Machine learning quells investor panic

Data A project with UTS will help Colonial identify nervous clients.

James Eyers

Colonial First State data scientists are working with a team of computer engineering PhDs from the University of Technology, Sydney, to develop deep learning algorithms to predict investor responses to market shocks and tailor the communication of financial advice.

A five-year partnership between Commonwealth Bank of Australia-owned CFS and UTS has resulted in the asset manager providing 20 years of investment and behavioural data for 1 million customers to machine learning researchers at the university, who are using its cutting-edge super-computers to forecast investor reaction.

Peter Chun, the general manager of product and investment at Colonial First State, said artificial intelligence and big data analytics will also help the asset manager predict which customers might be more receptive to investment opportunities. He points to the example of the government's non-concessional contribution rules for superannuation; customers have a window of opportunity before June 30 to invest more than the caps.

"That is an example where, over the next six months, we will use this deep data analytics capability to help our customers respond to this opportunity that's arisen," he said.

CFS, which has around $115 billion under management, can now analyse 100 attributes on each customer, including transactional and financial information along with behavioural data.

Predictive modelling is being used to analyse the propensity for particular customers to make top-up superannuation contributions beyond the mandatory 9.5 per cent. This is painting a picture of people who respond positively to having more, allowing CFS to focus strategic communications on the clients most likely to respond.

Machine learning is also providing lessons on investor reactions to the two dramatic political events of 2016, Britain's vote to exit the European Union and the election of Donald Trump as US President. When Brexit happened in June and after Mr Trump's victory, Mr Chun said various investors sought to switch to cash only to quickly switch back to equities at extra cost and higher prices. Deep learning is allowing CFS to identify investors with a propensity to panic so it can monitor and advise them during future market panics.

It is also planning to use voice recognition software that can analyse conversations between customers and the call centres. Mr Chun said management could run a report at lunchtime providing a picture of what clients were thinking about when they rang up that very morning.

"With the number of datasets we have access to for more than 1 million customers, we can then fine-tune the way we tailor our communication to customers, so they respond much more positively," Mr Chun said. CFS has a team of 12 data scientists led by James Brownlow, the national manager of analytics and business intelligence.

CBA is also using artificial intelligence for cyber security, fraud detection and regulatory compliance, the bank's chief information officer David Whiteing said in December.

Colonial First State is one year into a five-year partnership with the Advanced Analytics Institute at UTS, which has been developing graphical processing unit-powered supercomputers that process vast amounts of data to allow the computers to learn.

The university is also developing special visualisation techniques, including through the Data Arena in its Broadway campus. "For a regulator, a member of the public, or a director of a board of a company, information can now, for the first time, be shown to give insights in a visual medium through this visualisation," says Professor Michael Blumenstein, head of the school of software at UTS.

The dataset provided by CFS is precisely the right size for deep insights to occur, he said, and "if we can help with the cutting-edge algorithms, machine learning techniques and deep learning analytics, then we are excited about contributing to that. Some of the things we are contributing to this partnership is to ensure that CFS has the absolute cutting-edge algorithms.

"We want highly multi-disciplinary research that can provide insights for a purpose," Professor Blumenstein said. "This project has impact, and through the technology we can help to provide real outcomes for Australia such as improving savings in the superannuation space."

The analysis of investor reactions to Brexit and the election of Mr Trump was also helping to build up a "historical repertoire of data points and information," he said. "It is really effective for potentially predicting what will happen both in the short term and long term, because you have enough information in the period to make very informed predictions through deep insights."

In March, the Productivity Commission will deliver a final report to the federal government that will suggest reforms to remove the "lack of trust and numerous barriers to sharing and releasing data [which] are stymieing the use and value of Australia's data", according to its interim report published in October.

The commission recognised that developments in computing power, internet connectivity and algorithms had "enabled a kaleidoscope of new business models, products and insights to emerge" and suggested Australia needs to move "from a system based on risk aversion and avoidance, to one based on transparency and confidence in data processes."

Analysis of Colonial's data points have already revealed that low engagement with superannuation typically results in poorer financial outcomes in retirement, Mr Chun said.

Increasing the overall level of retirement savings obviously has commercial advantages for CFS given its fees are correlated with the size of its assets under management, but machine learning techniques can also help relieve pressure from the Commonwealth budget by targeting more savings, he said.

"A lot of the industry focuses on averages, but without being able to see the data you can't actually surface these
insights. It is all about having richer information to be able to drive insights. But ultimately insights are not valuable unless they drive action and behavioural change. For us, what we are trying to solve for is improving retirement outcomes,” Mr Chun said.

“With the big demographic shift, with the baby boomers starting to now retire, there is a real duty for all of us to actually improve the system. We do think it is a world-class pension system, we are the envy of the world. But we can be doing a lot more – particularly about understanding our customers and the lack of engagement and apathy in superannuation.

“A lot of what made us invest in data analytics was the desire to actually understand our customers much better. For a lot of the industry, it is very hard to get people engaged – superannuation is not something that people think about a lot. But we have been investing in capability to understand customer attributes.”

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