Transforming financial services with machine learning

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Digital disruption and business transformation means that tomorrow’s financial service providers may bear a closer resemblance to a data centre than the bustling trading rooms of today’s institutions. Banks are increasingly turning to machine learning (ML) and artificial intelligence (AI) to provide better customer experiences, drive operational efficiency and improve compliance. However, in order to turn the potential into tangible benefits, firms need digital platforms that provide flexibility and scalability, speed and security. Here we examine the possibilities of AI and ML, and why firms need to consider their digital infrastructure before they can take full advantage of these exciting technologies.

Artificial intelligence and machine learning techniques can be employed throughout the range of financial service markets. For example, digital advice platforms were initially used to onboard customers to low-cost portfolios via simple online questionnaires. With the application of machine learning, they now factor in changes in risk tolerances and event-driven priorities to create highly individualised financial planning goals.

Banks are also trialling chat bots that utilise natural language processing to answer customer queries in real-time, wherever and whenever the customer needs. This is just one example of how AI/ML has the potential to significantly improve the traditional customer experience, while offering providers ever-deeper insights into user preferences and behaviours. In the near future, AI/ML may help a bank to spot when a customer needs a loan, assess the credit risk, and encourage the budgeting behaviours that minimise fault risk.

As they serve more customers, the AI/ML engines continually improve, becoming better at recommending appropriate financial products and solutions for an ever-wider range of customers and circumstances.

Machine learning can help finance sector firms to create operational efficiencies by automating workflows. For many firms the greatest benefit will come in the area of regulatory compliance. Trade surveillance, anti-money laundering, fraud detection and information security regulations have ramped up costs across the financial services industry since the global financial crisis.

The most innovative financial services firms are now using AI/ML to identify non-compliant or abusive activity and prioritise issues for human consideration. While some firms are replacing statistical risk management models with machine learning programmes to flag suspicious transactions, others are preventing abuse by training algorithms to spot changes in employee behaviour that could lead to non-compliant trades.

Transforming customer experience

Streamlining operations and ensuring compliance
Better business decisions

The insurance industry has pioneered the use of data in its underwriting decisions. Many of the large insurers and banks are exploring the opportunities to deploy AI/ML in credit risk management and underwriting. The algorithms take account of structured and unstructured data including past default rates, claims data, demographics and health data to predicting possible future outcomes. A recent white paper estimated that a portfolio of 200,000 variable annuity contracts could be analysed via machine learning techniques in 1.5 hours, versus 1.5 years using standard risk analysis techniques1. The insurer is empowered to make better underwriting decisions, which in turn provides more confidence about its future business success.

Increasing momentum but challenges remain

Artificial Intelligence and machine learning are being super-charged by the huge volume of digitised data now available, and the cloud-based compute power to analyse it. As the McKinsey Quarterly2 recently put it, “The unmanageable volume and complexity of the big data that the world is now swimming in have increased the potential of machine learning – and the need for it.”

But combining these resources with intelligent, adaptive algorithms is no simple task, and pose a number of structural challenges for firms. First of all, AI/ML programmes are hungry. They work on a continuous feedback loop, adjusting to every new piece of data they consume. This feature means machine learning programmes need considerable compute power on-demand, both to renew themselves and to deliver timely outputs.

There are also considerable infrastructure demands made by big data workloads. Such applications can require thousands of central processing unit (CPU) cores and thousands of terabytes of solid state drive storage. They also need to facilitate multiple changes at speed. Reliable, flexible and immediate access to high-density compute power is seen as a pre-requisite, which makes network connectivity critical.

Successful implementation of AI/ML programmes may require firms to fundamentally reappraise their existing operating infrastructure, including their data management and networking capabilities. The potential gains – in terms of value creation and competitive advantage – are driving the search for cost-effective ways to aggregate massive data sets and access high-density compute resources to perform the analyses and calculations from which AI/ML can derive valuable new insights.

1 An efficient machine learning approach for risk management of large complex portfolios arising in insurance – Global Risk Institute (June 2016)

Established firms playing catch up

As the established financial services industry has grappled with evolving regulatory burdens and the complex process of transitioning from legacy IT systems, agile new players have emerged to put traditional firms under intense competitive pressure. Digitally-native, cloud-first firms have brought ‘FinTech’ solutions to market and threaten to disrupt incumbents. In response, the finance sector is partnering with technology service providers to explore the opportunities of AI/ML for themselves and their clients.

Across sectors, firms are already looking to partner with specialist providers with expertise in running, maintaining and developing compute and storage facilities, connecting them into their customised AI/ML ecosystems based on flexible, scalable and secure networking. A recent report commissioned by Telstra3, showed that enterprises are increasingly adopting flexible approaches, with the use of multiple cloud-based resources, colocation facilities and hosting services. Software-as-a-service (SaaS), infrastructure-as-a-service (IaaS) and public cloud are expected to increase from 24.7 per cent of workloads now to 36 per cent in two years, while hosted and on-premises private cloud usage will fall from 32.2 per cent to 25 per cent.

This shift reflects a need to maintain a flexible cost base and operating model as new waves of digital technology innovation continue to disrupt markets. Sector-specific issues such as Basel III’s capital requirement framework also play a role.

Statement of intent

We are still in the relatively early stages of the industrialisation of AI/ML. A cross-industry survey of executives for a Telstra-sponsored report into Asia’s digital transformation4 recently found that around a fifth of business units use data analytics “to a great extent” (25 per cent in financial services). However, 33 per cent said big data analytics would be their most important focus in future, in terms of industry connectivity.

It seems clear that the finance sector will look to collaborate ever more closely with third parties to realise the potential of their AI/ML programmes. A network effect of partnerships will develop among those who can provide gateways to the new services firms need. Fast, flexible and secure connections become more critical, and this is why Telstra has committed significant resources to upgrading our existing network and services. We see the potential in artificial intelligence and machine learning, and while we may be in the relatively early days of artificial intelligence, there are many exciting times ahead.

3 Enterprise Hybrid IT: The Role of Colocation, Cloud and Connectivity – 451 Research (December 2016)
4 Connecting Capabilities: The Asian Digital Transformation Index – Economist Intelligence Unit