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A.I. Has Arrived in Investing. Humans Are Still Dominating.

By CONRAD DE AENLLE   JAN. 12, 2018

Machines are starting to take the place of the people who flip burgers, drive across town and, lately, manage stock portfolios.

Artificial intelligence is taking on a bigger role in making investment decisions.

A.I., including an ability to analyze data and actually learn from it, is considered useful in executing certain investing models, such as high-frequency trading, and in helping fund managers with tasks that rely on gathering and interpreting reams of information. Going a step further, an exchange-traded fund introduced in October uses A.I. algorithms to choose long-term stock holdings.

It is to early to say whether the E.T.F., A.I. Powered Equity, will be a trendsetter or merely a curiosity. Artificial intelligence continues to become more sophisticated and complex, but so do the markets. That leaves technology and investment authorities debating the role of A.I. in managing portfolios. Some say it will only ever be a tool, valuable but subordinate to its flesh-and-blood masters, while others envision it taking control and making decisions for many funds.

"We are just beginning to see a rise of the machines in investment management," said Campbell Harvey, a professor of finance at Duke University. Although, he said, "it's hard to define what the markets will look like" if human judgment is usurped, he predicted that "in the end, it will be a good thing for investors."

Artificial intelligence is a term that may be spoken more than understood. Many investment firms use software to sift through data and perform rudimentary analysis by following fairly simple rules. The programs can create portfolios by screening universes of stocks to select ones that meet criteria related to corporate results, valuation metrics or trading patterns, or by tweaking the proportions of the constituent companies in an index based on certain factors.

Those programs may be useful, but they are not A.I. because they are static; they do the same thing over and over until someone changes them. A.I. involves machine learning, in which a program updates itself as new information comes in. Whatever goal the program was created to achieve remains the same, but the problem-solving tools it uses keep changing and reflect the sum of the information it has to work with.

Large fund management companies like Fidelity and Vanguard say they use A.I. for a range of purposes, but they decline to be specific.

BlackRock says it relies on it for heavy cognitive lifting, often by scouring data to tease out patterns that might remain obscure to human eyes and brains. Examples offered by Jessica Greaney, a company spokeswoman, include identifying and trying to exploit nonintuitive relationships between securities or market indicators, perusing social media "to gain insights on employee attitudes, sentiment and preferences," and monitoring search engines for words being entered on particular topics, say cars or luxury goods.

These algorithms play a supporting role in BlackRock's investing, Ms. Greaney said. Decisions on what to buy and sell are made by living, breathing managers.

The A.I. Powered Equity E.T.F. is different. It uses algorithms to go the last mile and select its holdings, usually 30 to 70 stocks, said Art Amador, one of the founders of EquBot, the company that created the fund. He had the assistance of an I.B.M. program that fosters technology start-ups, and the E.T.F. runs most of its calculations on I.B.M.'s Watson supercomputer.

"EquBot's A.I. tech mimics the investment process of an army of equity research analysts working around the clock," Mr. Amador said. "It has data on 6,000

companies, one million articles and filings a day, and data on market sentiment." Beyond sorting through that information and using its programming to ensure it has what it considers the optimal portfolio — the fund typically makes at least one trade every day — it constantly fine-tunes its stock-picking methods.

Mr. Amador says that artificial intelligence has an edge over the natural kind because of the inherent emotional and psychological weaknesses that encumber human reasoning.

"When it comes to traditional portfolio management, managers are going to talk to analysts and sector specialists, but these people have biases and incentives," he said. "The algorithm doesn't have them."

What it also doesn't have is a superior track record. Between Oct. 18, when it began trading, and the end of the year, the E.T.F. rose 3.1 percent, compared with a 5.1 percent gain for the Standard & Poor's 500-stock index.

Mr. Amador attributed the underperformance to a normal variability in returns. The fund's programming beat the market when tested against historical data, he said, and he expects the same in real life as time passes.

Others aren't so sure how effective A.I. will be when put in charge of otherwise ordinary funds. Robert Arnott, chairman of the investment firm Research Affiliates, noted that A.I. can process immense amounts of data; the flip side is that it needs immense amounts of data for the algorithms to learn.

Certain activities, like high-frequency trading, process market information tick by tick and seek to profit from making numerous trades and holding positions for matters of hours or minutes. Compared with conventional investing, this sort of trading gives A.I. programs more data, Mr. Arnott said, but it is limited in scope to patterns related to stock price movements, not the broader economic and commercial landscape.

When it comes to managing long-term portfolios, however, there are too many moving parts in financial markets for A.I. to get its mechanical head around, in his view, and too many humans with flaws, motivations and unpredictable behavior

doing the moving. He says the markets are far more complex than the games like chess and backgammon that A.I. algorithms have mastered.

Tim Clift, chief investment strategist at Envestnet PMC, a firm that helps build portfolios, said that while artificial intelligence can give managers an edge, it is "a little gimmicky at this point."

"We know the markets are irrational, especially in the short term," he said, "but the machines aren't going to know how to behave in that kind of environment."

Gregg Fisher, a portfolio manager at the Gerstein Fisher Funds, cautioned that A.I. programs could be stumped by off-the-wall and out-of-the-blue developments that have no obvious analogues in their databases.

They learn "by studying past patterns that they expect to continue," he said. Referring to the events that precipitated the global financial crisis, he wondered: "How would A.I. have observed and planned for that? The quantity of different things that can happen is seemingly unlimited."

But for advocates of A.I., like Mr. Harvey at Duke, the ability to gather data and put it to good use also seems to be unlimited. He expects great strides in machine learning in the decades to come, allowing A.I. to assume a major role in how funds are managed and by whom.

"Larger firms will be providing information to managers that other firms have no chance of getting" because they can't afford the necessary data management systems, he said. The result will be "15 to 25 investment management superpowers that can harvest all that data."

Maybe so, but some investment professionals prefer to give the final say to portfolio managers who were born, not made.

"I'm a fan of automating everything possible, but having a human being push the last button is still a good thing," Mr. Fisher said. "Hopefully, we all get better and better and smarter and smarter, but there's something comforting about having an informed human being with sound judgment at the end of the process."

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