Transforming the insurance sector:
How machines will change the game for insurers

By **Gary Richardson**, KPMG in the UK

Will the next round of competition in the insurance sector be fought – and won – by machine learning? It would seem so, with a handful of your peers already starting to arm themselves with the skills, capabilities and technologies to start winning the early battles. Are you ready to compete in this new environment?

Contact
Gary Richardson

nsurance executives can be excused for having ignored the potential of machine learning until today. Truth be told, the idea almost seems like something out of a 1980's sci-fi movie: computers learn from mankind's mistakes and adapt to become smarter, more efficient and more predictable than their human creators.

But this is no Isaac Asimov yarn; machine learning is a reality. And many organizations around the world are already taking full advantage of their machines to create new business models, reduce risk, dramatically improve efficiency and drive new competitive advantages. The big question is why insurers have been so slow to start collaborating with the machines.

Smart machines

Essentially, machine learning refers to a set of algorithms that use historical data to predict current or future outcomes. Most of us use machine learning processes every day. Spam filters, for example, use historical data to decide whether or not emails should be delivered or quarantined. Banks use machine learning algorithms to monitor for fraud or irregular activity on credit cards. Netflix uses machine learning to serve up recommendations to users based on their viewing history and recommendations.

In fact, organizations and academics have been working away at defining, designing and improving machine learning models and approaches for decades. The concept was originally floated back in the 1950's but – with no access to digitized historical data and few commercial applications immediately evident – much of the development of machine learning was largely left to academics and technology geeks. For decades, few business leaders gave the idea much thought.

Machine learning brings with it a whole new vocabulary. Terms such as feature engineering, dimensionality reduction, supervised and unsupervised learning to name a few. As with all new movements the ability of an organization to bridge the two worlds of data science-led machine learning and business is where the value will be generated.

Driven by data

Much has changed. Today, machine learning has become a hot topic in many business sectors fueled, in large part, by the increasing availability of data and low cost scalable cloud computing. For the past decade or so, businesses and organizations have been feverishly digitizing their data and records – building up mountains of historical data on customers, transactions, products and channels. And now they are setting their minds towards putting it to good use.

The emergence of big data has also done much to propel machine learning up the business agenda. Indeed, the availability of masses of unstructured data – everything from weather readings through to social media posts – has not only provided new data for organizations to comb through, it has also allowed businesses to start asking different questions from different data sets in order to achieve differentiated insights.

The ongoing drive for operational efficiency and improved cost management has also catalyzed renewed interest in machine learning. Organizations of all types and stripes are looking for opportunities to be more productive, more innovative and more efficient than their competitors. Many now wonder whether machine learning can do for information-intensive industries what automation did for manual-intensive ones.

> "We recently worked with a global insurer to develop a proof of concept focused on improving the efficiency of claims processing. Using a decade's worth of historical data, we created an algorithm that was able to reduce claims processing times down from months to just minutes. And the machines weren't just faster, they were also found to be more accurate and reliable than the traditional human-led approach.
>
> **– Gary Richardson**
> KPMG in the UK

Changing the game for insurers – machine learning is here

Reduce costs   **Improve efficiency**   **Gain competitive advantage**

A new playing field

For the insurance sector, we see machine learning as a fundamental game-changer. The reality is that most insurance organizations today are focused on three main objectives: improving compliance, improving cost structures and improving competitiveness. It is not difficult to envision how machine learning will form (at least part of) the answer to all three.

Improving compliance: Today's machine learning algorithms, techniques and technologies can be used on much more than just hard data like facts and figures. They can also be used to review, analyze and assess information in pictures, videos and voice conversations. Insurers could, for example, use machine learning algorithms to better monitor and understand interactions between customers and sales agents in order to improve their controls over the mis-selling of products.

Improving cost structures: With a significant portion of an insurer's cost structure devoted to human resources, any shift towards automation should deliver significant cost savings. Our experience working with insurers suggests that – by using machines instead of humans – insurers could cut their claims processing time down from a number of months to just a matter of minutes. What is more, machine learning is often more accurate than humans meaning that insurers could also cut down the number of denials that result in appeals they may ultimately need to pay out.

Improving competitiveness: While reduced cost structures and improved efficiency can certainly lead to competitive advantage, there are many other ways that machine learning can give insurers the competitive edge. Many insurance customers, for example, may be willing to pay a premium for a product that guarantees frictionless claim payout without the hassle of having to make a call to the claims team. Others may find that they can enhance customer loyalty by simplifying re-enrollment processes and client on-boarding processes to just a handful of questions.

Overcoming cultural differences

It is surprising, therefore, that insurers are only now recognizing the value of machine learning. The reality is that insurance organizations are founded on data and most have already successfully digitized their existing records. Insurance is also a rather resource-intensive business; legions of claims processers, adjustors and assessors are required to pore over the thousands – sometimes millions – of claims submitted in the course of a year. One would therefore expect the insurance sector to be leading the charge towards machine learning. But they are not.

One of the biggest reasons insurers have been slow to adopt machine learning clearly comes down to culture. Generally speaking, the insurance sector is not widely viewed as being 'early adopters' of new technologies and approaches, preferring instead to wait until technologies have become mature through adoption in other sectors. However, with everyone from governments through to bankers now making use of machine learning algorithms, this challenge is quickly falling away.

The risk-averse culture of most insurers also dampens the organization's willingness to experiment and – if necessary – fail in its quest to uncover new approaches. The challenge is that machine learning is all about experimentation and learning from failure; sometimes organizations need to test dozens of algorithms before they find the most suitable one for their purposes. Until such a time as 'controlled failure' is no longer seen as a career-limiting move, insurance organizations will continue to shy away from testing new approaches.

Insurance organizations also suffer from a cultural challenge common in information-intensive sectors: data

> **"**One of the great benefits of doing 'proof of concepts' is that it allows organizations to try – and fail – in a safe environment. This means they can take the time to find the right data, build the best algorithms and create the smartest use cases for their organization. This is not a plug-and-play technology – it takes work, patience and a supportive culture to succeed.**"**
>
> – **Gary Richardson,** KPMG in the UK

hoarding. Indeed, until recently, common wisdom within the business world suggested that those that held the information also held the power. Today, many organizations are starting to realize that it is actually those that share the information that have the most power, not those that hoard it. As a result, many organizations are now keenly focused on moving towards a 'data-driven' culture that rewards information sharing and collaboration and discourages hoarding.

Starting small and growing up

The first thing insurers should realize is that this is not an arms race. The winners will probably not be the organizations with the most data, nor will they likely be the ones that spent the most money on technology. Rather they will be the ones that took a measured and scientific approach to building up their machine learning capabilities and capacities and – over time – found new ways to incorporate machine learning into ever-more aspects of their business.

Insurers may want to embrace the idea of starting small. Our experience and research suggest that – given the cultural and risk challenges facing the insurance sector – insurers will want to start by developing a 'proof of concept' model that can safely be tested and adapted in a risk-free environment. Not only will this allow the organization time to improve and test their algorithms, it will also help the data scientists to better understand exactly what data is required to generate the desired outcome.

More importantly, perhaps, starting with pilots and 'proof of concepts' will also provide management and staff with the time they need to get comfortable with the idea of sharing their work with machines. It will take executive-level support and sponsorship as well as keen focus on key change management requirements.

Take the next steps

Recognizing that machines excel at routine tasks and that algorithms learn over time, insurers will want to focus their early 'proof of concept' efforts onto those processes or assessments that are widely understood and add low value. The more decisions the machine makes and the more data it analyzes, the more prepared it will be to take on increasingly complex tasks and decisions.

Only once the proof of concept has been thoroughly tested and potential applications are understood should business leaders start to think about developing the business case for industrialization (which, to succeed in the long-term, must include appropriate frameworks for the governance, monitoring and management of the system).

However, while this may – on the surface – seem like just another IT implementation plan, the reality is that machine learning should be championed not by IT but rather by the business itself. It is the business that must decide how and where machines will deliver the most value and it is the business that owns the data and processes that machines will take over. Ultimately, the business must also be the ones that champion machine learning.

All hail, machines!

At KPMG, we have worked with a number of insurers to develop their 'proof of concept' machine learning strategies over the past year. And we can say with absolute certainty that the battle of machines in the insurance sector has already started. The only other certainty is that those that remain on the sidelines will likely suffer the most as they stand by and watch their competitors find new ways to harness machines to drive increasing levels of efficiency and value.

The bottom line is that the machines have arrived. Insurance executives should be welcoming them with open arms. ◢

CONTRIBUTORS

Gary Richardson
Director, UK Head of Data Engineering
KPMG in the UK
T: +44 20 7311 4019
E: gary.richardson@kpmg.co.uk
Twitter: @garydata

Gary leads a team of data scientists and data engineers in the agile development of data science solutions. The focus of the team is raising the bar in terms of industrializing data science solutions and getting the science into business as usual functions. He believes mainstream enterprise adoption of machine learning is the key to accelerating innovation in the usability and productivity of the data science technology ecosystems and platforms.

KPMG
cutting through complexity

www.kpmg.com/insurance
kpmg.com/socialmedia

kpmg.com/app

Download on the App Store