

AI Industry Report

Q2 2023



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Introduction

In the midst of a world propelled by technological marvels, a revolution is taking place. A revolution that is transforming not just industries, but the very essence of human interaction with machines. This is the story of the AI industry—an industry that has surged forward with unprecedented vigour, reshaping the landscape of possibilities.

In the corridors of research labs, a symphony of algorithms danced tirelessly, birthing breakthroughs that once existed only in the realm of science fiction. Deep learning emerged as the orchestrator of this revolution, casting its spell upon image recognition, natural language processing, and strategic game mastery.

The world watched in awe as AI transcended its theoretical confines and stepped onto the stage of real-world applications. From the bustling heart of healthcare to the enigmatic enclaves of finance, from the rhythmic cadence of manufacturing floors to the ethereal realms of marketing, AI emerged as a force of transformation. It whispered insights to diagnose medical enigmas, painted predictive strokes across the canvas of market trends, and choreographed supply chains with a precision that defied human intuition.

But it was the language of AI that became the universal translator, bridging the gap between human intention and computational execution. Models like GPT-3 possessed a linguistic finesse that dazzled the world—engaging in conversations, translating idioms across continents, and even crafting lines of code with a fluency that blurred the lines between silicon and synapse. As the sun dipped below the horizon, AI's eyes turned to the visual tapestry of reality. Computer vision emerged as a maestro of perception, decoding the language of pixels to uncover the secrets hidden

within. Autonomous vehicles prowled the streets, their AI-driven minds navigating the labyrinth of urban complexity.

Yet, amidst the crescendo of advancement, shadows gathered. Ethical dilemmas cast their long fingers upon the landscape. Concerns of bias and privacy echoed through the hallowed chambers of innovation. The symphony of automation found itself in a dual role—creator of efficiency and harbinger of change. As AI reshaped industries, it also nudged the boundaries of employment, invoking a cacophony of debates about the future of labour.

In the midst of this orchestration, a new era of hardware emerged—a symphony of silicon designed not just to compute, but to dream the AI dream. GPUs and specialized chips like whispers in the wind, accelerating the pulse of neural networks, propelling computations to the very edge of possibility.

Amidst the serenade of progress, a tapestry of collaboration and competition unfolded. Giants of technology stood shoulder to shoulder with startups and visionaries, their symphony of innovation echoing across the expanse of possibility. The spirit of collaboration, enshrined in open-source philosophies, propelled the industry to new heights, making knowledge a beacon lighting the path forward.

As the curtain rises on the AI odyssey, it beckons us to step into a world where the boundaries of human and machine are ever more fluid. This is the tale of an industry that marries art and science, reimagining the potential of existence. It is a story that invites us to journey into the heart of creation, where codes and algorithms intertwine, and the symphony of intelligence resounds.

State of the Industry

AI - a history

The symphony of AI's evolution echoes through time, composed of distinct movements that have shaped the grand narrative of artificial intelligence. Emerging in the 1950s, luminaries like Alan Turing and John McCarthy laid the foundation for the field, venturing into symbolic AI—the realm of rules and representations to mirror human intellect. As the decades unfolded, the melody shifted to expert systems and knowledge-based AI in the 1980s and 1990s, with rule-based simulations of human expertise, while neural networks faced the constraints of their era.

A crescendo was reached in the early 2000s, as neural networks rose from dormancy, empowered by efficient algorithms, superior hardware, and expansive datasets. This renaissance paved the way for deep learning, with breakthroughs like convolutional neural networks for images and recurrent neural networks for sequences. The mid-2010s brought forth a revolution ignited by the fusion of big data and deep learning, birthing models like GPT and BERT that transformed natural language processing and propelling computer vision to human-level precision.

As AI's prominence grew, so did concerns of ethics and bias, prompting a new movement. Researchers and institutions united to infuse equity into AI's veins. Transparency and interpretability became the battle cries of recent times, driving the pursuit of explainable AI and laying the groundwork for federated learning—a concept bridging privacy and progress.

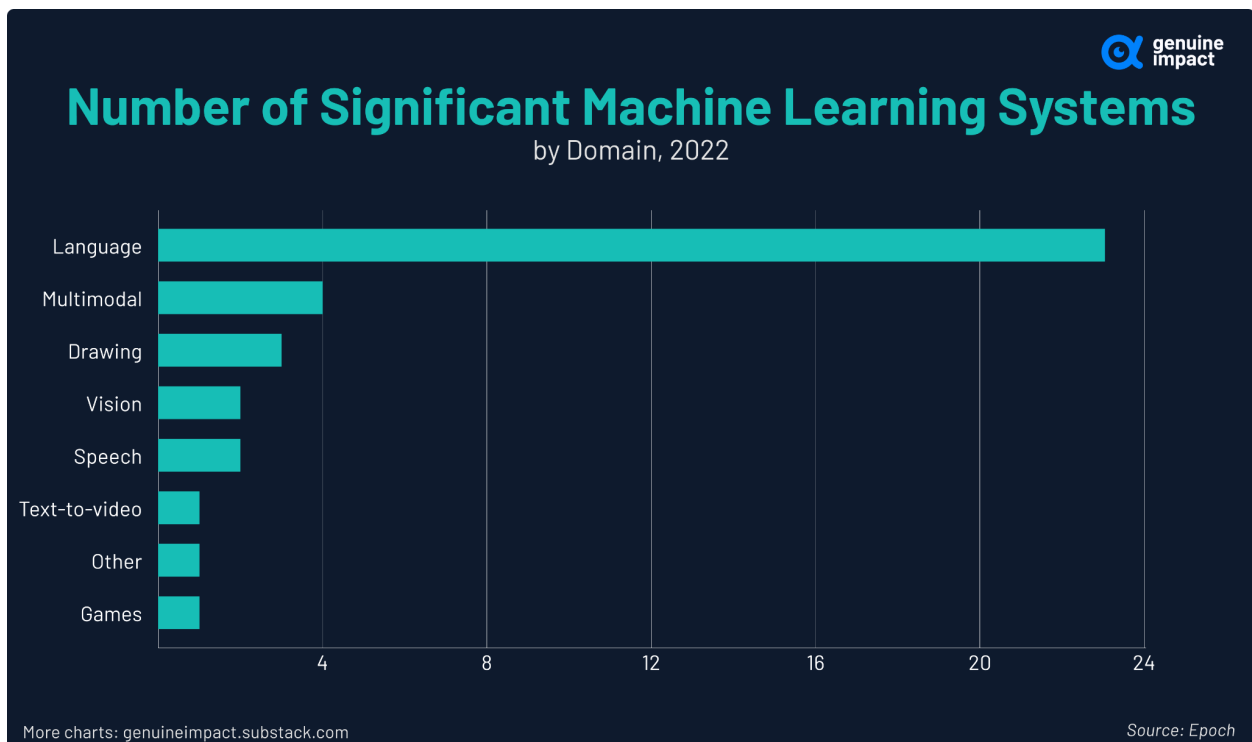
A new chapter dawns with continual and lifelong learning, where AI systems evolve over time without forgetting the past. Quantum computing whispers of a revolution, promising a new era of computational might. Neuromorphic computing, inspired by the human brain, aspires to emulate its intricacies,

weaving the symphony of AI ever deeper into the fabric of our world. As we journey through these harmonies of innovation, the echoes of AI's evolution resonate with the promise of a future woven with intelligence's touch.

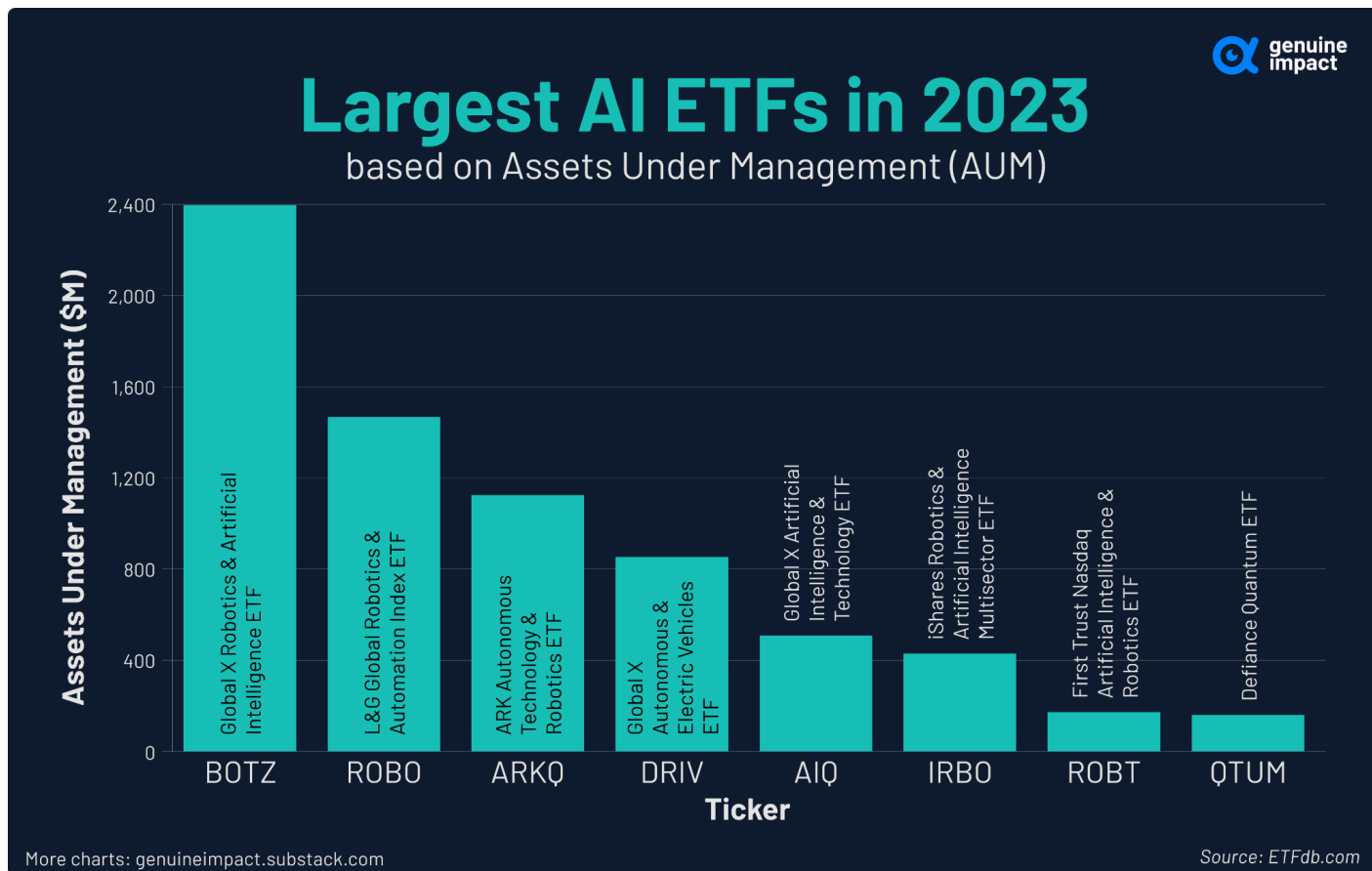
Major players

In the bustling landscape of the AI industry, a handful of monumental figures stand as the cornerstones of innovation, each weaving their unique narratives into the grand tapestry of progress. Google, with its commanding presence, has pioneered AI research and application through its renowned TensorFlow framework. Facebook's AI Research (FAIR) division has etched its mark with pioneering contributions to computer vision, natural language processing, and reinforcement learning.

OpenAI stands as a guardian of ethical AI advancement, exemplified by creations like GPT-3 and beyond, that beckon the era of artificial general intelligence (AGI). Microsoft's Cognitive Services and Azure Machine Learning platform orchestrate data-driven symphonies, while Amazon's AI mastery orchestrates seamless experiences in recommendation systems and logistics optimization. IBM's Watson takes centre stage in natural language and healthcare, and NVIDIA's GPUs compose the hardware symphony, accelerating the training of deep learning models. Apple's AI-infused products enrich user interactions, while Baidu and Tencent lead China's innovation charge with impactful strides in speech recognition, computer vision, and gaming AI. Samsung's intelligent devices harmonize daily living, and Intel's hardware solutions amplify AI's capabilities. Together, these pillars shape the landscape of AI, propelling us into an age where human and machine collaborate in unprecedented harmony.



ETFs



Overview

ETFs are a popular way to gain exposure to the AI industry without having to cherry-pick individual stocks. As AI gets adopted by more and more sectors, revenue and profits of these companies are expected to surge with the market poised to grow to over \$2 trillion by 2030.

One popular ETF that has exposure to AI is \$QQQ which tracks the NASDAQ 100 Index. This is a tech ETF that holds many of the world’s largest tech companies, including Alphabet, Meta, Microsoft, Tesla and Nvidia.

It isn’t really an AI ETF, but with most of these tech companies venturing into the AI space, it might as well be.

At the time of writing, the 8 largest AI-focused ETFs have a combined \$7.4B of assets under management, and all of them were created in 2018 or earlier. Global X manages three of the top five, while technology-focused companies like ARK and Quantum are also present in the list.

Global X Robotics & AI ETF

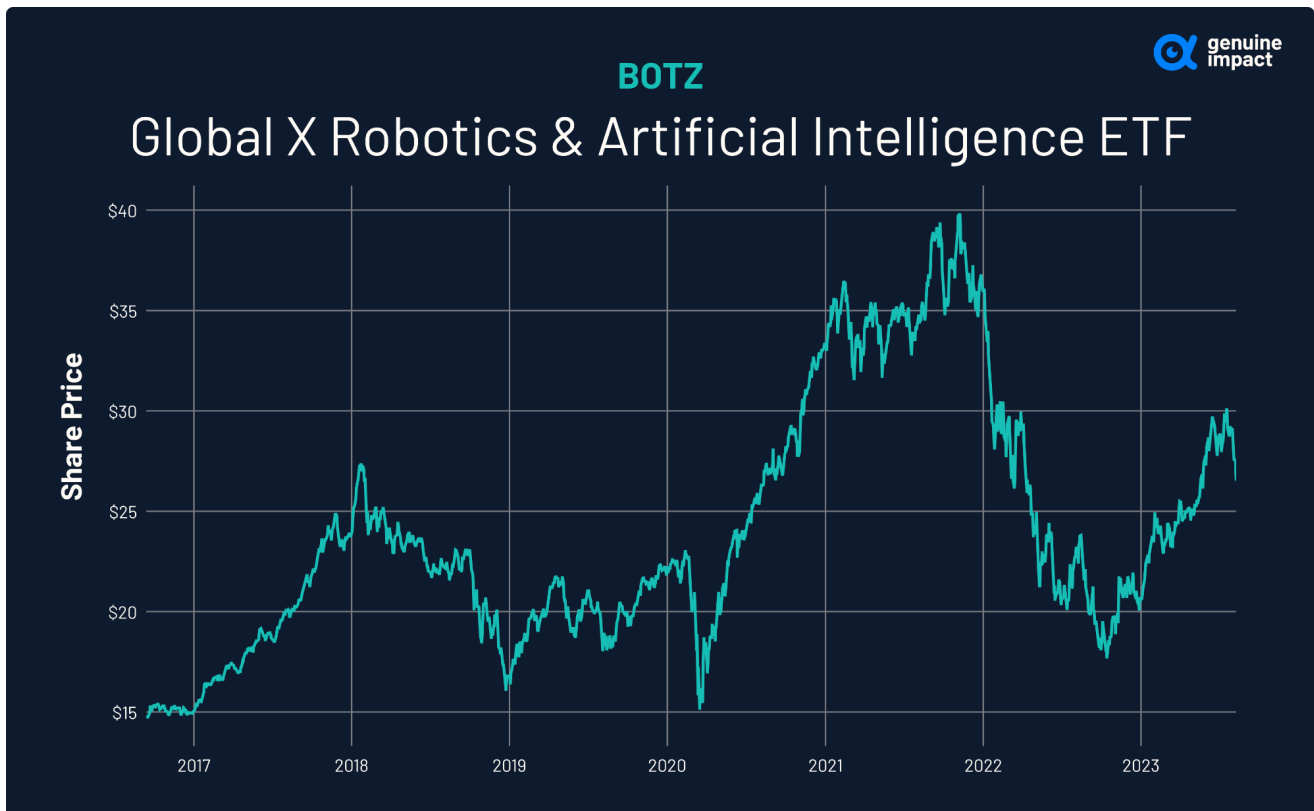
The largest ETF by a long way is the Global X Robotics & Artificial Intelligence ETF (\$BOTZ). This fund manages \$2.4B of assets and aims to provide exposure to AI via companies involved in industrial and non-industrial robotics and autonomous vehicles. The top holdings mainly hail from information technology (43.9%), industrials (36.5%), and healthcare (16.5%). They include big names like NVIDIA along with less well-known ones like Keyence and Dynatrace.

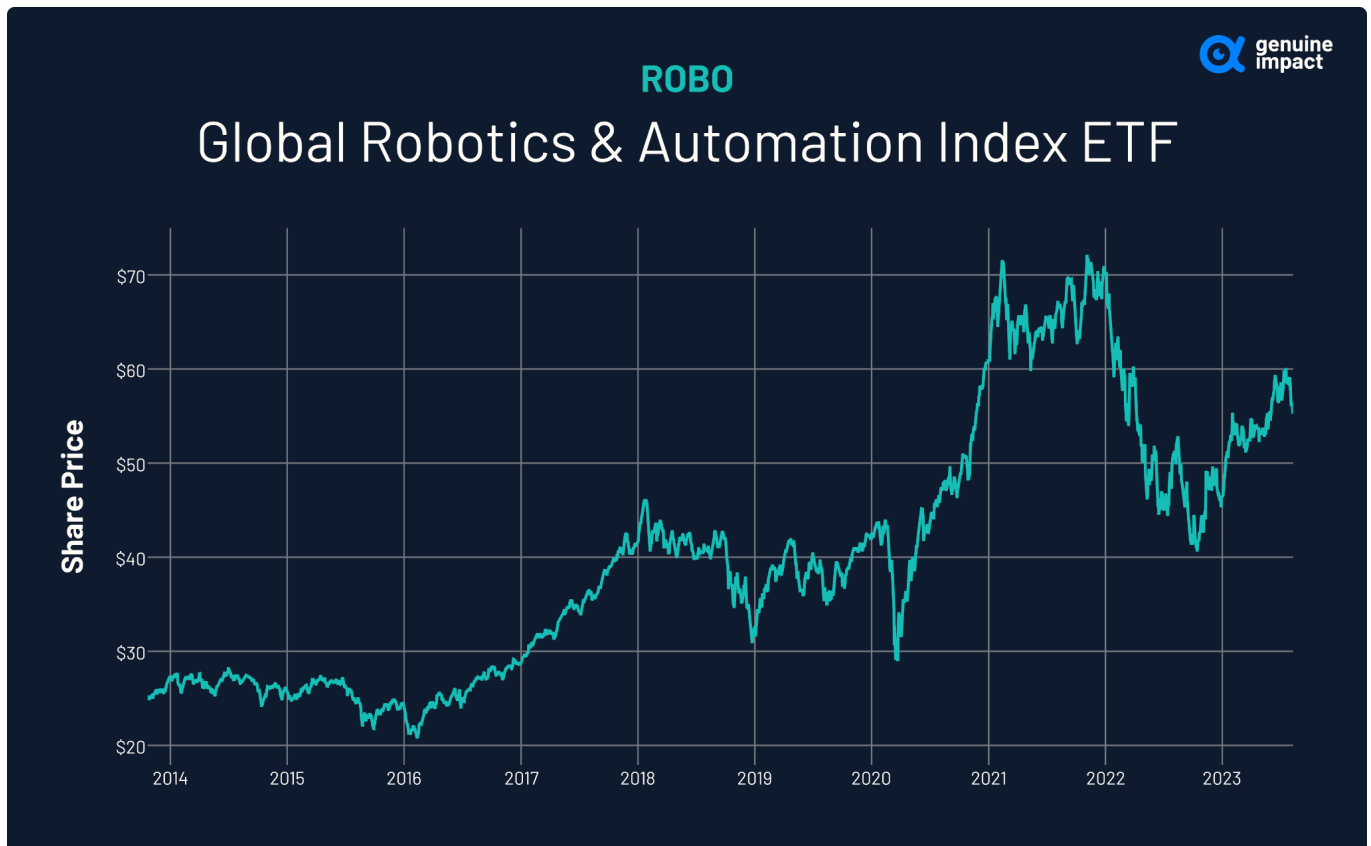
After the global dip of tech stocks last year, BOTZ is up +50% since its low in October 2022. It pays dividends twice a year, with a 0.04% yield.

Global Robotics & Automation Index ETF

The second-largest and oldest AI ETF is the Legal and General Global Robotics & Automation Index ETF (\$ROBO). It manages \$1.5B of assets and tracks the ROBO Global Robotics & Automation Index. This index was created in 2013 to track robotics and automation stocks, with the aim to provide a broad and diversified exposure to best-in-class tech companies. ROBO holds companies from 11 subsectors, with the top 3 being logistics automation (17%), manufacturing & industrial (15%), and healthcare (15%).

This ETF is more diversified in terms of weightings and BOTZ, with the top 3 holdings accounting for only 7.16%, compared to BOTZ top 3 holdings with a combined weight of 31.17%. Like BOTZ, ROBO dipped for most of 2022 but is currently up +37% since its low in October 2022. The ETF currently does not pay any dividends, but last paid one at the end of 2021.





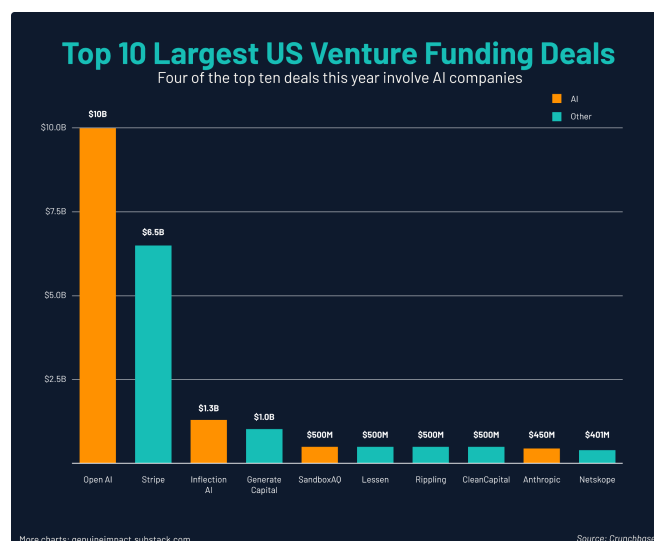
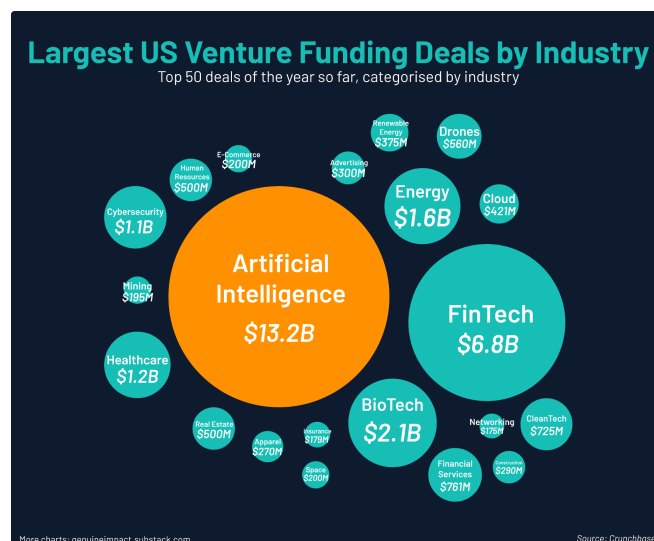
Startups & VC Funding

OpenAI

The popularity of artificial intelligence from both the perspective of a consumer and investor cannot be understated. The launch of ChatGPT emphasises this, with their user base growing to 100 million active users in only two months- a record breaking achievement. In addition, OpenAI, the company behind ChatGPT, is currently the recipient of the largest venture funding deal of 2023 so far at \$10B. This deal was announced in January with Microsoft as the lead investor. OpenAI's product offering also includes DALL.E, which creates realistic images and art based on a text description, and Whisper which transcribes speech and translates many languages into English. When looking at what is to come for OpenAI, they submitted a trademark application for "GPT-5" in July 2023, however the CEO has said that the company is still far from initiating GPT-5 training. Regardless, OpenAI is making great strides in the world of artificial intelligence, and is definitely an interesting start-up to watch.

Adept AI

Adept AI is another company that has raised a significant amount of money this year. They secured \$350M in March 2023 with lead investors including General Catalyst and Spark Capital. Adept AI is aiming to take artificial intelligence one step further. Products like ChatGPT display responses to your typed queries, however Adept AI is building an AI that will execute these for you. They are doing this by studying how humans use computers to build a model that turns a text command into actions. They currently have a working demo called ACT-1, which is already capable of performing complex functions such as importing LinkedIn URLs into recruiting software.

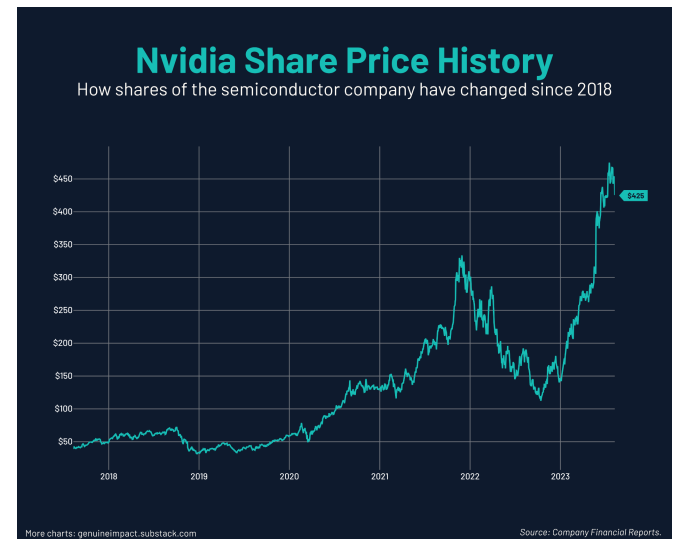


US Focus

The US is investing big in AI

The landscape of AI companies in the United States is characterised by a dynamic environment of growth and innovation across various sectors. Several prominent companies are leading the way in advancing artificial intelligence technologies and applications.

alternative data sources to assess creditworthiness and improve the accuracy of lending decisions.



C3.ai

C3.ai (AI) is a software company which facilitates the development, deployment and operation of AI applications for its customers. Notable company offerings include the C3 AI application platform, allowing customers to design AI apps, and the C3 AI Ex Machina, a no-code solution allowing business analysts to build AI models.

Upstart Holdings

Upstart Holdings (UPST) is making waves by applying AI to the financial sector. The company utilises machine learning algorithms to streamline and enhance the lending process, leveraging

Nvidia

Nvidia (NVDA) remains a pivotal figure in the AI landscape, renowned for its high-performance GPUs that serve as the backbone for training and running deep learning models. Nvidia's hardware continues to play a crucial role in various AI applications, including autonomous vehicles and advanced medical imaging.

Symbiotic Inc

Symbiotic Inc (SYM) operates at the intersection of AI and robotics, developing intelligent robotic systems for industries including manufacturing, logistics, and healthcare. Their technology contributes to automation and efficiency improvements across various sectors.

Helix Energy Solutions

Helix Energy Solutions (HLX) employs AI technologies in the energy sector, utilising data analysis and predictive maintenance in oil and gas

operations. This integration optimises processes and reduces downtime, enhancing overall operational efficiency.

PROS Holdings

PROS Holdings (PRO) specialises in AI-powered pricing and revenue management solutions to optimise shopping and selling experiences. Their technology assists businesses in dynamically adjusting pricing strategies based on market trends and consumer behaviour, ultimately maximising revenue.

robotic-assisted surgery, integrating AI and robotics to empower surgeons in performing minimally invasive procedures with precision and control.

AI is booming

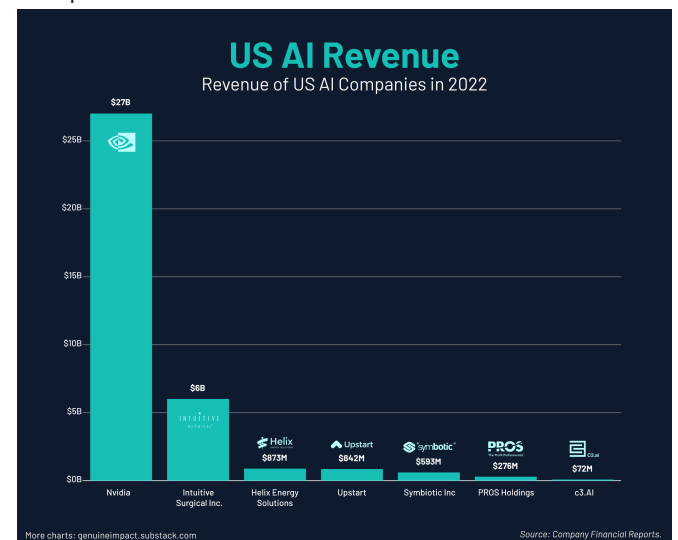
AI companies in the US continue to drive innovation and transformation across various industries, harnessing the capabilities of artificial intelligence to create more efficient, intelligent, and technologically advanced solutions.

The chart below shows the revenue of select AI companies in the US in 2022.

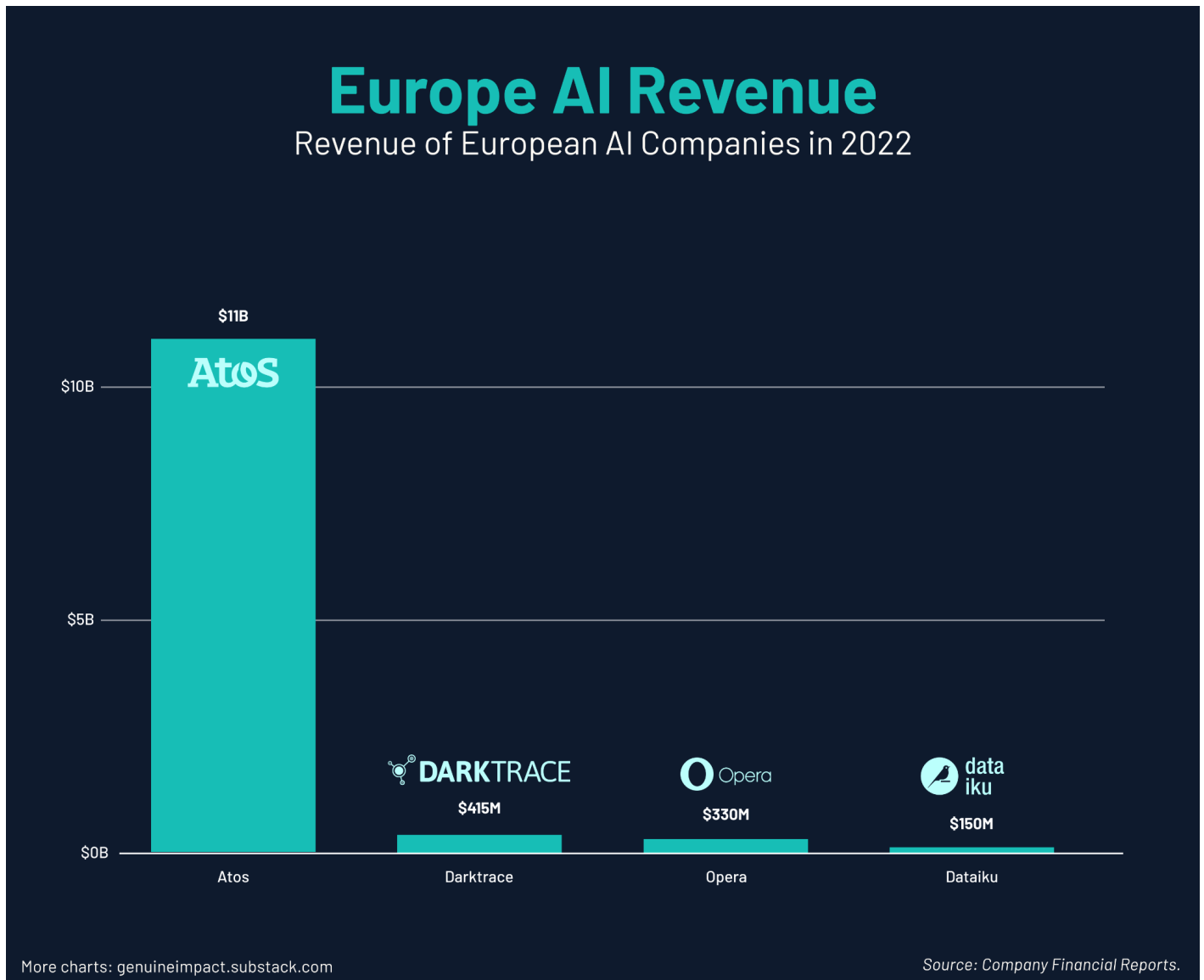


Intuitive Surgical

Intuitive Surgical (ISRG) is at the forefront of



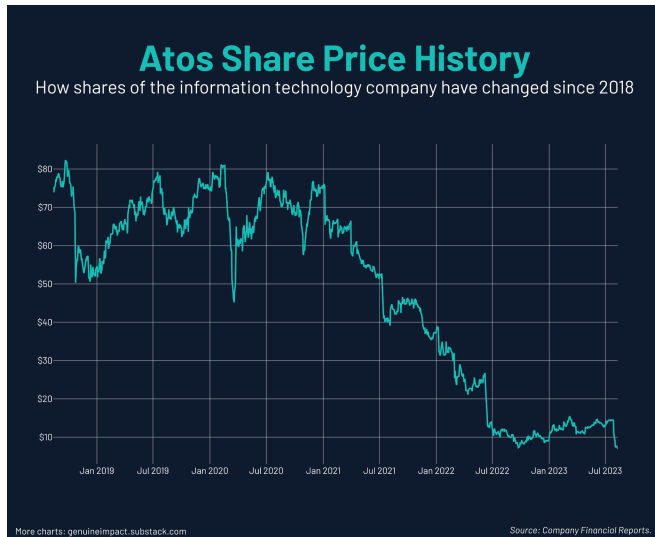
Europe Focus



The European AI Landscape

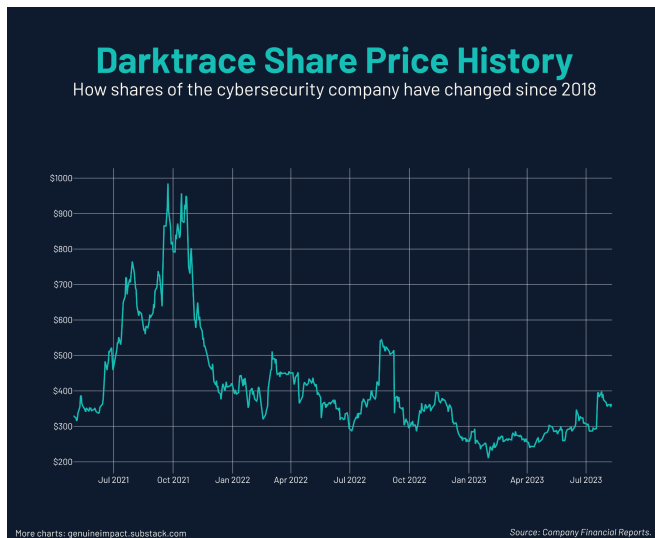
Relative to the US, Europe does lag behind slightly when it comes to start-ups in the AI space. However, the numbers are growing and currently the UK is home to the most AI start-ups in Europe at 334. This is followed by Germany and France at 167

and 135 respectively. Interestingly, when you instead look at the number of AI start-ups per million people, the numbers change dramatically, and instead Estonia comes out on top, followed by Switzerland.



Atos

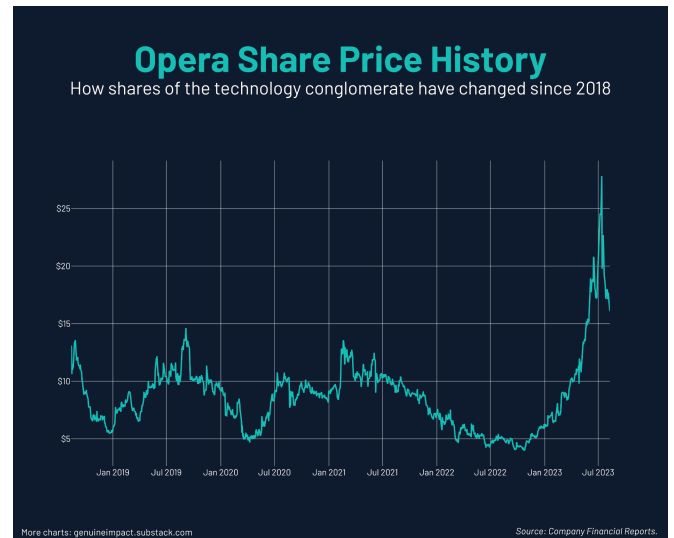
Atos is a French multinational information technology company. They work with a variety of stakeholders from governments to large companies, in order to implement AI solutions to create value.



Darktrace

Darktrace is a cybersecurity company that utilises AI, and more specifically machine learning, to build a defence that recognises and eliminates cyber-attacks at an early stage. They do this by

creating a baseline, and then detects any anomalous activities that could be a threat.



Opera

Opera is a Norwegian technology company, most well-known for its Opera browser. They recently launched a new browser which comes along with a native AI called 'Aria', which works similarly to ChatGPT.

Dataiku

Dataiku is a French AI and machine learning company. It is a collaborative platform for data professionals and can help with data preparation, visualisation, data operations, and more.

Asia and Other

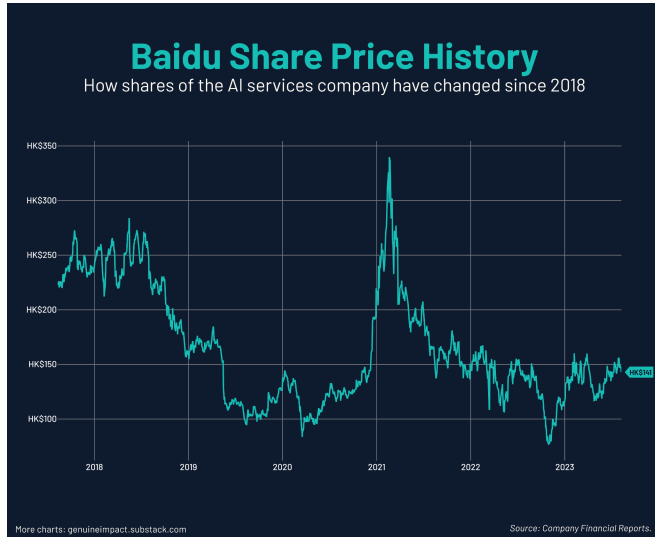


AI in Asia

AI companies in Asia are shaping a dynamic landscape of innovation and progress across diverse industries. Several companies in the region are at the forefront of advancing artificial intelligence technologies and applications.

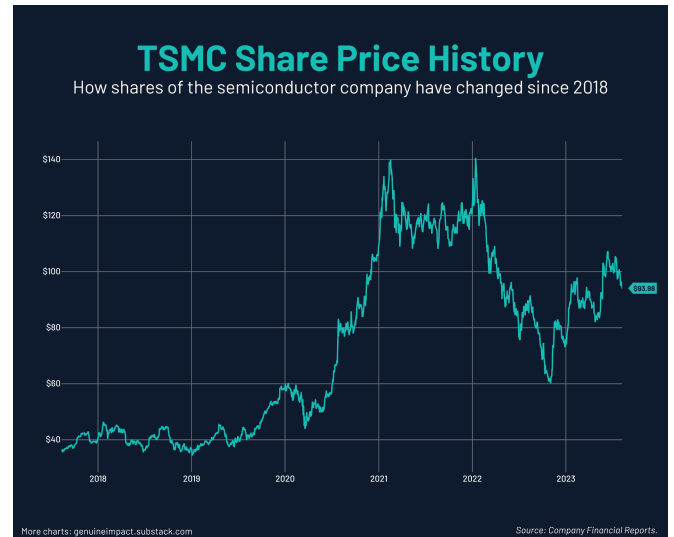
SenseTime, based in China, stands out as a significant player in the Asian AI scene. The company specialises in computer vision and facial recognition technology, with applications ranging from security and surveillance to retail and healthcare.

Another China-based company making big contributions to the field of AI is Baidu. Baidu's AI-powered services span from natural language processing to autonomous driving, showcasing their commitment to advancing AI technologies. Baidu has also developed its own GPT model, Ernie.



Semiconductors in Asia

Asia is also investing big in the production of semiconductors, to aid the production of new AI models. Leading the way is TSMC (Taiwan Semiconductor Manufacturing Company), which takes a prominent role in the Asian AI scene and reported a 2022 revenue of \$75 billion. As a semiconductor manufacturing giant, TSMC plays a crucial role in producing advanced chips and components that power AI systems, contributing to the foundation of AI technology.



Another chipmaker making waves in the industry is AIChip technologies, which is dedicated to designing and developing specialised AI chips. These chips are tailored to accelerate AI computations, enabling faster and more efficient processing for AI applications across various industries. Global Unichip Corp, headquartered in Taiwan, is another major semiconductor design company contributing to the AI landscape.

ASM Pacific, also based in Asia, is a significant player in semiconductor assembly and packaging. Their expertise in packaging technology is crucial in ensuring the efficient and reliable operation of AI hardware.

Guest analysis

An insider perspective with [Michael Spencer](#)

Developed [back in 2017](#), Generative AI has seen an unprecedented level of adoption on the Enterprise and consumer level, with even AI-driven ETFs going up into bubble-like bull-market territory for AI-related stocks including some of the BigTech names. With Amazon saying it's putting Generative A.I. into all of its products, the stock went up 10%.

A good portion of Apple's R&D budget of significantly [over \\$20 Billion went to Generative A.I.](#) research. AI large language models raised over \$25 billion in the first half of 2023. The industry is starting to look like a bubble that's about to burst. Searches for ChatGPT have been coming down since May and the second half of 2023 should see a cooldown as startups are beginning to struggle in this macro environment.

SoftBank, one of the biggest investors in A.I. of the last decade is [launching SB Intuitions](#), a new company that it says will "research and develop homegrown Large Language Models (LLM) specialized for the Japanese language." SB Intuitions also plans to build and sell generative AI services based on Japanese. This even as Alibaba has [released its own version of Meta's open-source models](#).

Generative AI is the new hook for many enterprise products to try to gain more customers and increase profits, while 2023 has also seen a massive tech layoffs movement and year of efficiency. This means via AI, companies are also becoming more efficient entities from a shareholder perspective.

With future applications coming to education, finance, healthcare, research and development and most industries simultaneously, the Generative A.I. bubble shouldn't cool too fast as Venture Capital is still pumping funding into Generative A.I. bets and startups coming out of stealth. While Microsoft's efforts to take search advertising market share from Google have largely failed so far, its 365 and coding Copilots and new subscription revenue will be lucrative and easily make up for the massive investment in OpenAI over time. On the whole Generative A.I. has the ability to improve productivity, automate some white collar tasks and substantially improve areas like customer service, office tasks, marketing, sales and advertising.

Its long-term impact on coding, gaming and the future of entertainment may be substantially more lucrative for a few winners forcing the likes of Disney, Netflix, Amazon, Apple and others to invest more in the future of video, movies and streaming on the cutting edge of Generative A.I. How this unfolds over the 2020s will be important for shareholders to watch as new winners could emerge and Hollywood itself is transformed as if overnight by Generative A.I. as the technology catches up with the demand.

While mega caps like Nvidia might be overpriced at this point, strategic entry into AI-related ETFs could be an interesting way to play the macro environment and real profits that Generative A.I. adoption could lead to. With the NASDAQ 100 up substantially so far in 2023, I think we are highly

likely to see a mean reversion correction later in the year. The NASDAQ 100 being up nearly 41% YTD simply is not sustainable no matter what Generative A.I. narrative you want to spin.

Competition is heating up for OpenAI from other BigTech-funded startups like Anthropic and Inflection even as regulatory scrutiny has slowed down the development of GPT-5. This will allow time (and valuable months) for others to catch up including some teams in China. There is some indication [Generative A.I. funding in China](#) will pick up in 2023 as a whole, and while the startup situation is grim, Venture Capital won't let this opportunity pass it by as Europe, China and other parts of the world attempt to keep up with the U.S.

In BigTech itself we've seen Nvidia, Google, Salesforce and others take advantage of this window of opportunity including many AI-related VC funds. Generative AI still promises many exciting tools and tech with some of the biggest firms being some of the biggest spenders in the new technology hoping LLMs can give them a sustainable competitive edge in the years to come. Generative AI is expected in the coming years to

entirely reshape media, consulting, upgrade physicians and radically alter the landscape of how AI is adopted at work.

In 2024 we should see a new crop of Generative A.I. startups at the intersection of healthcare and finance especially those that could go on to become market winners with substantial talent exodus from BigTech into new startups. Judging by how Anthropic, Cohere and others are fairing, the incentives for new startups to emerge being leaders of Generative AI in their fields is one of the most exciting times in A.I. innovation we have seen for decades. While startups on the whole will struggle in 2024, and we [are seeing signs of this already](#) in August 2023, Venture Capital will remain bullish on big bets in Generative AI.