# THE FUTURE OF FINANCIAL SERVICES IS IN MACHINE LEARNING

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## WHAT IS MACHINE LEARNING?

Since the 17th century mathematicians have been developing formulas in statistics to help make demographic and economic forecasts for policymaking. More recently, with the arrival of digital computers, more powerful algorithms have been developed, which we now use every day for a wide range of tasks, such as weather forecasting and internet searches. Machine learning has evolved from statistics and involves the development of algorithms that can give computers the ability to learn information, without the information being pre-programmed, in order to solve particular problems.

Generally, there are three different forms of machine learning. In 'supervised learning' the computer is given an example question, the data needed to answer it and the correct answer, similar to learning in a classroom. The computer can then learn the process for answering the question in order to answer similar questions on its own. In 'unsupervised learning' the computer is not told what the correct data is that is needed to answer the question, or what the correct answer is, which the computer has to work out for itself. Lastly, 'reinforcement learning' gives the computer a goal, such as winning a game of chess, and it is given feedback each time it plays the game until it wins. In financial services, where most information is now accessible in a digital form, we are starting to see the use of machine learning techniques in automating tasks, decision-making and compliance, which is likely to rapidly grow.

Three reasons why machine learning is going
to radically change the financial services industry.

## 1 AUTOMATION

Machine learning programs can be used to automate the tasks needed to perform particular financial services. In the insurance sector, Fukoko Mutual Life Insurance is now using IBM's Watson platform to automate the information gathering exercise to process policyholders' pay-outs. IBM's Watson uses machine learning to build an understanding of the expertise needed to complete the task. Fukoko Mutual believe that Watson will increase the firm's productivity by 30% and save about $1.2 million, but at the expense of over 30 staff who will be made redundant. The World Economic Forum has estimated that automation using computers and robots will result in a total loss of over seven million jobs during the next five years in 15 developed countries, two thirds of which are focused in routine white collar office functions, such as administrative roles.

On the bright side, however, there is expected to be two million jobs created in computer, mathematics, architecture and engineering fields.

## 2 DECISION-MAKING

There is a lot of talk about 'big data' in financial services, and with the dramatic increase in the number of devices that are connected to the internet it seems that data can be collected on nearly everything. However, such large amounts of data can be difficult to process in order to produce any meaningful information. Machine learning can be used as a tool to analyse big data and to extract useful results. Further, because machine learning programs are less reliant on human involvement, they can process very large amounts of data quickly and efficiently, whilst also identifying information that may otherwise be missed by human data analysts. Decision-makers within businesses that utilise machine learning will be able to arm themselves with insights, such as in relation to customer behaviours, product development and business strategy, which would otherwise have been unavailable, when making important strategic decisions.

## 3 COMPLIANCE

Regulatory technology, or RegTech, is increasingly being used to assist financial services businesses to meet their compliance requirements. Machine learning can assist in risk management, fraud analytics and know-your-client due diligence tasks, which for many businesses previously required large compliance teams. Some banks are already using machine learning to detect credit card fraud. It should soon be possible to teach a computer what the regulations are that apply to a particular business and for the computer to then monitor the business' compliance with the requirements of the regulations.

### HOW DO I GET STARTED?

I would suggest that your firm builds a strategy on how it will use machine learning. I would also suggest that you start small before letting your business become reliant on more significant tasks performed by a computer. For regulated businesses, it is important to note that tasks performed automatically by a program are likely going to be more difficult to explain or demonstrate to a regulator than if those tasks are performed by a person, so give your business sufficient time to get the regulator comfortable with the software that you decide to use. Further, I would suggest that you consider how you will protect your business know-how and intellectual property once it has been learned by the computer, including in relation to your cyber-security requirements. Ultimately, financial services businesses that do not have a digital strategy to take advantage of the rapid developments in machine learning are likely going to quickly lose their competitiveness.

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