Data Science / AI / ML

The race to AI utilization in finance is a marathon, not a sprint

Bloomberg Professional October 04, 2017

Development and deployment of artificial intelligence (AI) in financial services has accelerated. In particular, quantitative funds are increasingly applying programming and advanced statistical methods to generate alpha and automate trading strategies. Despite the hype and frequent headlines extoling the virtues and efficacy of AI and outperformance of quant driven funds, the path to AI adoption industrywide should perhaps be tempered as it is more likely to evolve slowly and incrementally. Step changes in technology applications at scale often come gradually rather than swiftly. Before we see wider adoption of AI in investing, there are several hurdles – technological, operational, regulatory and structural – to overcome.

“We are still early in the adoption cycle,” Paul Crowley, co-founder of high-frequency hedge fund Gradient Fund Management, said at the Bloomberg Enterprise Tech & Data Summit in New York last month. “How long will it be until new AI techniques see real efficacy and repeatability for alpha generation? Probably later than you might think,” he continued.

Investment banks and insurance firms have started to utilize AI and machine learning (a segment of AI based on the principle that given enough training data, machines can learn for themselves). Early successes have not been investment focused but rather have spanned the automation of repetitive acts

such as know your customer, anti-money laundering, claims processing, trade reconciliations and fraud identification. Most of these types of applications running in the industry are narrow AI rather than general AI and must be implemented for very specific use cases and programmed with detailed instructions as they are not able to self-learn. Experts say the future that many envision, one in which robots can autonomously identify trends or make independent decisions, is still a long way off. It is more appropriate to consider AI an augmentation to task oriented projects and there is usually some form of "human in the loop" to monitor a process and otherwise be prepared to intervene or override decisions as appropriate.

Building early AI into Investment Management

In addition to the automation of repeatable back office processing, there are many active AI use cases across investing. Hedge funds, prop desks and asset managers are increasingly well suited to leveraging AI techniques because these firms are working with large quantities of data and have teams of software developers and data scientists. The goal of growing these capabilities is to achieve, maintain and grow organizational alpha that offers them ongoing potential for returns exceeding their benchmarks. Some firms are experimenting with proprietary AI-enhanced stock-picking tools relying on factor models to identify stocks that their portfolio managers and analysts may have overlooked; and other firms are exploring alternative data and non-traditional data source to mine for unique alphas. Unstructured data, including the volumes of social media data, can be examined using topic extraction and sentiment scores (the range of positive, neutral, and negative weights) and assigned confidence scores which can either lead or lag market trends. These data driven strategies are carefully tested. When a human manager is ready to implement, the machine usually takes over applying the methodology and monitoring for breaks. Firms are procuring data vendors

new and old as well as tinkering with AI-enhanced data analytics to complement their traditional analyses.

While these are significant steps forward, the applications are still a bit niche. “Many firms want to incorporate more non-financial data and alternative data sources into their processes and are using open-source modules to aid in the testing and evaluation of new sources in various combinations. What they lack is usually a team of data hunters to knock on the doors of vendors that don’t typically sell data but are exploring the monetization of their ‘data exhaust’ that is produced as a byproduct of their primary business (for example processing invoices is a SaaS business, but the anonymized summarized payment trends may aid a sector weighting model),” said Jeremy Baksht, Senior Product Manager at Bloomberg.

Deciphering unstructured data

A joint study by the National Business Research Institute and Narrative Science found just 32% of traditional financial institutions surveyed are using recommendation engines, predictive analytics, voice recognition or other such technologies. Twelve percent of those surveyed said they weren’t using AI technology because it was new, untested and risky. Respondents also cited barriers such as siloed data sets, regulatory concerns and unclear internal ownership of emerging technologies as factors thwarting innovation.

The lack of trust brings up a central concern. It’s not only the newness and unfamiliarity of AI that breeds hesitation. The quality of AI output depends very much on the quality of data going in. For now, computers are still dependent on highly organized, searchable “structured” data sets that are “machine readable”. Machine systems struggle to make sense of unstructured

data – which includes images, documents, voice recordings, emails, graphs, social media and more.

One of the biggest problems right now for companies trying to use artificial intelligence is that the majority of data is unstructured. There have been many improvements in image and speech recognition and some in text as well, noted Crowley. But it's far from foolproof. For the most part, computers still have a way to go before they can be "trusted" to accurately make sense of unstructured data.

Then there are the regulatory challenges. Data underpins AI's analytical firepower, but there are many gray areas concerning who owns that data and how it can be used. There are privacy laws in place to protect consumer data, but current regulations aren't equipped to address the merging of big data and artificial intelligence. Banks already strip out personally identifiable information in many cases to comply with current privacy regulations, but approaches to data governance vary from one institution to another. Regulators and legal experts are starting to address these concerns and seek solutions, especially as it becomes increasingly possible to identify individuals by combining data sets.

Determining factors for investment

Currently, budget and resources are the key determinants for which firms implement AI. The development and adoption of AI in financial services are mainly taking place at large firms with the resources to hire teams of data scientists and to invest in new technology.

Firms are starting to use AI in niche applications as a complementary tool, but it will be some time until AI is trusted to make self-directed investment

decisions without significant human intervention. “What we’re seeing is innovation tourism,” said Matei Zatreanu, founder of System2, a company that advises hedge funds on integrating alternative data into their investment strategy. “Funds are tinkering in earnest trying to get in the door and learn about machine learning but they’re not usually ready to pull the trigger on a build out of teams, systems, data sets and processes to support automated trading strategies.”

Whether big or small, firms are looking to AI as a differentiator. Smaller firms, while not able to invest large teams or resources to implement AI, can consider a growing number of off-the-shelf solutions in AI that can help increase productivity and efficiency. The adoption of artificial intelligence in the industry may well be slow and incremental, but investments today are needed in order to compete in financial services both back office and increasingly in machine enhanced trading, which is always dynamically reshaping the competitive landscape. The marathon is in progress and the teams with machines are moving faster than those without machines.