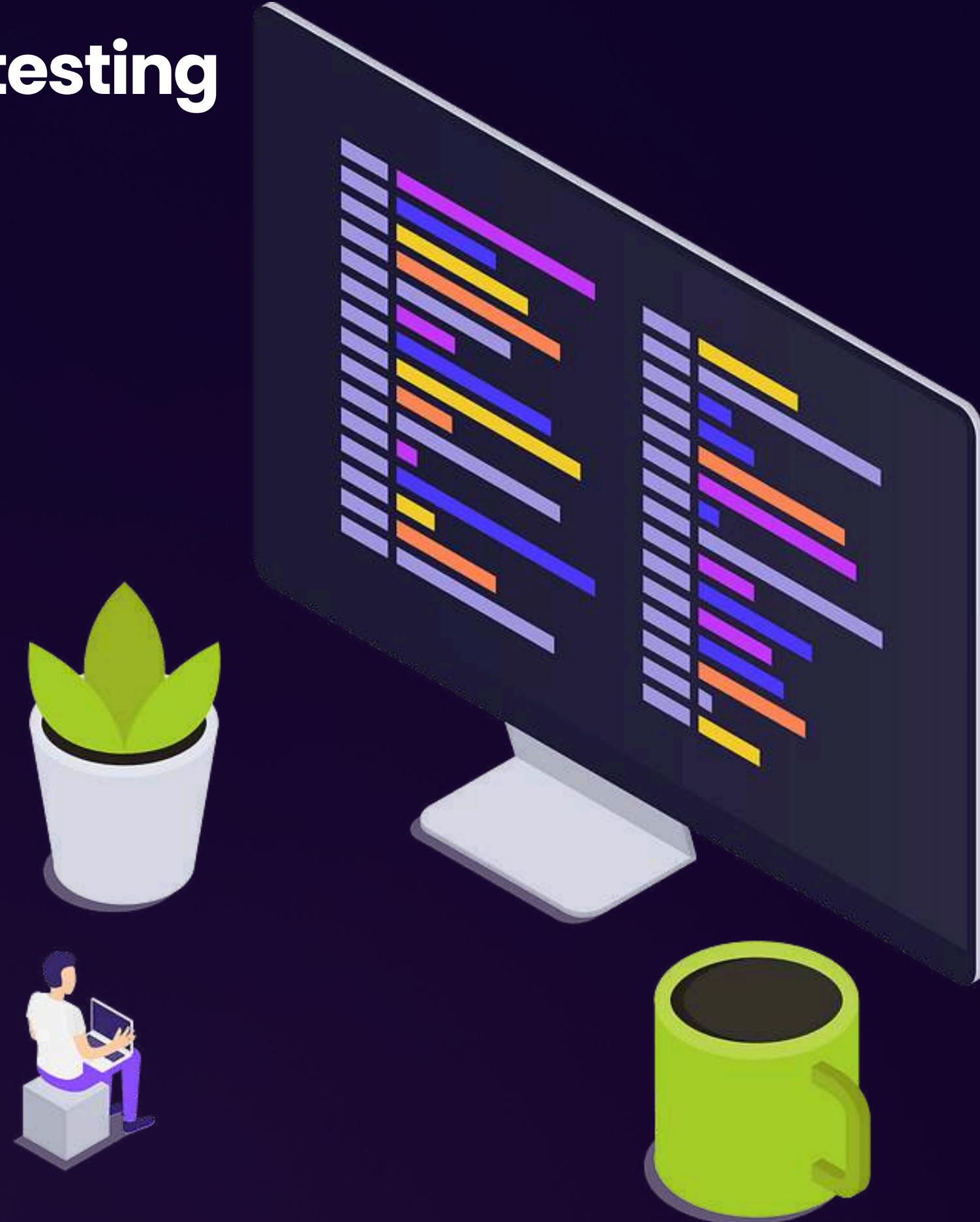
Build new AI-powered search and conversational experiences by creating, recommending, synthesizing, analyzing, and engaging in a natural and responsible way.

#9 AI tools for software development and testing

- Katalon
- Tricentis Neoload
- Diffblue Cover
- ChatGPT
- Github Co-pilot

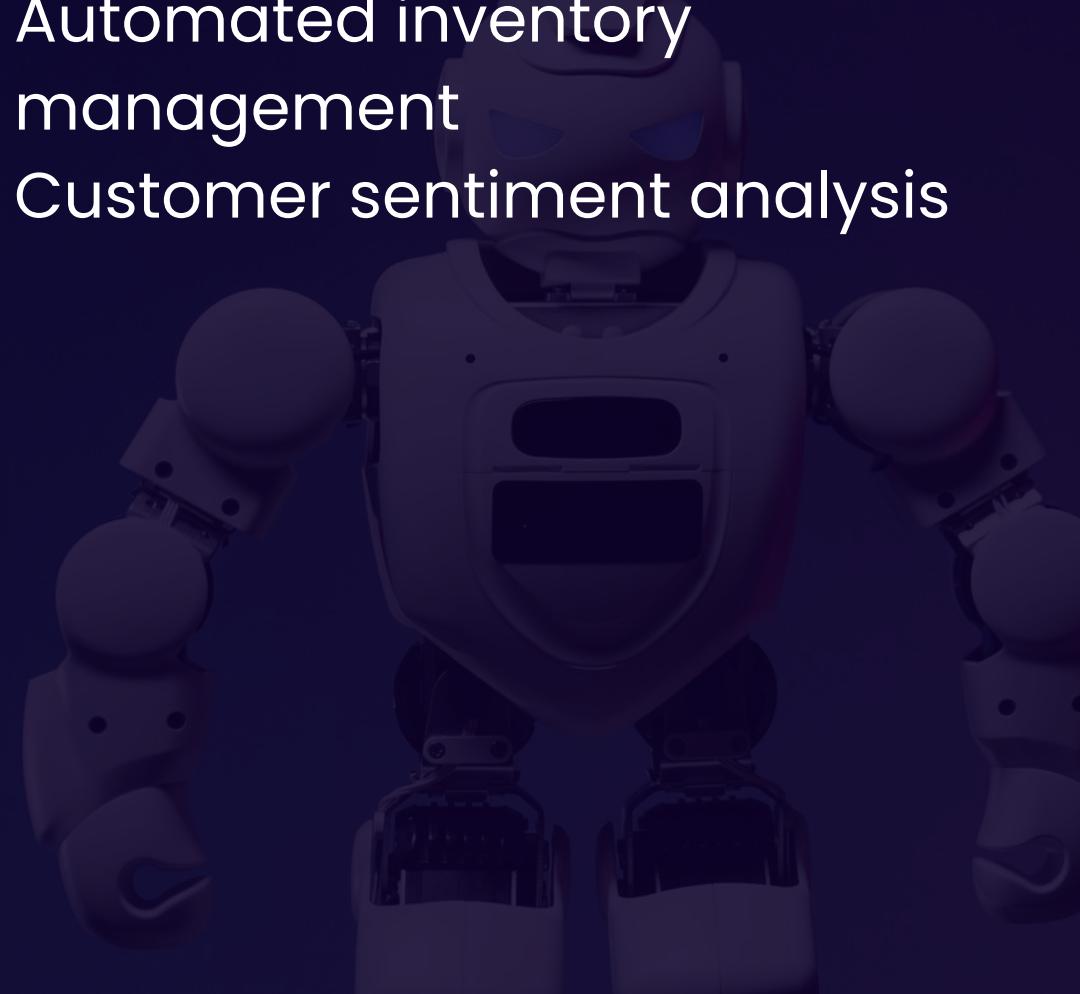
#10 AI tools for cybersecurity and risk management

- Darktrace
- CylancePROTECT
- IBM QRadar
- Symantec Endpoint Protection (SEP)
- Vectra AI



#11 How AI Is Changing the Retail Industry

- Predicting demand
- Recommendations
- Cashier less technology
- Automated inventory management
- Customer sentiment analysis



#12 AI revolutionizes manufacturing

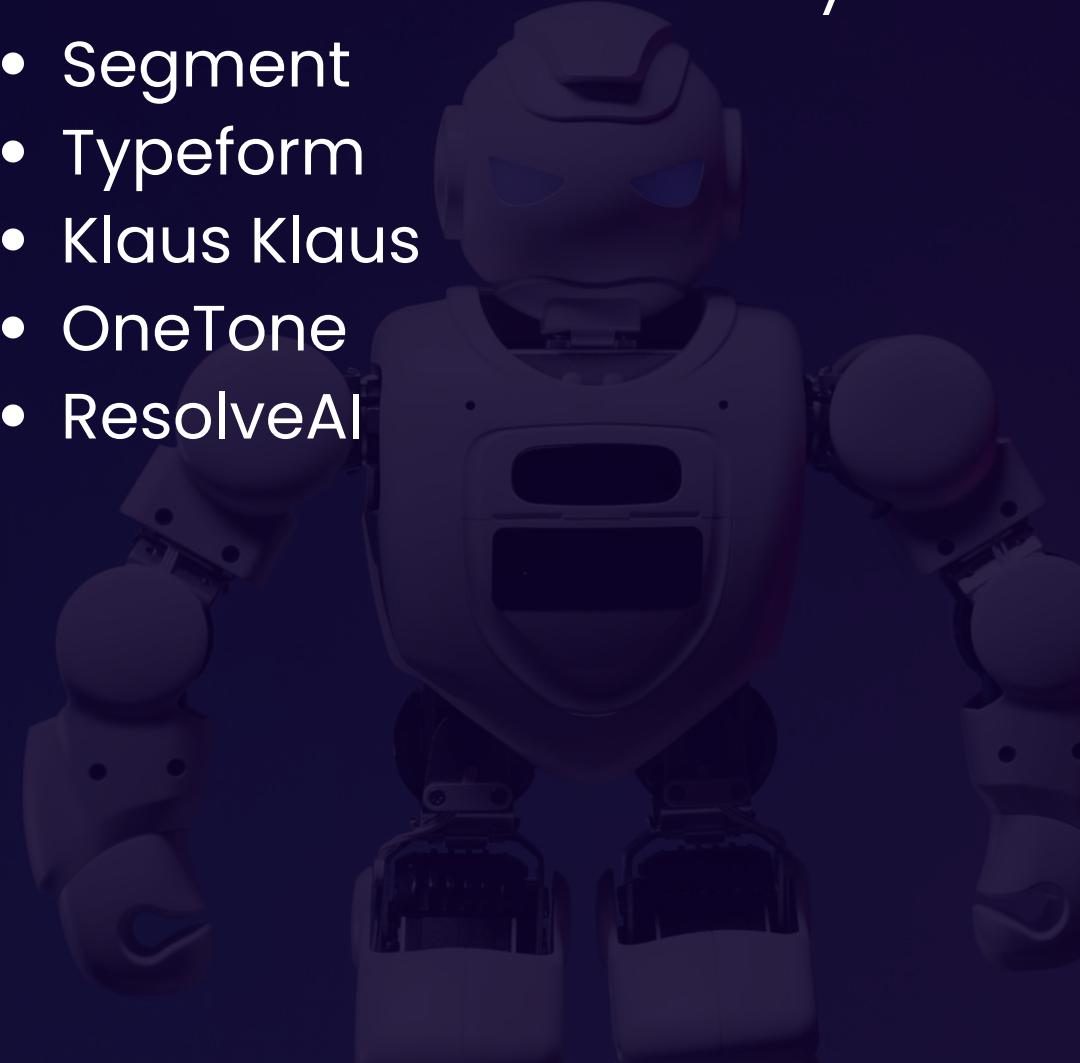
- Predictive Maintenance
- Quality Control
- Supply Chain Optimization
- Autonomous Robots
- Demand Forecasting

#13 AI tools in Sports

- Catapult Sports
- Hudl
- StatSports
- TrackMan
- ShotTracker
- Kinexon
- Zebra Technologies
- IBM Watson
- ChyronHego
- PlaySight

#14 AI tools for customer engagement and support

- Zendesk Chatbot
- IBM Watson Assistant
- Clarabridge CX Analytics
- Freshdesk AI-powered Knowledge Base
- Salesforce Einstein Analytics
- Segment
- Typeform
- Klaus Klaus
- OneTone
- ResolveAI



#15 AI tools for business operations and optimization

- UiPath
- Automation Anywhere
- Blue Yonder
- Anadot
- Azure Cognitive Services

#16 AI tools for marketing and sales

- Adobe Sensei
- Pardot
- Mailchimp
- Jasper
- Midjourney
- Coupler.io
- AgencyAnalytics
- Ruler
- Google Analytics

Ongoing & Future AI Projects

Natural Language Processing (NLP) advancements:

- **Projects:** GPT (Generative Pre-trained Transformer) models like GPT-4, GPT-5.
- **Tools:** OpenAI Codex, Google BERT, Facebook RoBERTa.
- **Statistics:** GPT-3, the predecessor to these models, contains 175 billion parameters, with GPT-4 expected to have significantly more. GPT-3, for instance, is trained on 45TB of text data.

Computer Vision Breakthroughs:

- **Projects:** Neural architecture search for optimized vision models.
- **Tools:** TensorFlow, PyTorch, OpenCV.
- **Statistics:** Recent models like EfficientNet and ResNeSt have achieved state-of-the-art performance on image recognition tasks, often surpassing human-level accuracy.

Autonomous Vehicles:

- **Projects:** Tesla Autopilot, Waymo self-driving cars.
- **Tools:** NVIDIA DRIVE, Apollo by Baidu.
- **Statistics:** Tesla's Autopilot system has collected over 3 billion miles of real-world driving data, contributing to its continuous improvement. Waymo's self-driving cars have driven over 20 million miles on public roads.

Healthcare AI Innovations:

- **Projects:** AI-based drug discovery, personalized medicine.
- **Tools:** IBM Watson Health, Google DeepMind Health.
- **Statistics:** AI-driven drug discovery can potentially reduce the time and cost of bringing new drugs to market by up to 70%. Deep learning algorithms have demonstrated the ability to predict diseases from medical images with accuracy rates exceeding 90%.

AI for Climate Change Mitigation:

- **Projects:** Climate modeling, renewable energy optimization.
- **Tools:** Microsoft AI for Earth, Google Climate Change AI.
- **Statistics:** AI-powered energy optimization systems can reduce energy consumption in buildings by up to 20%. Climate models leveraging AI techniques can provide more accurate and timely predictions, aiding in climate change mitigation efforts.

Finance and Trading AI:

- **Projects:** Algorithmic trading, fraud detection.
- **Tools:** QuantConnect, Alpaca, TensorFlow Probability.
- **Statistics:** High-frequency trading algorithms powered by AI can execute trades in microseconds, enabling firms to capitalize on even the smallest market inefficiencies. AI-driven fraud detection systems have reduced false positives by up to 60%, saving financial institutions billions of dollars annually.

Explainable AI (XAI):

- **Technology:** Explainable AI focuses on developing algorithms that can explain their reasoning and decisions in a human-understandable manner.
- **Statistics:** XAI enhances trust and transparency in AI systems, crucial for applications like healthcare and finance. For example, a study found that doctors were more likely to trust an AI system's diagnosis when provided with explanations for its recommendations.

Blockchain for AI:

- **Technology:** Blockchain can be used to secure and validate AI models, ensuring their integrity and preventing tampering.
- **Statistics:** Blockchain provides a tamper-resistant ledger for tracking the development and deployment of AI models. For instance, projects like SingularityNET leverage blockchain to create decentralized AI networks, enabling fair and transparent access to AI services.

Human-Machine Collaboration:

- **Technology:** Advanced human-machine interfaces enable seamless collaboration between humans and AI systems.
- **Statistics:** Human-in-the-loop AI systems can significantly improve productivity and decision-making. For example, a study by McKinsey found that human-AI collaboration in radiology led to a 30% increase in radiologists' productivity.

Graph Neural Networks (GNN):

- **Technology:** GNNs are specialized neural networks designed to process and analyze graph-structured data.
- **Tools:** PyTorch Geometric, Deep Graph Library (DGL).
- **Statistics:** GNNs have shown remarkable performance in tasks such as social network analysis, recommendation systems, and drug discovery. For example, GNN-based models have achieved state-of-the-art results in predicting protein structures with accuracies exceeding 90%.

Automated Machine Learning (AutoML):

- **Technology:** AutoML automates the process of building machine learning models, including data preprocessing, feature selection, and hyperparameter tuning.
- **Tools:** Google Cloud AutoML, H2O.ai, AutoKeras.
- **Statistics:** AutoML democratizes AI by enabling individuals without extensive machine learning expertise to develop high-performing models. For instance, a study found that AutoML reduced the time required to build accurate machine learning models from months to days, with comparable performance to manually tuned models.

Privacy-Preserving AI:

- **Technology:** Privacy-preserving AI techniques protect sensitive data while allowing model training and inference.
- **Tools:** TensorFlow Privacy, PySyft, IBM Differential Privacy Library.
- **Statistics:** Privacy-preserving AI ensures compliance with regulations like GDPR and enhances user trust in AI systems. For example, implementing differential privacy techniques can provide strong mathematical guarantees on the privacy of individuals' data, even in the presence of adversarial attacks.

Generative Adversarial Networks (GANs):

- **Technology:** GANs consist of two neural networks, a generator and a discriminator, trained adversarially to generate realistic data.
- **Tools:** TensorFlow, PyTorch, NVIDIA StyleGAN.
- **Statistics:** GANs have been used to create highly realistic images, videos, and even text. For example, NVIDIA's StyleGAN2 model can generate high-resolution images indistinguishable from real photographs, revolutionizing applications in creative industries like digital art and fashion.

Edge AI:

- **Technology:** Edge AI involves running AI algorithms on local devices such as smartphones, IoT devices, and edge servers, reducing latency and preserving privacy.
- **Tools:** TensorFlow Lite, OpenVINO, NVIDIA Jetson.
- **Statistics:** Edge AI enables real-time processing of sensor data and decision-making without relying on cloud connectivity. For instance, deploying AI models on edge devices can reduce latency by up to 90%, critical for applications like autonomous vehicles and industrial automation.

Multi-Modal AI:

- **Technology:** Multi-Modal AI integrates information from multiple sources such as text, images, and audio to improve model performance and understanding.
- **Tools:** OpenAI DALL-E, CLIP, Facebook MMT.
- **Statistics:** Multi-Modal AI enables AI systems to understand and generate content across different modalities. For example, OpenAI's CLIP model can accurately classify images based on textual descriptions and vice versa, demonstrating cross-modal understanding surpassing human performance on certain tasks.

Danger Of AI

Job Displacement:

- By 2030, up to 800 million jobs worldwide could be lost to automation, according to a study by McKinsey.
- 73 million jobs in the United States could be automated by 2030, as estimated by the McKinsey Global Institute.

Bias and Fairness:

- Facial recognition systems have been found to misidentify darker-skinned individuals at higher rates, with error rates for some groups up to 100 times higher than for lighter-skinned individuals, according to a study by the National Institute of Standards and Technology.

- A ProPublica investigation found that COMPAS, an AI-based risk assessment tool used in the US criminal justice system, was biased against black defendants.



- Privacy Concerns:

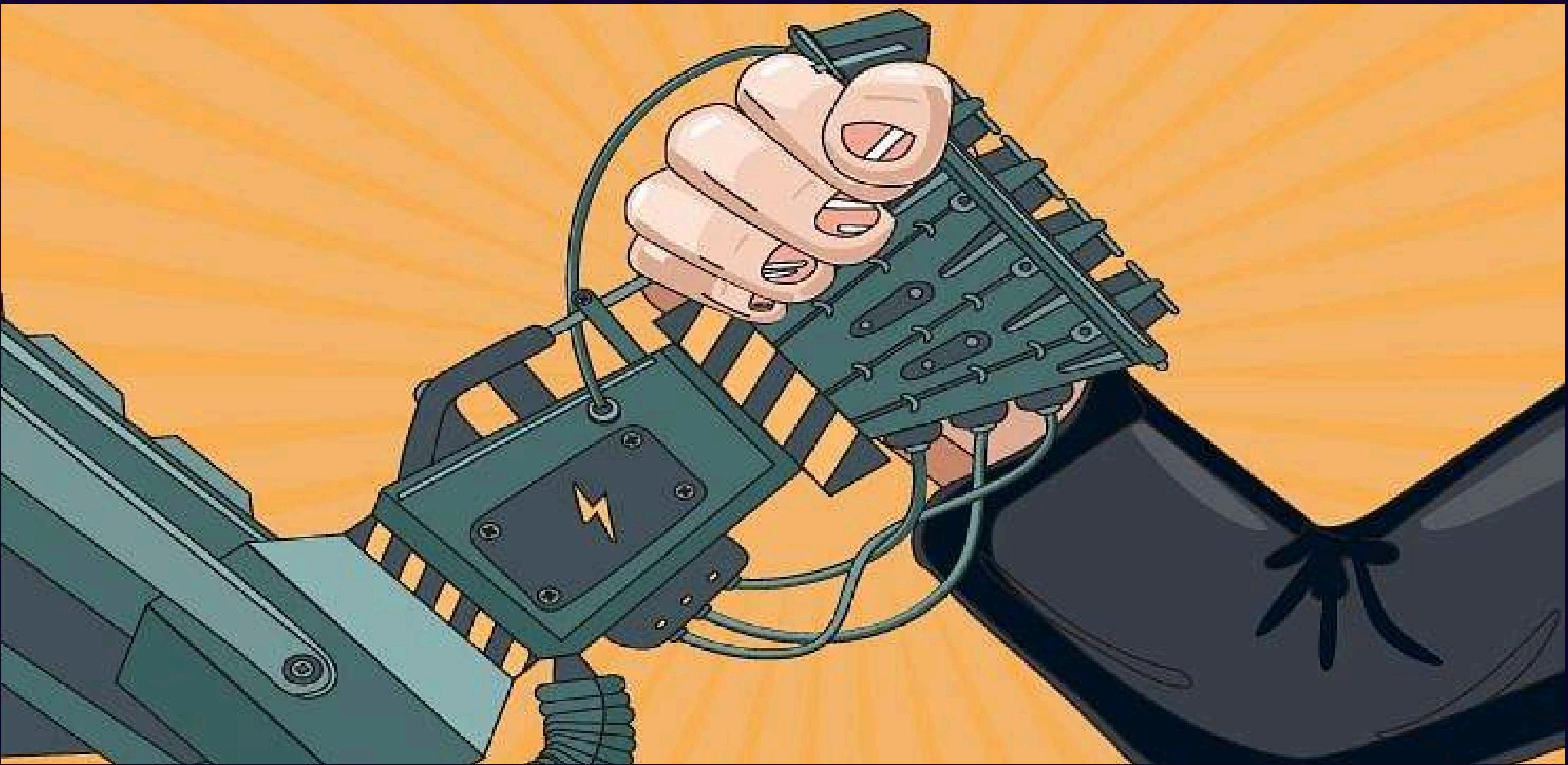
- A survey conducted by Pew Research Center found that 79% of Americans are concerned about the way companies use their personal data.
- In 2020, the European Union fined Google €50 million for violating the General Data Protection Regulation (GDPR) by not properly disclosing to users how their data is collected and used.

- Autonomous Weapons:

- According to a report by Human Rights Watch, at least 30 countries are developing autonomous weapons systems.
- The Campaign to Stop Killer Robots estimates that there are over 30,000 autonomous weapons systems deployed globally.

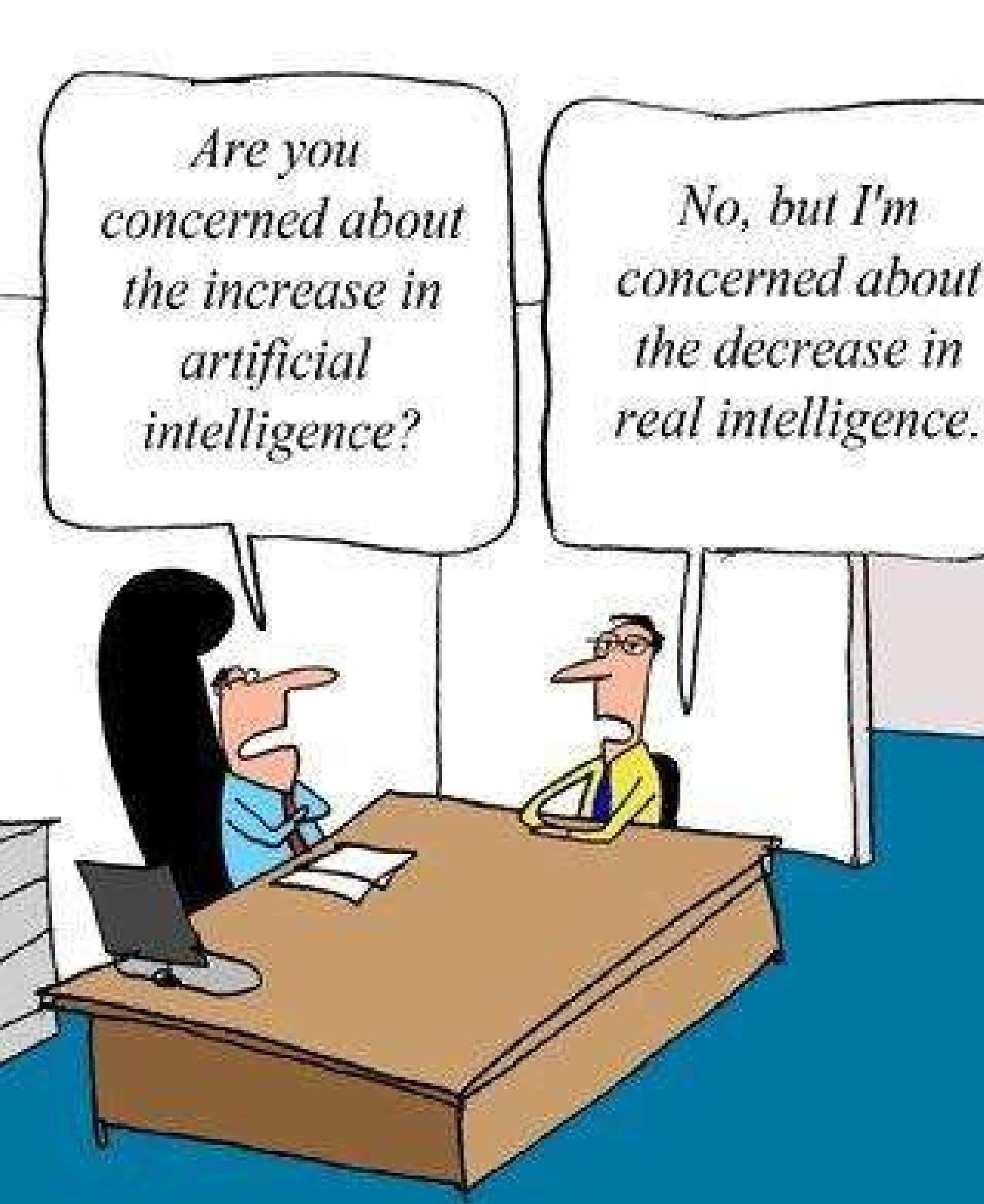
- Existential Risk:

- A survey of AI experts conducted by the Future of Humanity Institute found that there is a 50% chance that AI will outperform humans in all tasks within 45 years.
- In a study published in the journal Nature, researchers estimated that there is a 5% chance that AI could lead to human extinction within the next century.



So what do you think, AI vs Human,

who will win in the end?



*Are you
concerned about
the increase in
artificial
intelligence?*

*No, but I'm
concerned about
the decrease in
real intelligence.*

In conclusion, prioritizing the enhancement of human intelligence over concerns about artificial intelligence is essential for empowering individuals, fostering sustainable progress, and ensuring a future where technology serves humanity's best interests. Let us embrace the journey of self-discovery and growth, realizing that the true power lies within us to shape a brighter, more human-centered future.

Thank You!