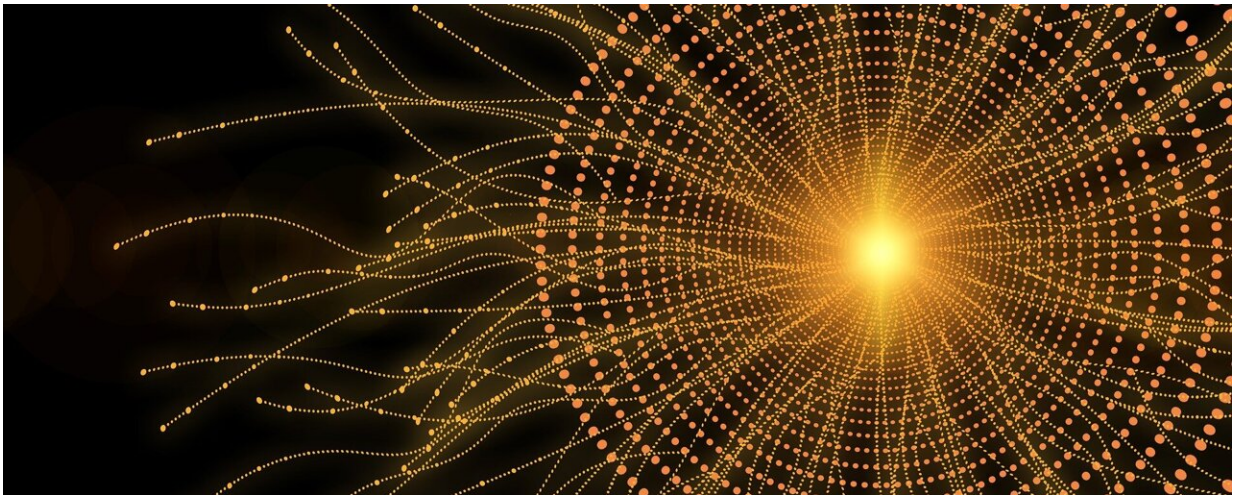# Vanguard quietly embraces AI in $13 billion of quant stock funds

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Credit: Pixabay/CC0 Public Domain

Vanguard Group, famous for its old-school investment ethos and reluctance to chase newfangled technologies like crypto, has been quietly using machine learning across several active stock funds with a combined $13 billion under management.

The world's second-largest asset manager added artificial intelligence to four so-called factor-based funds about a year ago just as the ChatGPT frenzy seized global markets. The bet: that new linguistic and data-analysis capabilities will help systematic strategies adapt to changing

economic and market conditions.

"What we want to do here is represent the process that we believe in, which is a fundamentally driven quant process," said Scott Rodemer, head of factor-based strategies at Vanguard. "With this kind of multitude of effects that could impact a stock, it lends itself quite naturally to a machine-learning process."

It's still early days and the traditional models haven't gone away. But initial signs are encouraging for the Jack Bogle-founded giant.

The $7.8 billion Vanguard Strategic Equity Fund beat its benchmark and most peers in 2023, as did the $1.5 billion Vanguard Strategic Small-Cap Equity Fund, data compiled by Bloomberg show. The $491 million Vanguard Market Neutral Fund returned 12%, also outperforming similar products. In the fourth fund, Vanguard's Quantitative Equity Group is one of multiple teams with input into the strategy.

Compared with Silicon Valley or some of the more cutting-edge hedge funds, Vanguard is only dipping a toe into the AI pool. But coming at a firm renowned for its focus on simple index-investing and its recent rejection of Bitcoin spot ETFs in the U.S., it's a powerful signal of the potential for the technology across Wall Street and Main Street.

The four strategies have incorporated trading insights derived from machine learning while retaining their core approaches to factor investing. The latter involves picking stocks based on characteristics historically shown to predict outperformance, such as low valuation multiples or accelerating profit growth.

The models use the same inputs but throw in a fresh array of economic and market variables. With an architecture known as neural nets—also used in common AI applications like image recognition and chatbots—it

can make more nuanced stock predictions, or so the pitch goes.

The idea is that a machine is better at figuring out non-linear relationships across a litany of variables. For instance, it might deduce that the strength of a corporate balance sheet doesn't really matter until interest rates cross a key level, or until economic growth slows past a certain point.

While traditional factor quants have long been skeptical of timing their bets, they have learned the hard way just how long the market can work against them. The Vanguard Market Neutral Fund lost 20% in the two years through 2020, when pricey tech stocks ruled the market thanks in part to rock-bottom interest rates and the pandemic.

To Vanguard's quants, the past year has shown the value of paying more attention to the market environment. For instance, during the regional banking crisis in 2023, the AI helped stop the portfolio from diving headlong into cheap-looking shares.

"We all could think to ourselves, 'there are many reasons why these stocks are cheap now and the macro environment is certainly one of those," said Rodemer. "If you look at the machine-learning perspective for a handful of those stocks, they're actually quite expensive. And if you blend those two views together, it becomes neutral."

Vanguard began experimenting with AI in 2018, starting with text processing before moving on to study how it might be used in its quant strategies. CEO Tim Buckley said at a conference last year that generative AI—the branch epitomized by ChatGPT—will revolutionize asset management.

The Malvern, Pennsylvania-based firm is far from alone in applying AI to factor strategies. Research Affiliates co-founder Jason Hsu's Rayliant

Global Advisors, which runs about $19 billion, went from using a handful of factors to parsing some 200 trading signals with AI. Bryan Kelly, head of machine learning at AQR Capital Management, has penned reams of research on how the technology can be incorporated into traditional quant trades.

At Vanguard, key to adopting AI was understanding the final decisions it was making—a perennial challenge in the field of machine learning. The team had to build a model that explained its output before executives were comfortable to start using the tech.

"The thing you worried about the most was curve-fitting and data mining," said John Ameriks, who runs the QEG. "So really trying to make sure that we could find something that not only produced attractive results in a back test, but that we also had a really good intuitive understanding of, was a priority."

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