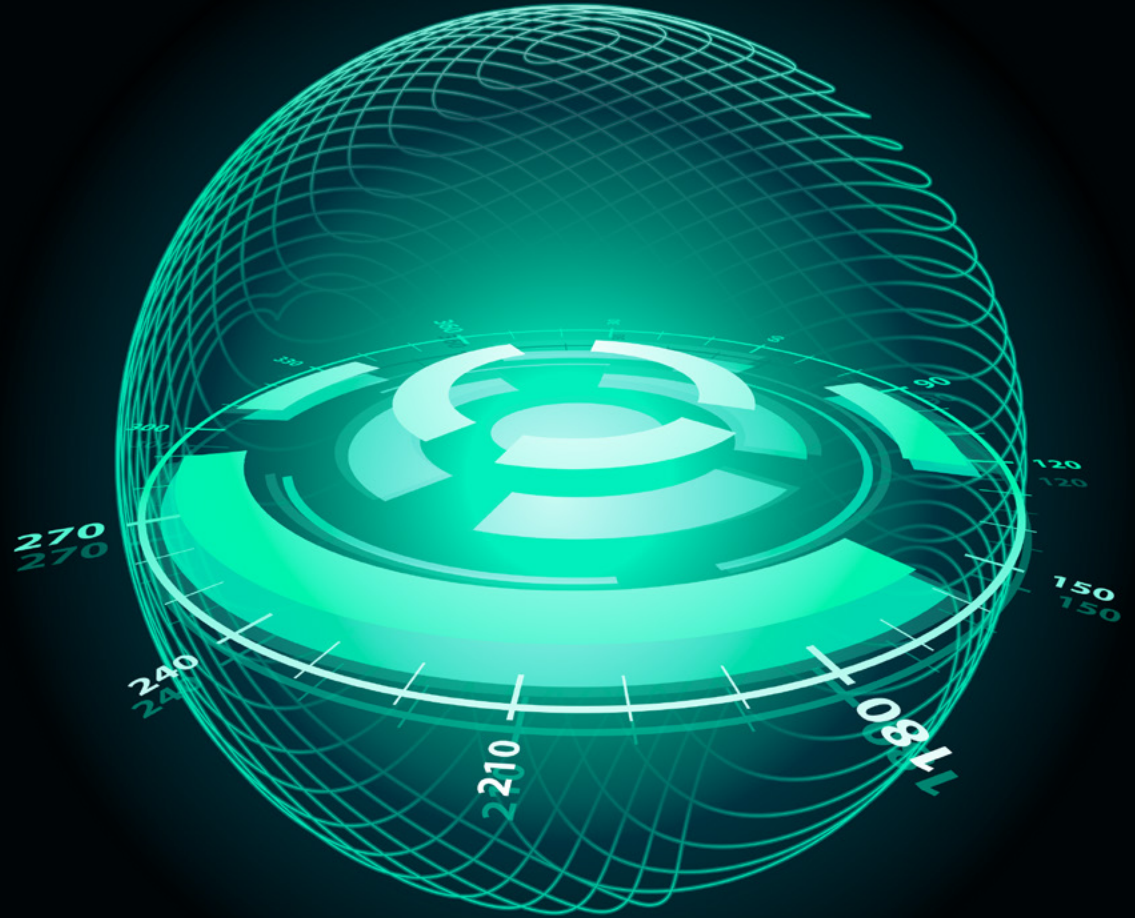# Deloitte.

Artificial intelligence and machine learning within the insurance market

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As Artificial Intelligence (AI) continues to infiltrate every corner of the world, companies are being forced to adapt and ensure that implementation of machine learning (ML) methods that underpin AI occur throughout the business. If they don't, they risk falling short of their competitors due to inferior performance, poor client interaction, flagging operational efficiencies and high costs. The use of Artificial Intelligence extends well beyond simply replacing mundane tasks with automated processes: machine learning algorithms are paving the way for solutions to be found and programs to be implemented to solve previously unimaginable problems. This is leading to higher profits, reduced risks and faster identification of systematic errors. Insurance, like any other industry, is on this journey to delivering value through Artificial Intelligence and as such, machine learning is fast becoming a business imperative.

The Emerging Science of Artificial Intelligence

AI is broadly defined as the science of developing computational intelligence; that is, any machine which takes on the ability to think, reason or learn in a similar manner to that of humans. As such, AI tends to encompass a larger spectrum of what is possible in a digital world and has many sub-sections of research and application: Robotics, Evolutionary Computation, Natural Language processing to name a few. Machine learning (ML) forms a specific subset of AI (see Diagram 1), encompassing any algorithm that

has the ability to learn from data without explicitly being programmed to do so. In laymen's terms, it's a computer system mimicking human intelligence and learning. Machine learning itself can be further broken down into supervised learning (learning where there is a known outcome), unsupervised learning (learning where there is no known outcome) and reinforced learning (learning along a set of rewards and loss to achieve a goal).
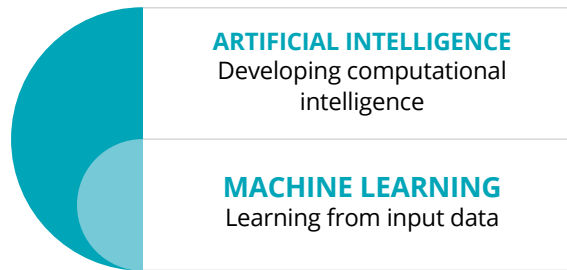

ARTIFICIAL INTELLIGENCE
Developing computational intelligence

MACHINE LEARNING
Learning from input data

Diagram 1: Relationship between Artificial Intelligence and machine learning

COVID-19 as focused insurers need to include AI in their response to the pandemic

There is no doubt that the coronavirus pandemic has exacerbated countless issues across almost every industry and, naturally, insurance companies have not been immune, with the severity of the effects varying depending on the offerings of each company.

Unpaid premiums and lapsed policies are a common issue faced by all insurers. In particular, due to the large number of retrenchments that occurred due to COVID-19 lockdowns and business operating restrictions, many people have suffered from a loss of income which has led to even more policyholders being unable to cover their monthly premiums or lapsing entirely on their policies. Some insurers have suffered from accumulation of risk (overexposure) due to large portfolios of travel insurance, event insurance and business interruption, with very little that they can do about these increased risks currently present in the market.

On the other hand, while the pandemic has taken its toll on most insurers, "working from home" has, for example, meant less driving and fewer claims for motor vehicle related damages. Further, with many businesses unable to operate with their full workforce at the office, companies that already offered more automated and intelligent services and contactless operations initially felt less of a burden due to the work-from-home orders during the COVID-19 pandemic. Hence, insurers that were already on the AI trajectory would have seen the benefits of its incorporation particularly in the past year. As an example, car insurance companies that had already implemented Robotic Process Automation to process claims would have seen less downtime and better continued levels of service while employees migrated to the new way of work.

2

Prioritising AI in the insurance value chain

Our experience in the industry with various clients has provided us with some prime examples of the improvements possible when ML is incorporated into – or replaces – previous operational processes. As one of the biggest impacts of COVID-19 on insurers, unpaid premiums and lapsed policies have caused strain on the collections process. The ability to ensure efficient operations within the process and reclaim partial or full payments is essential for insurers surviving the pandemic.

The general collection process requires the insurer to chase missed premiums with policyholders and make the necessary payment arrangements before these individuals lapse on their policies entirely. The traditional approach requires daily dialling lists of policyholders who have missed payments and these lists then get sent to the collection centre to resolve. However, there often tends to be large numbers of policyholders with unpaid premiums making it very difficult to follow up with every single individual on the list each day. A machine learning model can predict which clients are more likely to make an arrangement on the outstanding amount and these clients can be targeted first by the dialling team. Hence, resources are not wasted on policyholders who have no intention of paying their missed premiums at a future date. Instead the collections process will yield a greater amount of money received by prioritising specific policyholders.

On the other end of the lifecycle, new business may be a struggle in the post-pandemic world with many individual's either being retrenched or severely restrained by the consequent economic downturn. In many cases, AI and ML advances are out of reach for brokers and agents. With the insurer holding data across the business, they need to ensure that insights and decisions from AI are passed through to the distribution model enabling the individual agent or broker to capitalise on opportunities. For instance, the inclusion of an early lapse probability through a prediction model can ensure that the broker/agent only takes on customers who have a greater chance of paying their premiums – especially in the first 12 months of the policy. Another example could be the implementation of Next Best Action models which can give brokers and agents insight into which offers clients would either be interested in or able to afford. This can be achieved though end-to-end AI solutions which ingest data across the business, run various models and deliver the insight on broker or agent platforms making the entire process seamless, intuitive with actionable and valuable insights that individuals can use in sales conversations. Other benefits of including AI tools in the sales process include leveraging process automation techniques for mundane manual tasks such as email follow ups and verification checks during the leads process. The benefits of this include operational efficiency and better client service.

Another pain point that AI can help with is underwriting. Underwriting is lengthy and often riddled with human judgement bias. Despite best attempts, unconscious bias can creep into decision-making which devalues the risk and pricing judgments in underwriting. However, AI and ML have no such bias! With a set of unbiased data, they are completely objective and add consistency to the process. In addition, AI can be leveraged to create greater accuracy in determining risk as it is able to consider a larger variety of data points, uncover subtle trends and locate outliers. And because machine learning can be combined with Big Data technologies, new data sources that may be large in volume, produced in real-time or be generated in a non-traditional way, can be leveraged to optimise the underwriting process. For instance, data sources such as social media data, geo-location and data from wearable tech such as smart watches could all be incorporated into the underwriting process. Other areas in AI can be leveraged in the underwriting process. For instance, Robotic process automation (the automation of rules-based process) can optimise tasks such as ID and income verification, credit history checks and bank statement retrieval.

These examples of a simple machine learning application of Artificial Intelligence can lead to a major impact on day-to-day operations. By integrating predictive analytics via machine learning algorithms and process automation, an insurer can better streamline and consequently optimise their end-to-end lifecycle. Applying similar logic and appropriate machine learning models to fraud detection, claims and underwriting, will have significant benefits to any insurance business.

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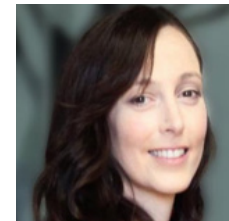
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