

Unleash the Power of Machine Learning

Are You Ready for the Next Industrial Revolution?

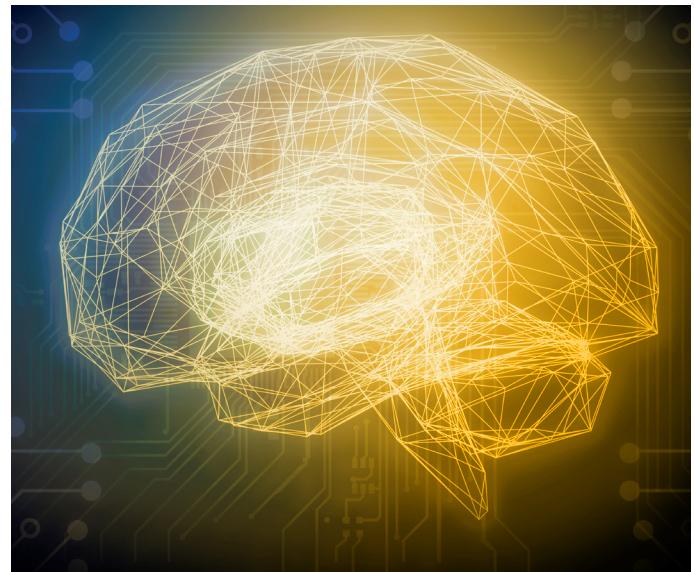
Artificial Intelligence and Machine Learning have the power to entirely transform a wide range of industries beyond recognition in the next five to ten years. Unlike many other recently highly publicised technologies, Machine Learning is starting to gain traction commercially, as new and innovative applications using these prediction techniques are implemented to **improve business performance and decision making**.

Machine Learning harnesses the power of your **big data**, utilising advanced mathematics and computational techniques to predict and automate tasks with greater accuracy than ever before. Rather than a technology to replace humans, we see it as an enhancement tool to help your workforce make more informed decisions and to improve customer value and retention.

Machine Learning Applications

Use cases can be far reaching across the organisation, including:

- **Customer Behaviour** – understand which of your customers are at risk of leaving for a competitor and why. Find out what characteristics increase the likelihood of converting prospects into future customers. Accurately predict credit risks or bad loans.
- **Risk & Regulation** – automatically spot red flags from transactional and other financial data that could be a warning against fraud, terrorist financing or non-compliance with various regulations.
- **Cyber Security** – enhance threat detection on your networks by learning from previous attacks.
- **Market Research & Pricing** – gain insights into your market, potentially predicting market trends to enhance your business strategy. Enhance pricing by using non-traditional data to predict likely outcomes that have positive or adverse effects on the demand for your products.
- **Financial Portfolio Optimisation** – forward looking analytics to optimise risk and return using a variety of traditional or non-traditional data.



It has been said that 90% of the world's data was created in the last 2 years*, and this is growing exponentially. We believe that we have only scratched the surface of what Machine Learning can achieve. With computer capacity and performance growing exponentially, a major evolution is currently underway.

*Source: IBM

Client Case Study: An Insurance Example

An insurance client asked us to help determine the factors that might influence sales of their annuity products, based on quotation data.

Typically these factors could include some or all of the following:

- Approximate location of the customer
- Age and health factors
- Type of distribution channel or which financial advisory company was used
- Whether price was an influential factor.

Traditional statistical techniques typically only focus on a small number of variables at a time. Previous analyses did not uncover anything that was not already well known and understood.

Crowe helped the company implement a Machine Learning model that incorporates all the factors that are available, using millions of data points to determine what combination of features influences the outcome.

The project entailed:

- Defining the business problem and hypothesis
- Sourcing, extracting, anonymising and cleansing data
- Applying a range of Machine Learning algorithms to the data and testing to find the best fit
- Creating a production model for ongoing use
- Training to ensure users fully understand what the model is doing in layman's terms.

The model has been implemented such that going forward it can be used in real time by the client. This means that as new quotation data is added on a daily basis, the model will update itself and become more accurate over time.

With the model, the company is able to predict the probability of a given customer buying the product, and can therefore act accordingly, for example by customising the products or improving specific advisor training. Over time, this proactive approach is expected to yield an increase in sales, revenue and profit.



This example shows how Machine Learning is finding patterns in the data using sophisticated non-linear algorithms. While one can visualise these patterns in two dimensions with only two outcomes (Sale, No sale), the data and outputs may have any number of dimensions. It can therefore perform analyses far more complex than most traditional data analytics methods.

Many organisations are actively gearing up their in-house data science capabilities in order to experiment with these ideas. We believe a pragmatic, targeted approach can be very effective in unlocking the real value of your data, and ensuring the organisation is not left with black box models that no-one understands. Machine Learning is no longer a futuristic ambition, but a useful tool that can be used to add value today.

About Us

Crowe Horwath is a risk management, consulting, audit and technology firm with offices across the globe and over 33,000 professionals. Connecting deep industry and specialised knowledge with innovative technology, our dedicated professionals create value for our clients with integrity and objectivity. Our team in the UK blends actuarial, risk management and data science expertise.

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