AI wins big at the Nobel Prizes: A new era of opportunity for investors

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Key Takeaways

- AI has achieved its first Nobel Prizes in chemistry and physics, highlighting its far-reaching impact on life sciences and machine learning.
- AI's breakthroughs in biotech and foundational machine learning offer unique investment opportunities in cutting-edge technology.
- AI's transformative potential spans multiple fields, with applications set to drive disruptive innovation across industries.

The Nobel Prize is among the most prestigious global honours, awarded to pioneers whose work brings transformative advancements. For the first time, artificial intelligence (AI) programs have led their creators to win these coveted awards in two categories. At WisdomTree, we believe these moments signal a pivotal shift in the AI megatrend, offering important insights and opportunities for investors.

The journey of a megatrend

The term "artificial intelligence" was introduced by John McCarthy in 1956 at the first academic conference on AI, describing it as “the science and engineering of making intelligent machines.” This concept sparked decades of gradual progress, with defining moments such as the 1997 chess match when IBM’s Deep Blue defeated world champion Garry Kasparov, showcasing AI's computational prowess and potential in specific domains. Another significant milestone came in 2012 when AlexNet, a deep learning model, excelled in the ImageNet competition, revealing AI’s potential in visual recognition tasks.

In 2016, DeepMind’s AlphaGo triumphed over Lee Sedol, one of the world's best Go players, further demonstrating AI’s sophistication in handling complex strategic thought. However, the breakthrough that brought AI to the mainstream arrived in 2022 with the release of ChatGPT by OpenAI, sparking global attention and widespread adoption. Now, as we enter a new phase where AI is receiving the recognition it deserves on the world stage, the Nobel Prize underscores the technology's growing significance and legitimises its role in scientific and societal advancement.

And the award goes to…

In 2024, the Nobel Prize in Chemistry honoured Demis Hassabis and John Jumper for their ground-breaking work with DeepMind's AlphaFold, which has solved one of biology's grand challenges: accurately predicting protein structures from amino acid sequences. This breakthrough enables scientists to predict the structures of nearly all known proteins, a feat that previously required years of intensive laboratory research. AlphaFold's success has dramatically accelerated the speed of scientific discovery, marking an inflection point in life sciences by making complex protein structures accessible to researchers worldwide.

Meanwhile, the 2024 Nobel Prize in Physics recognised John Hopfield and Geoffrey Hinton for foundational contributions that have propelled modern machine learning and neural networks. Hopfield's work in associative memory networks enables AI systems to store and retrieve information with precision, while Hinton's Boltzmann machine marked an early model that paved the way for today's deep learning techniques. Their innovations laid critical groundwork for AI's applications, from language translation to medical imaging, showing how AI-driven analysis can reveal insights in data-intensive fields, including physics. This honour reinforces AI's power to transform complex data-driven research, sparking new opportunities for innovation in both technology and scientific discovery[1].

We are only getting started

AI is just beginning to reveal its potential, and, as with biotech, which earned its Nobel for advancements in protein modelling, AI's transformative impact across industries is still in its infancy. Tools like AlphaFold have showcased how AI can revolutionise biotechnology, but similar innovations are arising in other fields. In education, AI-driven personalised learning platforms are helping students learn at their own pace, adapting to everyone's strengths and weaknesses. The transportation industry is also evolving, with autonomous vehicles and smart traffic systems improving road safety and fuel efficiency. In the energy sector, AI optimises power grids, forecasts demand, and facilitates the integration of renewable energy sources more effectively.

Finance and healthcare are also experiencing profound changes as AI-driven algorithms redefine investment strategies and assist in diagnosing complex conditions with higher accuracy. The rapid advancements in machine learning and neural networks signal that we are merely scratching the surface of what AI can accomplish. Just as biotech transformed life sciences, AI is poised to reshape possibilities across every major industry, offering investors a unique window into the next wave of disruptive innovation.

What this means for investors

In 2023, following the viral success of ChatGPT, companies across industries began ramping up their AI investments, often touting their AI initiatives in earnings calls to capture investor interest. This enthusiasm boosted many companies, but investors are taking a more discerning approach as the AI landscape matures. Market observers closely track the scale and focus of AI investments, particularly among major technology firms. The AI capital expenditure of large US tech companies is projected to grow from $218 billion in 2024 to $254 billion in 2025, according to Barron's[2].

Both investors and corporations are now anticipating AI's next phase – monetisation. This stage will separate short-term hype from sustainable growth, highlighting companies with meaningful AI implementations

that drive measurable value. For investors, this shift from novelty to necessity within AI represents a defining moment, underscoring the importance of selecting investment vehicles that look ahead and evolve along with the underlying technological trends.

[1] Nobelprize.org, Oct 2024.

[2] As reported by Forbes on 30 Oct 2024.

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