

Reflections

July 2023

The transformative potential of AI

When writer William Gibson said, “The future is here – it’s just not evenly distributed yet”, he could have been describing artificial intelligence (AI). That is, until OpenAI’s ChatGPT burst onto the scene, causing widespread excitement at its potential to rapidly reshape how each of us interacts with the world. However, the influence of AI has quietly shaped the LTGG portfolio since our investment in Amazon in 2004. In those early days, Jeff Wilke, the then head of Amazon’s consumer business, was already harnessing the power of machine-learning algorithms to predict book recommendations for customers. Since then, every Amazon executive’s annual business plan must address the question, ‘How do you intend to utilise machine learning?’ The visionaries of the corporate world have long recognised the significance of AI; it’s only now that it’s becoming accessible to the average Joe.

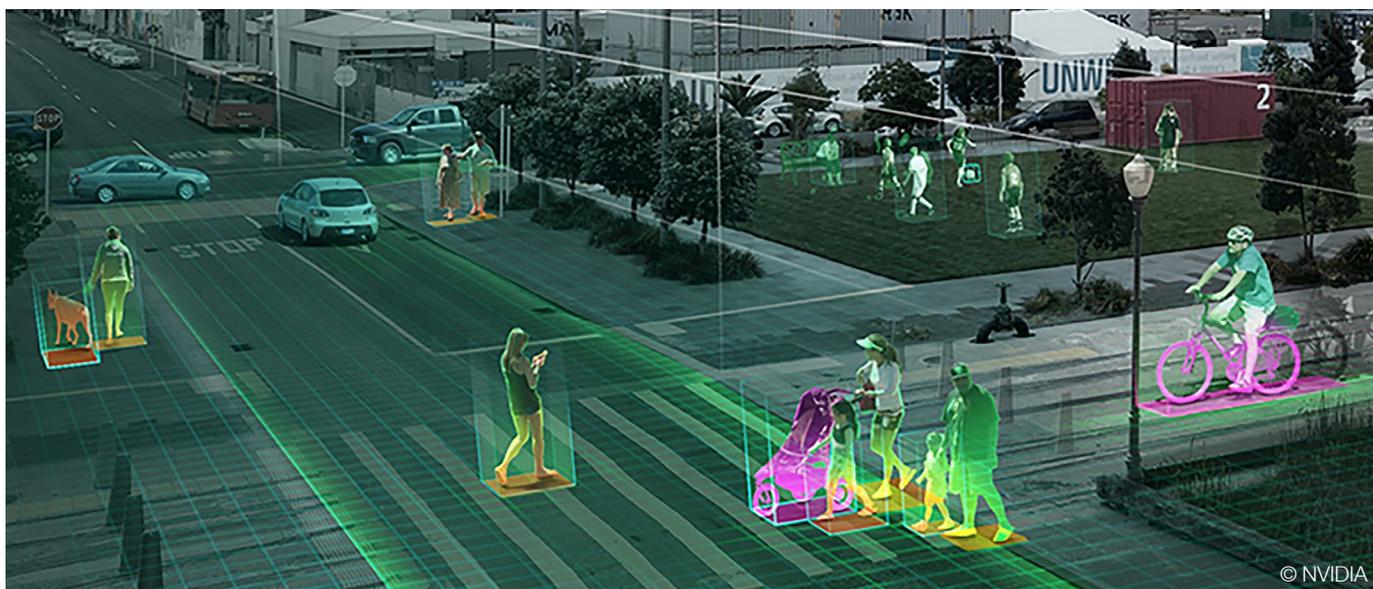
Carlota Perez’s research, explained in our ‘Navigating Noise’ [video series](#), focuses on how novel, multi-purpose technologies spark technological revolutions. She proposes that revolutions happen when a new technology undergoes a significant cost transformation, supported by an infrastructure that encourages widespread use. For instance, in the mid-19th century, the steam power revolution was fuelled by inexpensive coal and the expansion of railways, which helped distribute the technology. Similarly, the AI revolution is driven by a significant reduction in computation costs and a surge in data availability, with the internet making it more accessible to everyone.

AI and machine learning are prediction machines in layperson terms. Whether it’s an Amazon recommendation prompting a purchase, Netflix suggesting a TV show to binge, or Tesla determining how the steering wheel should turn to emulate a human driver, that’s AI at work. Recent innovations such as ChatGPT have taken predictive capabilities to a whole new level.

The information age has been propelled by advancements in computing for over six decades. And each computing era has given rise to dominant players who have captured substantial market shares. For instance, IBM, Microsoft, Intel and Apple led the way in mainframe, personal and mobile computing, garnering market shares exceeding 80 per cent during their dominance.

NVIDIA is following a similar trajectory. It is amassing a dominant market share in accelerated computing, which is the specialised hardware needed so that computers can process vast amounts of data at speed. Historical trends indicate that each computing paradigm is dominated by a few big winners, a narrative that aligns with [Hendrik Bessembinder’s](#) perspective on the concentration of shareholder returns.

The company’s technological dominance has propelled, the portfolio’s largest holding, NVIDIA, to new heights since the start of the year. This growth has been underpinned by extraordinary fundamental progress. Revenue expectations were raised from \$7bn to \$11bn last quarter, which analysts suggested was the most significant revenue upgrade in business history.



LTGG's exposure to AI isn't new; we've been investing in companies driving or benefiting from such advancements for some time. By adopting a long-term perspective, you can predict progress in an industry without having to predict the specific timeframe developments will materialise. Moore's Law has driven the doubling of computing power every two years since the 1960s. Now, this progress is accelerating, with NVIDIA's core product as the key catalyst.

LTGG's investments span the entire computing value chain, from hardware manufacturers to cloud architecture and services. Approximately 25 per cent of LTGG's portfolio is directly linked to advancements in AI, thanks to investments in hardware companies such as NVIDIA, ASML and AMD, as well as cloud architecture and service providers including Amazon, Alibaba, Tencent, Datadog and Cloudflare.

However, it's worth noting that virtually every company in the portfolio stands to gain from AI progress. Tesla's Dojo supercomputer is helping train the machine-learning models for autonomous driving; ecommerce businesses such as

Amazon, SEA, Coupang, Shopify, MercadoLibre and Pinduoduo, leverage algorithms to make their customer recommendations, and even companies such as Moderna use algorithms to expedite the design and development of future vaccines.

We also need to consider the interface between machine learning and energy consumption. Datacentre emissions are already approaching twice the level of the century-old aviation sector. Their electricity demands are forecast to grow significantly by the end of the decade. Any company using machine learning will face a reckoning as carbon pricing comes to the fore. Efficient chip design – a central tenet of NVIDIA's proposition – will be vital in addressing the energy challenges of progress in this area.

From early investments in companies such as Amazon to our current holdings in key players such as NVIDIA, the portfolio has been positioned to benefit from the transformative potential of AI. We continue to think in decades, not quarters.



Tesla Dojo supercomputer. © Tesla

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Annual past performance to 30 June each year (net %)

	2019	2020	2021	2022	2023
LTGG Composite	0.1	56.4	61.7	-48.9	24.2
MSCI ACWI Index	6.3	2.6	39.9	-15.4	17.1

Annualised returns to 30 June 2023 (net %)

	1 Year	5 Years	10 Years	Since Inception*
LTGG Composite	24.2	9.9	15.9	11.6
MSCI ACWI Index	17.1	8.6	9.3	7.8

*Inception date 29 February 2004.

Source: Baillie Gifford & Co and MSCI. US Dollars.

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