

The background of the cover features a dark blue gradient. On the right side, there is a faint, stylized profile of a human head facing right. Overlaid on and around the head are various glowing elements: a network of green and blue lines with small dots (nodes) representing a neural network or data flow; several concentric, semi-transparent circles in shades of green, blue, and purple; and a few larger, solid-colored circles in purple and blue. The overall aesthetic is futuristic and technological.

2023

AI OUTLOOK

Investor Report

Expert Forecasts
& Trends

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Additional information on emerging tech stock investing — FREE

Sometimes referred to as disruptive technologies, emerging technologies can be defined as sections of the tech sector that are set to have a massive impact on human lives in the next decade.

Many types of technology fall under that umbrella, but a few of the best-known categories are artificial intelligence (AI), robotics and mobile technology. Read on for a look at the overall emerging technology space and how investors can jump into those three specific arenas.

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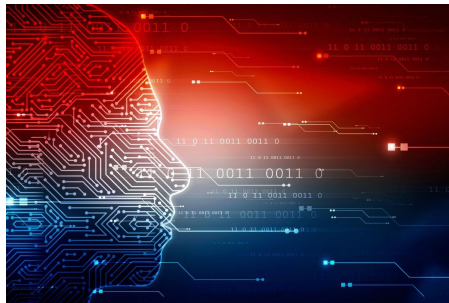
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AI Market 2022 Year-End Review

What should investors expect from the revolutionary AI technology sector in 2023?



2022 was a banner year for artificial intelligence (AI), with broad advancements cementing the industry's foundations.

While some investors still see AI as science fiction, in reality the [thriving AI scene](#) is quickly setting itself up as an essential segment of the wider [technology](#)

market that's worth paying attention to.

Here the Investing News Network presents a look back at the AI investment space in 2022.

Public AI valuations fall, private AI valuations rise

According to the [State of AI Report](#), a data set produced by AI investors Nathan Benaich and Ian Hogarth, the valuations of public AI companies receded in 2022, reaching levels last seen in 2020.

Their combined enterprise value (EV) dropped by 29 percent from 2021 to 2022, sinking from US\$9.6 trillion to US\$6.8 trillion.

Despite that drop in EV on the public side of the industry, the private segment has seen an increase in valuations. In fact, in 2022 the EV of “privately owned startups and scaleups using AI” reached US\$2.2 trillion thanks to a 16 percent year-on-year uptick.

The problem of lower valuations isn’t exclusive to the AI market though. As many investors know, immense macroeconomic pressures have greatly impacted the stability and health of various industries across the world. This downturn has in large part been brought about by rising global inflation rates and ongoing pressures caused by Russia’s invasion of Ukraine.

How did AI leader NVIDIA perform in 2022?

Benaich and Hogarth [told VentureBeat](#) that despite several attempts to disrupt NVIDIA's (NASDAQ:[NVDA](#)) position as the top company in the AI space, no firm has effectively challenged the corporation.

"Nvidia has been investing heavily in AI research and producing some of the best works in imaging over the years," the researchers state in their report. According to their data, NVIDIA's entire revenue for its Q4 2021 period was greater than the combined valuation of the top three AI semiconductor startups.

Even so, NVIDIA has faced some bumps in the road, including the [February decision](#) to abandon its acquisition of Arm, a semiconductor and software design company based in England.

Jensen Huang, founder and CEO of NVIDIA, said Arm has a "bright future" in the industry and will continue to have a partnership with NVIDIA despite the deal collapsing. "Arm is at the center of the important dynamics in computing. Though we won't be one company, we will partner closely with Arm," he said.

Interestingly, even though the purchase fell through, the State of AI Report shows that NVIDIA's enterprise value grew by US\$295 billion during the period between when the deal was announced and when it was officially scrapped.

"Announced at \$40B, NVIDIA's attempted acquisition of Arm fell through due to significant geopolitical and anti competition pushback," as per Benaich and Hogarth.

Based on nearly 30 analyst reviews [collected on TipRanks](#), shares of NVIDIA hold a "strong buy" recommendation, while the company has projected upside of 30.47 percent.

AI finds a new partner industry in healthcare

The AI industry has found unique ways to supplement and [add on to other markets](#). One of those is the drug development space, which has joined forces with AI tools to advance its efforts.

As of August 2022, there were 18 drug assets in clinical trials from “AI-first drug discovery companies,” according to the State of AI Report. To put that into context, there were none as recently as 2020.

It’s clear the marriage between AI and drug development could prove beneficial in the long run, but at the moment there are some inefficiencies to clean up in the partnership.

“While AI promises better drugs faster, we need to solve for the physical bottlenecks of clinical trials today,” the report explains.

What's next for the AI market in 2023?

The stock market took significant hits across the board in 2022, and while the AI sector wasn't safe, it's clear some experts are encouraged by where the market is heading. With major companies making strides and the ability to make major improvements and additions to other markets, AI's path forward looks promising.

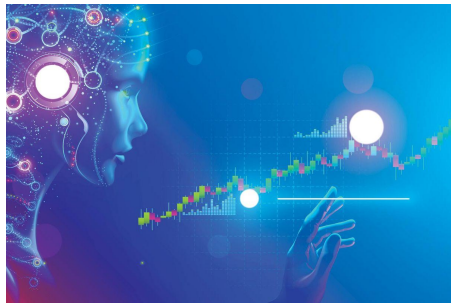
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AI Market Forecast: 3 Top Trends That Will Affect AI in 2023

What should investors expect from the revolutionary AI technology sector in 2023?



Artificial intelligence (AI) is one of the fastest-growing [technology](#) sectors. While its reputation may still be married to science fiction concepts and movie plots, AI serves as a core backbone for a wide variety of industries.

In the year ahead, the sky is the limit for this market as a potential recovery in the global economy allows for increased investment. Here the Investing News Network presents a look at where AI is headed in 2023.

1. Tech market health may improve in 2023

From the biggest names in technology to up-and-coming startups, companies that don't already have AI capabilities are evaluating [AI tools](#) or looking at other ways to enter the sector. However, tech investments suffered a [colossal downturn in 2022](#) due to massive global pressures, including interest rate hikes from the US Federal Reserve.

Some experts expect these increases to stop in March, which could switch how the tech market is viewed by investors.

[According to Fortune](#), analysts at CitiBank believe that if the Fed eases up, investors will turn their attention to growth stocks and riskier plays. "The analysts added that sectors with greater potential for high earnings, including health care and technology, will take priority among investors," the news outlet states.

However, the end of rate hikes doesn't mean the end of volatility, the CitiBank analysts said. Investors will still have to be cautious in the AI market and the overall tech market.

Speculation also remains about whether the US will enter a recession in 2023 and how that could affect the market.

2. Investment dollars set to flow to large AI players

The gap between the leading AI companies and the up-and-comers widened in 2022, and this trend may be exacerbated in 2023 as the top players continue to garner significant interest. A [report](#) prepared by the McKinsey Global Institute indicates that larger companies in the AI space already have a big lead, and will continue to receive heavy investments.

"The bottom line: high performers are already well positioned for sustained AI success, improved efficiency in new AI development, and a resultingly more attractive environment for talent," the report states.

Michael Chui, a partner at the McKinsey Global Institute, said the most successful AI solutions companies are the ones that have dedicated a significant amount of time and money to their operations instead of trying to quickly gain an advantage.

Chui praised those that have learned from their mistakes and slowly added to their AI operations.

"They not only invest more, but they also invest more wisely, with the goal of creating a veritable AI factory that enables them to incorporate more AI in more areas of the business, first in adjacent ones where some existing capabilities can be repurposed and then into entirely new ones," he wrote.

3. Safety to gain new importance in AI discussions

While excitement surrounding AI solutions continues to grow, experts want more investors to consider safety measures.

In their latest annual [State of AI Report](#), AI investors Nathan Benaich and Ian Hogarth have included a new "safety" category. In this section, they explore what's being done to mitigate unchecked AI.

"Safety is gaining awareness among major AI research entities, with an estimated 300 safety researchers working at large AI labs, compared to under 100 in last year's report, and the increased recognition of major AI safety academics is a promising sign when it comes to AI safety becoming a mainstream discipline," the researchers wrote. "Increased awareness of AI existential risk is leading to increased headcount, with an estimated 300 researchers now working full-time on AI safety."

Benaich and Hogarth are encouraged to see more researchers than ever join the AI safety category. However, the number pales in comparison to the amount of researchers in the broader AI field.

The pressing need for AI safety comes from increased concerns when it comes to "the risks of human-level AI and superhuman (artificial general intelligence) in the near future."

Investor takeaway

Despite the excitement and limitless potential attached to AI technology solutions, the industry will continue to be at the mercy of tech market trends as volatility continues to reign supreme in the broader markets.

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AI Market Update: H1 2023 in Review

Interest in AI surged in the first half of 2023. Learn about the highlights seen over the last six months and find out what could be next for the sector.



Artificial intelligence (AI) has become a hot topic in 2023 as industries across the board and some of the biggest names in tech try to integrate this game-changing tool into their operations.

At a smaller scale, the rise of platforms like OpenAI's [ChatGPT](#) are allowing individuals to use AI in everyday life.

Here the Investing News Network recaps key events in the AI market in the first half of 2023.

OpenAI's ChatGPT generates excitement

Spurred on by the rise of ChatGPT, AI tools have been on the frontlines of discourse in 2023.

ChatGPT is a prompt-based AI model that can answer questions posed by users. While the tool [officially launched late last year](#), this year many people have harnessed it for help with everything from writing to coding and more.

Corporations have responded quickly to demand for more ways to access AI, with [Snapchat](#) and [other companies](#) working on ChatGPT tools; the platform's popularity has also spawned a wide array competitors.

"I think with all the talk about ChatGPT over the last six months or so, that has really brought AI, at least the conversation about it to the forefront," Allan Small, senior investment advisor with iA Private Wealth, [told Global News](#).

Major tech players integrate AI improvements

Investors watching the AI trend are curious about how to get exposure, and from a capital markets standpoint, it's hard to argue that any company has benefited more from the AI boom than NVIDIA (NASDAQ:[NVDA](#)).

NVIDIA has a direct presence in both the way AI tools are used and in the entire computing landscape. [The company has an AI division](#) that offers business solutions to organizations in need of AI platform software or AI models and services, and also has investments and partnerships geared at further advancing its AI interests.

Shares of NVIDIA are up over 195.51 percent year-to-date as of June 30, and the company has continued to expand its partnerships and investment deals across the AI landscape.

Of course, NVIDIA isn't the only large tech player looking to capitalize on the tremendous rise in AI interest.

One example is Microsoft (NASDAQ:[MSFT](#)), which is an investor in [OpenAI](#). It has integrated ChatGPT into its Bing search engine, [upgrading it to the GPT-4 update](#) in May after beginning the partnership earlier this year.

Microsoft will now look to add AI solutions to Azure, its cloud computing solution for businesses.

Billion-dollar AI deal shows confidence in sector

Highlighting AI's growing prominence, an AI startup locked in a US\$1.3 billion investment [from several tech investors](#) at the end of June. Among its backers are Microsoft and NVIDIA, which will support the company as it develops a new [generative AI](#) assistant.

The company, Inflection AI, is led by Mustafa Suleyman, who previously co-founded DeepMind, the now Google-owned AI lab.

In a [television appearance](#), Suleyman said it's "an honor and a privilege" to be backed by these investors.

"The potential upside is enormous," the executive added.

Suleyman envisions a world where personal intelligence tools will suit users directly and said there's a lot to do when it comes to figuring out where AI may be headed. He expects Inflection AI to be up and running later this year.

Positive AI fund returns highlight opportunity

Investors who are evaluating novel markets often rely on exchange-traded funds (ETFs) as a way to get broad initial exposure before taking more direct positions. Those looking at AI are in luck — various funds offer exposure to the market.

The Robotics & Artificial Intelligence ETF (NASDAQ:[BOTZ](#)) from Global X ETFs has enjoyed a strong return so far this year, rising 39.18 percent year-to-date as of June 30. The fund has over 40 holdings whose focus is on the adoption and use of AI.

Another AI fund is the ROBO Global Robotics & Automation ETF (LSE:[ROBO](#)), which had gone up in value by 25.61 percent year-to-date as of June 30. Similarly, the iShares Robotics and Artificial Intelligence Multisector ETF (ARCA:[IRBO](#)) had risen 28.11 percent as of the same date. This fund presents investors with a diversified approach since it holds over 100 securities and offers more exposure to Asian markets, including China and Japan.

In its [prospectus](#), the fund managers for IRBO highlight the following AI sector risk: "Robotics and artificial intelligence companies, especially smaller companies, tend to be more volatile than companies that do not rely heavily on technology."

Additionally, the fund managers note that companies involved in the AI marketplace face intense competition and potentially rapid product obsolescence. "Many of these companies are also reliant on the end user demand of products and services in various industries that may in part utilize robotics and artificial intelligence," the document states.

Investor takeaway

The speed at which AI business solutions are gaining traction shows the public's willingness to engage with novel technology. The money backing this industry also indicates how much interest is building for AI.

"Enterprises are increasingly turning to cloud-first AI strategies that enable fast development and scalable deployment," Jensen Huang, CEO and founder of NVIDIA, [said](#).

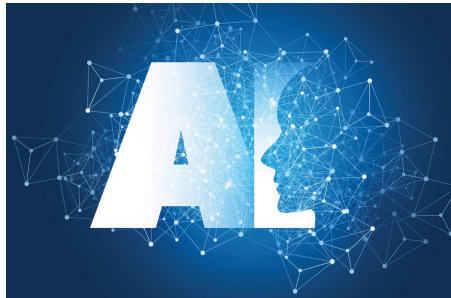
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AI Stocks: 9 Biggest AI Companies in 2023

What are the biggest AI stocks? Learn about the largest AI companies by market cap on US, Canadian and Australian exchanges.



Artificial intelligence (AI) may be an emerging technology, but there are plenty of billion-dollar companies in this space.

As the market has grown over the past few years, AI technology has made strong inroads into several key industries, including logistics, manufacturing, finance, healthcare, customer service and cybersecurity.

While AI-driven advancements in robotics have received the most press in recent years, the latest buzz has centered around OpenAI's [ChatGPT](#). This intelligent chatbot shows how quickly [generative AI](#) is advancing, and has attracted the attention of heavyweight technology companies such as Microsoft (NASDAQ:[MSFT](#)), which recently invested US\$10 billion in privately held [OpenAI](#). Alphabet (NASDAQ:[GOOGL](#)) has also released its own AI chat tool, Google Bard.

On a global scale, [Markets and Markets predicts](#) that the AI industry will experience a compound annual growth rate of 36.2 percent between 2022 and 2027 to reach a market value of more than US\$407 billion.

Here the Investing News Network profiles some of the biggest AI stocks by market cap on US, Canadian and Australian stock exchanges. Data was gathered on May 30, 2023, using TradingView's [stock screener](#).

American AI stocks

According to Tracxn Technologies, the number of US AI companies has [doubled since 2017](#).

One of the major factors fueling growth in the American AI market, [states GMI Research](#), is “rising investment in Artificial Intelligence by the government and prominent technocrats in the country.”

Below are three of the top US AI stocks.

1. [Advanced Micro Devices \(NASDAQ:AMD\)](#)

Market cap: US\$204.56 billion; share price: US\$127.03

Semiconductor company Advanced Micro Devices designs, develops and manufactures high-performance computer processors, graphics and visualization technologies that are used for AI, data centers, business computing solutions and gaming.

[According to Bloomberg](#), Microsoft is rumored to be financially supporting Advanced Micro Devices' expansion of its in-house AI processor division to the tune of at least US\$2 billion, although the tech giant has denied the report.

In an [earnings call](#) during early May, Advanced Micro Devices CEO Lisa Su stated, “We are very excited about our opportunity in AI — this is our number one strategic priority.”

[Company Profile](#)

2. [Qualcomm \(NASDAQ:QCOM\)](#)

Market cap: US\$122.93 billion; share price: US\$110.35

San Diego-based Qualcomm designs and manufactures semiconductors, software and wireless telecommunications products. The multinational corporation's product catalog includes processors, modems, RF systems, 5G, 4G and optimized software.

After a [decade of AI research and development](#), Qualcomm's goal is to make AI ubiquitous in everyday life by "inventing, developing, and commercializing power-efficient on-device AI, edge cloud AI, and 5G." The company has developed several AI-based products, including the Qualcomm Snapdragon 765G mobile gaming platform, which combines 5G and AI technologies.

Qualcomm has [partnered with Microsoft](#) to bring on-device AI innovations to market, including generative AI running on Snapdragon compute platforms, and tools for developers building applications for Windows 11 PCs powered by Snapdragon.

[Company Profile](#)

3. [Snowflake \(NYSE:SNOW\)](#)

Market cap: US\$48.75 billion; share price: US\$150.01

Cloud-based data warehousing company Snowflake offers customers data storage, processing and analytics capabilities through its data-as-a-service platform. Snowflake's scalable Data Cloud platform supports multi-cloud infrastructure environments, allowing companies to bring data from other platforms together in

one space. The platform was also designed to support enterprise AI projects that leverage big data and machine learning (ML).

Snowflake has made several acquisitions in the past few years, including picking up AI companies with complementary technologies. In early 2023, the company [announced its intention](#) to acquire Myst AI, an AI-based time series forecasting platform provider. Time series forecasting is used in several fields, including supply chain management and inventory planning. Myst AI's technology is capable of predicting spikes in energy demand and renewable generating capacity, as well as prices, in an effort to cut energy costs.

[Company Profile](#)

Canadian AI stocks

Recognized as a world-leading AI research hub, Canada ranks fourth out of 54 countries in the [Global AI Index](#). Since 2017, the Canadian government has invested hundreds of millions of dollars into accelerating the research and commercialization of AI technology in the country through the [Pan-Canadian Artificial Intelligence Strategy](#).

Below are three of the top Canadian AI stocks.

1. [OpenText \(TSX:OTEX\)](#)

Market cap: C\$15.37 billion; share price: C\$56.99

Ontario-based OpenText is one of Canada's largest software companies. The tech firm develops and sells enterprise information management software. Its portfolio includes hundreds of products in the areas of enterprise content management, digital process automation and security, plus AI and analytics tools. OpenText serves small businesses, large enterprises and governments alike.

OpenText's AI & Analytics platform has an open architecture that enables integration with other AI services, including Google Cloud and Azure. It can leverage all types of data, including structured or unstructured data, big data and the internet of things (IoT) to quickly create interactive visuals.

In March, OpenText [launched a new version](#) of its AI-powered cloud platform ValueEdge that features "new capabilities that build on the platform's existing functionality, enabling chief technology officers to accelerate speed-to-value eliminating the typical waiting, wasting and wondering in the development process."

[Company Profile](#)

2. [Descartes Systems Group \(TSX:DSG\)](#)

Market cap: C\$8.9 billion; share price: C\$104

Descartes Systems Group provides on-demand software-as-a-service (SaaS) solutions. The multinational technology company specializes in logistics software, supply chain management software and cloud-based services for logistics businesses.

[AI and ML enhancements](#) to Descartes' routing, mobile and telematics suite are helping the company's customers optimize fleet performance. "AI and ML are perfect extensions to our advanced route optimization and execution capabilities," said Ken Wood, executive vice president at Descartes. "From dynamic delivery appointment scheduling through planning and real-time route execution, we've used AI and ML to improve our ability to deliver the next level of fleet performance for customers."

3. [Kinaxis \(TSX:KXS\)](#)

Market cap: C\$5.26 billion; share price: C\$186.60

Kinaxis is a supply chain planning software company that has developed a cloud-based SaaS platform known as RapidResponse. The subscription software is used globally by supply chain operations for multiple industries, including electronics, aerospace, defense, pharmaceutical, automotive and retail.

In [May of last year](#), Kinaxis unveiled its new Planning.AI analytical approach as part of its RapidResponse platform. This enhancement allows for quicker, more accurate responses to market disruptions, the company said.

"Supply chain planners and leaders are often in the tricky situation of having to choose between making an accurate decision or making a fast one," Kinaxis CEO John Sicard noted. "Planning.AI eliminates that struggle by empowering people to make fast and accurate decisions through the use of multiple advanced analytical approaches. This latest breakthrough builds on our revolutionary concurrent planning technique, driving a true step change in supply chain agility and resiliency."

More recently, [Kinaxis partnered](#) with leading global supply chain company HAVI to provide machine learning and AI-powered supply chain planning and analytics solutions for the quick service restaurant industry.

[Australian AI stocks](#)

AI investment in Australia is expected to reach [AU\\$3.6 billion in 2025](#), according to research firm IDC. The biggest spenders when it comes to AI in Australia are the banking industry, the federal government, professional services and retail.

Below are three of the top Australian AI stocks.

1. [Xero \(ASX:XRO\)](#)

Market cap: AU\$16.7 billion; share price: AU\$109.73

New Zealand-based technology company Xero provides cloud-based accounting software for small and medium-sized businesses. The company's product portfolio also includes the Xero Accounting app, Xero HQ, Xero Ledger, Xero Workpapers and Xero tax tools.

Xero has made a number of AI enhancements to its platform in recent years, including [bank reconciliation predictions](#) that save time and reduce errors, and Analytics Plus, a suite of AI-powered planning and forecasting tools.

[Company Profile](#)

2. [TechnologyOne \(ASX:TNE\)](#)

Market cap: AU\$5.44 billion; share price: AU\$16.44

TechnologyOne is another large enterprise technology software firm in Australia. In fact, it is the country's largest enterprise resource planning SaaS company. TechnologyOne has a client base of over 1,200, including customers in the government, education, health and financial services sectors across Australia, New

Zealand and the UK. The company's research and development center is targeting cloud-based technology, AI and ML.

TechnologyOne recently announced its latest [half-year financial results](#), highlighting that it saw record profits for the 14th year. The company's SaaS annual recurring revenue was up 40 percent and its after-tax profit was up 24 percent.

TechnologyOne attributes the strong results to robust demand for the company's global SaaS enterprise resource planning solution. During the same period, TechnologyOne increased its large-scale enterprise SaaS customer base by 27 percent.

[Company Profile](#)

3. [Brainchip Holdings \(ASX:BRN\)](#)

Market cap: AU\$750.49 million; share price: AU\$0.45

Global technology company BrainChip Holdings has developed and commercialized a type of edge AI that simulates the functionality of the human neuron. The company's neuromorphic processor, Akida, enables the deployment of edge computing across several applications, including connected cars, consumer electronics and industrial IoT.

In August 2022, the company launched [the BrainChip University AI Accelerator Program](#). "By partnering with BrainChip's AI Accelerator Program, universities are able to ensure that students have the tools and resources needed to encourage development of cutting-edge technologies that will continue to usher in an era of essential AI solutions," BrainChip CEO Sean Hehir stated.

[BrainChip](#) [partnered](#) with AI-based video analytics solutions provider CVEDIA in May to further develop edge AI and neuromorphic computing. The CVEDIA-RT platform for video analytics will be integrated with BrainChip's Akida neuromorphic IP. The technology has applications in security and surveillance, transportation, information technology services and retail.

[Company Profile](#)

FAQs for AI stocks

Which company is leading the AI race?

Google and Microsoft are battling it out for king of the AI hill. While [a study](#) from digital marketing firm Critical Mass shows that consumers believe Alphabet's Google is leading the AI race, analysts are [pointing to Microsoft](#) as the clear frontrunner. Microsoft stands to benefit in a big way from its billions of dollars investment in OpenAI's ChatGPT as advancements in generative AI may have the potential to increase the company's revenues for its Azure cloud computing business.

Which country is doing best in AI?

North America is the global hotspot for advancements in AI technology and is home to the majority of the world's largest AI providers. Of the countries in this region, Canada's AI industry is showing the fastest growth, according to a [report by Markets and Markets](#). Swiss-based CRM firm InvestGlass [positions the US](#) as the primary hub for AI development, and many of the world's leading tech giants are headquartered there. According to the firm, China comes in a close second.

What is Elon Musk's AI company?

In March 2023, Elon Musk [launched X.AI](#), a new AI technology company based in Nevada. While not much is known about the company yet, Musk said he is starting it as a "third option" to ChatGPT and Google Bard; its product will be named TruthGPT.

Does Tesla have its own AI?

Tesla (NASDAQ:[TSLA](#)) has developed proprietary AI chips and neural network architecture. The company's [autonomous vehicle AI system](#) gathers visual data in real time from eight cameras to produce a 3D output that helps to identify the presence and motion of obstacles, lanes and traffic lights. The AI-driven models also help autonomous vehicles make quick decisions. In addition to developing autonomous vehicles, Tesla is working on bi-pedal robotics.

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10 Generative AI Stocks to Watch as ChatGPT Soars

Can you invest in OpenAI's ChatGPT? Not directly — but these 10 companies offer exposure to AI chatbot technology.



The launch of OpenAI's [ChatGPT](#) has created major buzz around artificial intelligence (AI) stocks.

ChatGPT is an AI chatbot software application that uses machine learning techniques to emulate human-written conversations. A hitherto niche subsector in the AI industry, this technology is called generative AI, and it's set to disrupt myriad industries, including marketing, security, healthcare, gaming, communication, customer service and software development.

While generative AI technology is in its early stages, Reid Menge, co-portfolio manager for the BlackRock Technology Opportunities Fund, sees immense potential. "ChatGPT is nearly as smart as the human brain today," [he said](#), "and with

the computational horsepower being used to train these AI models, imagine the capabilities of these generative AI services by 2025.”

According to [Grand View Research](#), the generative AI market is expected to grow at a compound annual growth rate of 34.6 percent between 2022 and 2030 to reach an impressive US\$109.37 billion.

Although investors can’t directly take a position in privately owned [OpenAI](#), there are a number of technology stocks that offer exposure to the expected growth in generative AI technology. Below the Investing News Network showcases 10 technology stocks that stand to benefit from the rise in advancements and adoption of AI chatbot technologies.

All market cap and share price data was current as of March 1, 2023.

1. [Microsoft \(NASDAQ:MSFT\)](#)

Market cap: US\$1.83 trillion; current share price: US\$246.27

Initially investing at least US\$3 billion in OpenAI a few years ago, Bill Gates-led technology behemoth Microsoft has reportedly committed to investing up to another [US\\$10 billion](#) in the chatbot creator in the years ahead.

In late February, [Microsoft shared](#) that a new update to Windows 11 will include integration with the company's Bing chatbot, which is based on OpenAI’s technology. Users will be able to query the Bing chatbot directly in Windows 11’s search bar.

[Press Releases](#)

[Company Profile](#)

2. [Alphabet \(NASDAQ:GOOGL\)](#)

Market cap: US\$1.16 trillion; current share price: US\$90.36

Alphabet's [AI chatbot Bard](#) is touted as a rival to ChatGPT and Bing. Bard is expected to be launched by Alphabet subsidiary Google in H1 2023. The chatbot has been in development for two years and entered testing in early February; it was built around Google's Language Model for Dialogue Applications. Much like Bing, the company will incorporate Bard into its Google Search tool.

Alphabet's foray into the AI chatbot space has already proved costly for the company. In early February, Alphabet shares lost US\$100 billion in one day, [according to Forbes](#), after Bard made headlines by fumbling a question about new discoveries from the James Webb Space Telescope. However, as Forbes staff writer Jonathan Ponciano points out, there is still plenty of bullish sentiment that Google is well positioned to "capture a significant part of the market."

[Company Profile](#)

3. [Amazon \(NASDAQ:AMZN\)](#)

Market cap: US\$938 billion; current share price: US\$92.17

Amazon subsidiary and cloud-computing platform Amazon Web Services (AWS) evolved out of Amazon's transition from an online retailer to one of the world's largest technology companies. AWS' wide range of services includes computing, storage, databases, networking, analytics, machine learning and AI. Its revenues are on track to break the [US\\$100 billion level for 2023](#).

AWS has a number of [AI business tools](#) on offer across four verticals: AI services, AI platforms, AI frameworks and AI infrastructure. Generative AI is nothing new to Amazon, as the technology forms the basis of conversational experiences with Amazon's all-too-familiar Alexa. In late February, AWS [announced an expansion](#) to its collaboration with AI company Hugging Face. The pair will "accelerate the training, fine-tuning, and deployment of large language and vision models used to create generative AI applications."

[Company Profile](#)

4. [NVIDIA \(NASDAQ:NVDA\)](#)

Market cap: US\$560.4 billion; current share price: US\$226.98

NVIDIA is a pioneer and global leader in graphics processing unit (GPU) technology for laptops, workstations, mobile devices, notebooks, PCs and more. Its business model primarily focuses on gaming, automotive electronics, mobile devices and AI. The company also offers supercomputing processing capabilities to scientific researchers around the world.

NVIDIA is supporting Meta Platforms (NASDAQ:[META](#)) as it builds out its [AI supercomputer](#), which is expected to be the largest NVIDIA DGX A100 customer system to date. NVIDIA is also [working with Dell Technologies](#) (NYSE:[DELL](#)) on AI applications for enterprises, ranging from language-based services to speech recognition and cybersecurity.

[Company Profile](#)

5. [Cisco Systems \(NASDAQ:CSCO\)](#)

Market cap: US\$197.99 billion; current share price: US\$48.34

Multinational digital communications firm Cisco Systems is a leader in IT and communications networks. The company has a large portfolio of multi-cloud products and applications, alongside strong relationships with Azure, AWS and Google Cloud.

Cisco's AI and machine learning offerings encompass a wide range of computing solutions for enterprises, including a focus on cybersecurity. [During a recent interview](#), Jeetu Patel, executive vice president and general manager of security and collaboration at Cisco Systems, spoke about the potential security threats posed by generative AI technology like ChatGPT.

"Over time, what you will see is attacks will get more bespoke and more sophisticated," explained Patel. "You will need to have better mechanisms to know that this was not a human being writing that to you, but a machine pretending to be a human being writing something to you."

[Company Profile](#)

6. [IBM \(NYSE:IBM\)](#)

Market cap: US\$115.9 billion; current share price: US\$128.19

IBM reportedly has one of the world's largest AI research programs. The multinational tech company offers various AI solutions for cloud computing, IT operations, healthcare, customer service, business automation, natural language processing and more.

Given the potential for factual and prejudicial errors inherent in the current generative AI models, an AI team at IBM Research is working on developing new generative AI systems that will lead to more trustworthy downstream applications.

But it's not all about chatbots for IBM — headed by Dr. Payel Das, the team has used generative AI technology to develop [antimicrobial drugs](#) targeting deadly antibiotic-resistant bacteria.

[Company Profile](#)

7. [Intel \(NASDAQ:INTC\)](#)

Market cap: US\$104.79 billion; current share price: US\$25.33

As the world's largest semiconductor chip manufacturer by revenue, Intel produces microprocessors that power many of the world's PCs and mobile devices. A household name, Intel continues to advance semiconductor design.

Intel says its [Trusted Media team](#) is building generative AI “that improves people’s lives, limits harm and builds tools to make other technologies more natural.” The company’s FakeCatcher can detect deepfake videos with 96 percent accuracy to help users quickly distinguish between real and fake content. Intel’s ARLA open-source urban driving simulator employs generative AI to create a more realistic 3D experience for “the development, training and validation of autonomous driving systems.”

[Company Profile](#)

8. [Micron Technology \(NASDAQ:MU\)](#)

Market cap: US\$62.57 billion; current share price: US\$57.34

Computer memory and data storage company Micron Technology produces dynamic random-access memory (DRAM), flash memory and USB flash drives. The company is a global leader in the semiconductor industry and is the only US manufacturer of memory, DRAM and NAND flash. This is important for the US AI technology sector because, as [Forbes reports](#), generative AI technology depends heavily on semiconductors and about 85 percent of semiconductors are manufactured in Asia.

Following US President Joe Biden's signing of the CHIPS and Science Act in mid-2022, Micron Technology announced plans to invest [US\\$40 billion](#) through 2029 in building memory manufacturing capacity in the country. "With the anticipated grants and credits made possible by the CHIPS and Science Act, this investment will enable the world's most advanced memory manufacturing in America," the company commented at the time.

[Company Profile](#)

9. [Marvell Technology Group \(NASDAQ:MRVL\)](#)

Market cap: US\$38.7 billion; current share price: US\$45.36

Another semiconductor producer, Marvell Technology Group is focused on delivering data infrastructure technology and semiconductor solutions for enterprises, cloud, automotive and carrier architectures.

In early March, the company [announced the launch](#) of its Marvell Nova 1.6 Tbps PAM4 electro-optics platform. “Delivering a breakthrough in optical connectivity, Nova enables the highest speed of data movement in cloud artificial intelligence / machine learning and data center networks,” a press release states.

[Company Profile](#)

10. [Juniper Networks \(NYSE:JNPR\)](#)

Market cap: US\$9.89 billion; current share price: US\$30.53

Multinational networking products provider Juniper Networks develops and markets routers, switches, network management software, network security products and software-defined networking technology. In 2021, the company [introduced AI services](#) to its networking technology, enabling its customers and partners to use Ethernet VPN or EVPN-VXLAN campus fabric management through Juniper's cloud-based AI engine Mist Cloud.

Mist Cloud combines AI, machine learning and data science techniques. Juniper Networks is [further leveraging this technology](#) as a “foundational element behind Marvis, the industry’s first AI-driven Virtual Network Assistant, which provides extensive insight and guidance to IT staff via a natural language conversational interface.”

As of January, investment firm BlackRock (NYSE:[BLK](#)) held a 9.8 percent stake in Juniper Networks.

[Company Profile](#)

FAQs for generative AI

What is generative AI?

Generative AI is an emerging AI technology based on deep learning models and algorithms that can generate text, images or sounds in response to prompts given by users.

What are generative AI examples?

Some of the most notable examples of generative AI are ChatGPT, DALL-E 2, Midjourney, Stable Diffusion and Bing AI.

OpenAI's DALL-E 2 is an AI system that can create realistic images and art from a description in natural language. Similar to DALL-E 2, Midjourney generates images from prompts. Stable Diffusion is a latent text-to-image diffusion model capable of generating photo-realistic images given any text input. Microsoft's Bing AI is a feature of the Bing search engine that leverages the same technology as ChatGPT.

What are the hottest generative AI startups?

According to [technology and business magazine e-Week](#), in addition to ChatGPT creator OpenAI, some of the other leading generative AI startups include Hugging Face, Synthesis AI, Jasper and Cohere.

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Securities Disclosure: I, Melissa Pistilli, hold no direct investment interest in any company mentioned in this article.

5 Artificial Intelligence ETFs

The artificial intelligence sector is expected to be worth over US\$407 billion by 2027. Here are five artificial intelligence ETFs for investors who want broad exposure to this developing industry.



It might be surprising, but the phrase "artificial intelligence" has been around for over half a century — since 1955, in fact. It was intended to describe a new computer science subdiscipline. But what exactly is artificial intelligence?

In simple terms, artificial intelligence, or AI, means "simulated intelligence in machines." In other words, machines with AI are capable of simulating thinking like people and mimicking their actions. The ideal characteristic of AI is the ability to rationalize.

Of course, that is a very broad definition of AI technology. There are actually at least [18 different applications](#) of AI, which seems to prove that this market isn't going away anytime soon.

Case in point: Research conducted by [Markets and Markets suggests](#) the AI industry will be worth over US\$407 billion by 2027, increasing at a compound annual growth rate of 36.2 percent between 2022 and 2027. With that much money going into the sector, there is certainly no shortage of ways for investors to add AI investments to their portfolios.

For those who are new to this segment of the technology arena and would prefer to gain exposure to the overall market rather than specific AI stocks, exchange-traded funds (ETFs) are a popular avenue. Here the Investing News Network looks at five AI-focused ETFs listed on ETFdb.com. All details were current as of April 26, 2023.

According to ETFdb.com, these [AI ETFs](#) are required to meet one of three criteria:

- Focus on stocks developing new products, services or technological improvements in AI-related research
- Have 25 percent portfolio exposure to companies that spend money on AI research and development expenses
- Choose individual securities to be included in the fund based on their use of AI methods

1. [Global X Robotics & Artificial Intelligence Thematic ETF \(NASDAQ:BOTZ\)](#)

AUM: US\$1.172 billion

The Global X Robotics & Artificial Intelligence Thematic ETF offers exposure to firms involved in the global automation and robotics industries. [According to ETF.com](#), the Global X Robotics & Artificial Intelligence Thematic ETF was launched in September 2016 and has holdings in various markets, including technology, healthcare and energy. Eligible companies must earn a significant portion of their revenue from or have a stated business purpose in the fields of robotics or AI.

The ETF currently tracks 45 holdings, including Intuitive Surgical (NASDAQ:[ISRG](#)) and NVIDIA (NASDAQ:[NVDA](#)).

[Company Profile](#)

2. [Robo Global Robotics And Automation Index ETF \(ARCA:ROBO\)](#)

AUM: US\$1.348 billion

The Robo Global Robotics and Automation Index ETF, launched in October 2013, was the first robotics and automation ETF to market. As its name suggests, it follows companies involved in those sectors. Robo Global currently tracks 80 companies, and its top two holdings are iRhythm (NASDAQ:[IRTC](#)) and Novanta (NASDAQ:[NOVT](#)).

[Company Profile](#)

3. [ARK Autonomous Technology & Robotics ETF \(ARCA:ARKQ\)](#)

AUM: US\$874 million

The ARK Autonomous Technology & Robotics ETF was created in September 2014 and primarily focuses on advancements that enhance productivity and reduce costs in autonomous vehicles, robotics, 3D printing and energy storage technology.

The fund [includes companies](#) that may "benefit from the development of new products or services, technological improvements and advancements in scientific research related to, among other things, energy, automation and manufacturing, materials and transportation." This ETF tracks 34 holdings, with two of its biggest being Tesla (NASDAQ:[TSLA](#)) and Trimble (NASDAQ:[TRMB](#)).

[Company Profile](#)

4. [iShares Robotics And Artificial Intelligence ETF \(ARCA:IRBO\)](#)

AUM: US\$306 million

The iShares Robotics and Artificial Intelligence ETF is relatively new compared to the others — the fund [launched in June 2018](#). It tracks an index composed of 118 developed and emerging market companies that could benefit from long-term growth in robotics technology and AI. The fund has the lowest expense ratio of the five AI funds on this list at 0.47 percent.

Some of the ETF's top holdings include Meitu (OTC Pink:[MEIUF](#), HKEX:1357) and iQIYI (NASDAQ:[IQ](#)).

[Company Profile](#)

5. [First Trust NASDAQ Artificial Intelligence And Robotics ETF \(NASDAQ:ROBT\)](#)

AUM: US\$235 million

The last AI ETF on this list is the First Trust NASDAQ Artificial Intelligence and Robotics ETF, which like IRBO was launched in 2018. It follows a modified equal-weighted index of all-cap, global companies involved in AI or robotics.

ROBT currently tracks 108 companies, and its top two holdings are AeroEnvironment (NASDAQ:[AVAV](#)) and QinetiQ Group (LSE:[QU](#)).

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This is an updated version of an article originally published by the Investing News Network in 2017.

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Securities Disclosure: I, Melissa Pistilli, hold no direct investment interest in any company mentioned in this article.

Additional information on emerging tech stock investing — FREE

Sometimes referred to as disruptive technologies, emerging technologies can be defined as sections of the tech sector that are set to have a massive impact on human lives in the next decade.

Many types of technology fall under that umbrella, but a few of the best-known categories are artificial intelligence (AI), robotics and mobile technology. Read on for a look at the overall emerging technology space and how investors can jump into those three specific arenas.

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