

Artificial Intelligence – A Game Changer

Once the domain of science-fiction movies, artificial intelligence (AI) is now a fully-fledged reality. Its potential to transform countless industries should not be underestimated, with Microsoft founder Bill Gates describing recent developments in AI as being on a par with the creation of the microprocessor, the personal computer, the Internet and the mobile phone. To its proponents, AI could usher in all sorts of productivity gains across multiple sectors, with PwC predicting the technology will contribute an additional \$15.7 trillion to the global economy by 2030.¹

Scott Ross, Head of NY Innovation Lab at Citi and Tod McKenna, Head of Data Science and AI for Securities Services at Citi, discuss how the technology could be applied in the world of finance.

ChatGPT is only the beginning

Right now, a number of financial institutions are looking for ways to leverage generative AI tools, such as ChatGPT, a large language model (LLM) platform which has undergone exponential growth since first being released in November 2022. In the case of ChatGPT, it reportedly took just five days for the platform to amass one million unique users, versus 10 months for Facebook and 3.5 years for Netflix.

“ChatGPT is an LLM, which is trained to search and answer questions based on a “data set” - namely everything that has ever been published on the Internet. Like any machine trained with data, ChatGPT assumes the data is true, meaning the quality of the answers will be based on the quality of the data it receives. Although public data on the Internet can be of questionable quality, LLM solutions have the potential to be revolutionary,” said Ross.

Increasingly, LLM applications are being taught using specific and refined data sets, enabling them to become highly proficient in specialist industries, such as finance or law. Finchat.io is an example of one LLM that has been trained using publicly available financial data, including company filings and quarterly reports.

“The quality of this particular information is much better than what is available on the wider Internet. The Finchat.io tool can answer very detailed questions about the finances of a company. The next step will be for companies to introduce more of these vertically trained LLM tools across their different business lines. At Citi, we are actively investigating incorporating LLMs into all parts of our business including securities services,” said Ross.

How AI could revamp financial services

AI, including LLMs could play an instrumental role in expediting decision-making processes at financial institutions thereby generating efficiencies at a time when costs are trending upwards. "Whenever someone makes a decision, part of that process requires information gathering. AI helps users collect and synthesise information, before sending it onwards to the decision-maker", noted McKenna.

Portfolio management is one area where LLMs and other AI tools could have a major impact. "A lot of the work in the front office involves investment teams or analysts poring over reports and filings when analysing companies. LLMs have the potential to circumvent a lot of that work," said McKenna. Many of these AI solutions are arguably more accurate in terms of their analysis and predictions relative to human-generated forecasts. This is because they can review vast tranches of historical data and cross-reference it across multiple scenarios, in a way that is well beyond the capabilities of any human. "We have already observed that AI can do things like predict FX spot prices a half second in the future better than anything we have seen before. The same is true for things like complex portfolio optimization," added Ross. Not only could LLMs streamline investment processes, but they may even help boost returns.

A number of operational activities are also being transformed by AI. AI has already been deployed extensively in risk management and compliance functions across financial institutions. "This is because AI is exceptional at detecting anomalous trends, which makes it an excellent tool to help firms combat money laundering and cyber-crime," said Ross.

Within custody, AI can detect data quality problems, remedy issues with payments and eliminate manual touch points to improve reconciliations. Elsewhere, the technology has also been leveraged in collateral management, as it can provide forward looking predictions on price, risk and liquidity. At Citi, Intelligent

Document Processing (IDP) has already been incorporated into some processes, including tax services.

AI is also being used for answering client enquiries. "We have an NLP [Natural Language Processing] tool which is trained to learn how to answer client enquiries or instructions sent via SWIFT MT599 messages. The engine can generate a response to clients, or it can initiate actions within our operations team," said McKenna.

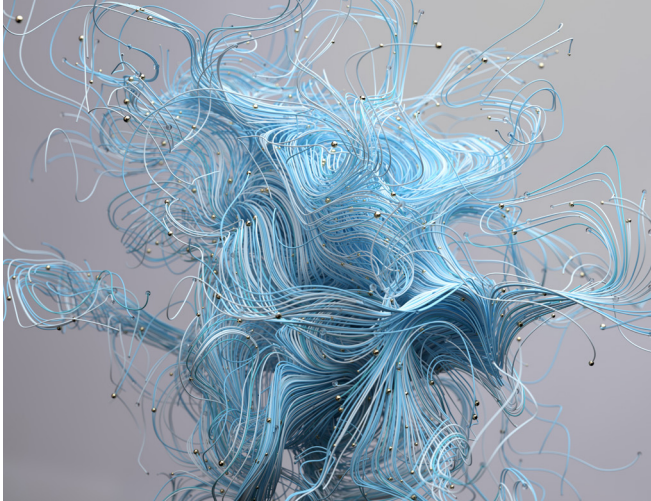
Securities settlements is one area that could be ripe for disruption through AI. AI tools have already been adopted by custodians to predict if a trade will fail, allowing trading counterparties to remediate any problems during the transaction life-cycle. Although distributed ledger technology (DLT) could facilitate atomic or instantaneous settlement, experts argue that AI has the potential to supplement the process even further. "There is no doubt DLT will simplify the settlement process and make it more efficient. However, the DLT settlement process will still be a process reliant on data and some human intervention. This is the beauty of AI. Over time, and with enough data, AI can understand these processes and subsequently make recommendations on how to improve them," continued McKenna.

In the midst of an AI cultural revolution

As AI becomes more entrenched in people's daily lives, firms will need to re-think their approach to talent management moving forward. According to a recent survey, 43% of college students said they have experience with AI tools like ChatGPT, of which half acknowledged they used them to work on assignments or exams.² "Just as the digital natives grew up with Facebook and smartphones, there is now a new generation of young AI natives. This generation will be entering the workforce very shortly and will expect to use ChatGPT or some other variant in their work," commented McKenna.

However, this is not the first time companies have been forced to adapt to meet the changing requirements of an increasingly tech-savvy workforce. "Years ago, we had





a wave of young people come to work for the bank, and they were shocked that we did not have Internet. What is happening today with AI is broadly similar,” shared Ross. Businesses will eventually have to evolve to accommodate for the growing numbers of AI natives joining their ranks.

Taking a responsible approach

Although AI could unlock a number of potential benefits, the technology is not risk-free. Advances in AI should be undertaken responsibly, with guardrails being put in place to ensure the technology is developed in a safe and measured way.

“Responsible AI is a huge topic and we have a lot of people at Citi working on this very issue. Firstly, there needs to be transparency and explainability into the analytics and conclusions which AI is producing. This can sometimes be complicated as early AI technology is very much a black box. We also must be careful to ensure that AI does not display any bias in its modelling. This means we must have checks to prevent machines from making decisions that are biased,” said Ross.

Protections will also need to be implemented when using generative AI models, namely systems which continually learn and adapt to new situations. “Generative models, which learn on the fly, have to be monitored very closely for any drift,” added Ross. A prime example of so-called drift involved a major tech company’s AI-enabled chatbot, which posted inflammatory comments after being trolled on Twitter, having been programmed to learn from interactions with users on the social media site.

And finally, there are mounting concerns that AI will displace a number of jobs over the next few years, possibly leading to serious societal upheaval. Research by OpenAI suggests 80% of US employees could have up to 10% of their work affected by GPTs.³ Consequentially, this has prompted some regulators - including those in the EU - to propose rules on AI and how it is used. The EU’s AI Act, for example, will attempt to implement stronger rules around data quality, transparency, human oversight and accountability,⁴ and other global regulators will likely follow suit. As such, financial institutions will need to think carefully about how they implement AI.

Harnessing AI for the future

AI is developing at an unprecedented pace, and its impact is likely to be felt extensively across a wide gamut of industries. Financial services will need to adapt to navigate these changes too, including embracing a new generation of AI natives and building guardrails to mitigate some of the risks which this new technology could pose.

Given the speed at which AI is developing, a wait and see policy is not viable. A successful AI strategy will require companies not just to adopt the technology itself, but to do so in a way that puts risk management and compliance at the forefront. A number of financial institutions are adopting this approach and leveraging AI in areas such as risk management, client onboarding, client servicing, collateral management, payments and improving data quality.

¹ PwC - Sizing the prize: PwC’s Global Artificial Intelligence Study: Exploiting the AI Revolution

² Forbes- March 20, 2023 - More than half of college students believe using ChatGPT to complete assignments is cheating

³ Euronews - March 30, 2023 - OpenAI says 80% of workers could see their jobs impacted by AI

⁴ World Economic Forum - March 28, 2023 - The European Union’s Artificial Intelligence Act, explained

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