

Can Man beat Machine in stock investing?

BY HARRY HUO

Hollywood depictions of artificial intelligence or AI have often painted a bleak picture of humanity. From the murderous Hal-9000 in *Space Odyssey 2001* to the genocidal Skynet in the *Terminator* series, AI is a bad boy.

A more down-to-earth example is the documentary *AlphaGo* in which an over-confident South Korean GO Master turned pale white when he was pitted against a neural network-trained AI by Google.

He soon realised that not only he would lose badly but that no human challenger will ever win again. However, we can take comfort that humans fare much better in less structured decision-making situations. For example, in deciding the value of a piece of art or evaluating a manager's performance, humans have not lost all the battles yet.

What about fund management? Can machine beat man in managing a stock portfolio? Data scientists have often labelled financial data as "noisy" because it is extremely hard to find a correlation between stock performance and a data set — be it price data, financial ratios or stock market news. There are simply too many reasons why a stock price will go up or down.

It is with such a fascinating backdrop that I joined Aggregate Asset Management (AAM). Eric Kong, co-founder, and fund manager of AAM, convinced me that he has been perfecting his stock selection process using machine learning (AI) for the last four years and has delivered some very credible results.

AAM is a zero-management fees, globally diversified fund management company and its foundational belief is that a cash-weighted, highly diversified global portfolio is the best way for capital preservation for our high-net-worth clients. Presently, we use AI

Deep Deep AI picks for October

Stock	Country	Price(US\$)	% of Portfolio
Aurizon Holdings	Australia	2.24	6.7%
Doman Building Materials Group	Canada	4.05	6.6%
Guangdong Tapai Group Co	China	1.07	6.7%
Fresenius SE & Co. KGaA	Germany	19.63	6.7%
China Communications Services Corporation	Hong Kong	0.32	6.9%
PT Indofood Sukses Makmur	Indonesia	0.40	6.6%
Kanematsu Corporation	Japan	10.17	6.7%
Kossan Rubber Industries	Malaysia	0.24	6.6%
DMCI Holdings Inc	Philippines	0.17	6.6%
Hutchison Port Holdings TR-U	Singapore	0.18	6.7%
MK Electron Co	Korea	6.90	6.8%
Everlight Electronics Co	Taiwan	1.08	6.9%
Supalai Public Company	Thailand	0.50	5.2%
IG Group Holdings	UK	8.39	6.7%
GENWORTH FINANCIAL INC-CL A	US	4.07	6.7%

* Cash level less than 1%
** US\$ Price converted at date of trade

as a stock screener to add value to our decision-making process. AI is a mere tool to improve our stock-picking abilities.

Kevin Tok, our co-founder and executive director, posed this challenge to us: Can AI beat human fund managers and analysts in stock selection? It begs the next question: Can an all-powerful AI picking just 15 stocks per month beat a highly diversified global portfolio using both AI and human inputs? The proxy for this would be Aggregate's own Aggregate Value Fund (AVF). Eric Kong, our fund manager and co-founder, coined this contest "Machine versus Human". I share both the founders' innate curiosity and the result is this new column for *The Edge Singapore*. It will be a fun and exciting "thought experiment" as Albert Einstein was fond of saying.

For the next 12 months, the proprietary AI of Kong's team will pick 15 stocks. We

will publish the purchase price of each stock and the portfolio valuation. The AI portfolio will be rebalanced once a month. It is a real and "live" portfolio starting with an investment of US\$500,000 (\$710,510).

In essence, our concentrated AI-powered 15-stock portfolio called "Deep Deep" (in honour of IBM's historic AI Deep Blue) will be competing against the following benchmarks:

- Aggregate Value Fund, a global value fund by AAM using both AI and human inputs with nearly 1,000 stocks
- The Edge Publishing chairman Tong Kooi Ong's portfolio has garnered a tremendous following and has achieved sterling results since its inception. We are honoured to have his portfolio's participation.
- Warren Buffett's **Berkshire Hathaway** stock price.
- We will include Dow Jones Industri-

al Index, MSCI All Country World Index (MSCI ACWI) and MSCI All Country Asia Pacific Index (MSCI AC APAC) benchmark comparisons.

At the end of 12 months, we will declare the winner.

Let's agree on the implications of this contest. If the AI machine fails to beat man miserably, it does not mean AI is useless in stock selection. It merely means we need to get back to the drawing board and improve our version of the machine. If the machine wins convincingly and hopefully, spectacularly, then as a fund management firm, it behoves us to explore further. Additionally, it will be fascinating to see if an AI-picked portfolio comprising only 15 stocks can outperform a diversified AI-enhanced portfolio comprising nearly 1,000 stocks. I will also use this space to share with our readers what we have learned in our AI discovery journey.

Join us in this AI discovery journey and may the best portfolio — humans vs machine; concentrated vs diversified, win. **E**

Harry Huo is head, special projects, at Aggregate Asset Management



Scan this QR code to visit
www.aggregate.com.sg

**aggregate
asset
management**
perfect alignment with your interest

Machine vs Man Challenge

The table above shows the 15 stocks picked on Oct 17 by Aggregate Asset Management to form a concentrated, proprietary AI-picked portfolio. This machine-picked portfolio will challenge human stock pickers via the following competing portfolios and benchmarks:

a. Aggregate Asset Management's diversified fund, Aggregate Value Fund, with nearly 1,000 stocks picked by human inputs but enhanced by AI stock screening.

b. Tong's Portfolio which has been published in *The Edge Singapore* since December 2017.

c. Warren Buffett's investment vehicle Berkshire Hathaway's stock performance.

d. Dow Jones Industrial Index, MSCI All Country World Index (MSCI ACWI) and MSCI AC Asia Pacific (MSCI AC APAC) will be included as reference benchmarks.

Next month onwards, we will publish an updated table showing the relative performance of these portfolios and benchmarks, and we will continue to do so monthly for a year. In October 2023, we will declare the winning portfolio based on the highest portfolio return. For simplicity, all our portfolios' returns and benchmarks will be in US dollar for easy comparison.

TONG'S PORTFOLIO

double-digit y-o-y growth in services revenue. Total number of paid subscriptions across Apple's platform hit 860 million in 3QFY2022, up 160 million y-o-y and 35 million q-o-q, as the company continued to improve the breadth and quality of offerings on Apple TV+, Apple Arcade, iCloud and Apple Music. Services revenue from China also grew strongly during the lockdown as people spent more time at home. There was, however, a slowdown in digital advertising during the quarter due to the macro-economic environment.

Despite higher revenue, Apple's operating income fell 4% y-o-y mainly due to a 19% y-o-y increase in research and development expenses and an 11% y-o-y increase in selling, general and administrative expenditures. CEO Tim Cook indicated that the company will continue to invest through the downturn but will be more deliberate in doing so.

Looking forward, a slowdown in the global economy and strengthening of the US dollar will hurt overseas contributions for multinational companies. Nevertheless, we think Apple's loyal and higher-income customer base should fare better than many of its peers.

With over 1 billion unique iPhone users and 1.8 billion installed devices, Apple has a large pool of potential customers for its subscription services. Contribution of services to overall revenue has been increasing, from 14% at end-2019 to 21% in the latest quarter. Increasing contributions from services can improve the company's profitability in the long run due to its higher gross margin (71% in 3QFY2022) as compared to the products segment (35% in 3QFY2022).

The Global Portfolio declined 0.5% for the week ended Sept 14, led by losses from **Guangzhou Automobile Group** (-3.5%), **Commercial Bank for Foreign Trade of Vietnam** (-2.1%) and **Apple** (-0.4%). On the other hand, **DBS Group Holdings** (+3.3%) and **Yihai International Holding** (+0.6%) closed higher for the week. Total portfolio returns since inception now stand at 19.6%, trailing the MSCI World Net Return Index's 34.9% returns over the same period.

Positively, losses from its local consumer services segment narrowed, from RMB4,770 million a year earlier to RMB3,044 million in 1QFY2023, due to improved unit economics per

order for its food delivery business. Ele.me's economics per order turned positive during the quarter, thanks to higher average order value, lower delivery cost per order and optimisation in user acquisition spending.

On the other hand, revenue growth for the cloud segment was affected by the loss of one of its top internet customer ByteDance's international business as well as softening demand from customers in China's internet and education industries. The 10% y-o-y revenue growth for the segment was mainly contributed by non-internet industries such as financial services, public services and telecommunication industries. Operating earnings fell 27% y-o-y to RMB247 million due to investments in technology, as well as increases in co-location and bandwidth costs.

Contribution of services to overall revenue has been increasing, from 14% at end-2019 to 21% in the latest quarter. Increasing contributions from services can improve the company's profitability in the long run due to its higher gross margin (71% in 3QFY2022) as compared to the products segment (35% in 3QFY2022).

The Global Portfolio declined 0.5% for the

week ended Sept 14, led by losses from **Guangzhou Automobile Group** (-3.5%), **Commercial Bank for Foreign Trade of Vietnam** (-2.1%) and **Apple** (-0.4%). On the other hand, **DBS Group Holdings** (+3.3%) and **Yihai International Holding** (+0.6%) closed higher for the week. Total portfolio returns since inception now stand at 19.6%, trailing the MSCI World Net Return Index's 34.9% returns over the same period. **E**

Disclaimer: This is a personal portfolio for information purposes only and does not constitute a recommendation or solicitation or expression of views to influence readers to buy/sell stocks, including the particular stocks mentioned herein. It does not take into account an individual investor's particular financial situation, investment objectives, investment horizon, risk profile and/or risk preference. Our shareholders, directors and employees may have positions in or may be materially interested in any of the stocks. We may also have or have had dealings with or may provide or have provided content services to the companies mentioned in the reports.