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Avoiding pitfalls when Implementing Machine Learning and Blockchain in Insurance

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Cliff Moyce // February 7, 2017

Tools for implementing Machine learning (ML) and distributed ledger technologies (Blockchain) can now be used relatively easily and cheaply in insurance processes. Used well, they present a great opportunity to improve productivity and security. However, companies need to ensure that implementations and subsequent operations are as painless and risk-free as possible. This article aims to provide tips on avoiding common pitfalls.

Machine Learning

ML describes software that changes ("learns") when exposed to new information. Explicit programming to add new rules is not required as the software is self-adaptive. A good example is spam-detection software that improves its own ability to spot junk email over time.

Insurance underwriting presents a strong use-case for ML. Algorithms can be trained on millions of examples of customer data, actuarial information, and policy outcomes. Underlying—sometimes non-intuitive—trends can be unearthed as new information continues to be captured, and underwriting decisions can be improved as a result. Other use cases include:

- Combining ML with telematics in vehicles to improve road safety, e.g., using data on the road ahead to guide drivers; analyze driving patterns; and, make safety suggestions.
- Spotting account behaviors correlated with default and customer churn.
- Accelerating and improving quality of processing of paper forms, e.g., by analyzing handwriting and digitalizing paper documents by recognizing similar content in variable formats across jurisdictions, e.g., death certificates in different states in the U.S.

- Improving the speed and quality of insurance policy reviews by ingesting a policy, breaking it down into clauses and logical blocks, analyzing and comparing, etc. Where done manually currently, this process is labor-intensive, error-prone and slow.
- Improved fraud prevention at the underwriting and claims-handling stages through access to immutable records.

Top tips for adopting ML:

- Start small—but do start. Do proof-of-concepts (POCs). Do not attempt to plan a large-scale transformation without ever having done a small implementation.
- Success of ML depends on an insurer's ability to provide enough valid data to "train" the software. Make sure you can get those data.
- Partnerships are important. Most insurers do not have the required expertise internally and will need to use advisors that do.
- Diversify. Avoid betting the farm on a single ML approach or technology. Try different approaches in different POCs.
- Use Cloud based/SaaS/on-demand solutions from partners, plus open-source tools. This will allow you to experiment without committing a lot of capital up front.

Blockchain

Blockchain is a secure record of transactions collected into blocks grouped in chronological order and distributed over different servers to provide reliable provenance. The technology uses digital signatures and a consensus mechanism that ensures participants can agree on which transactions are valid.

Our experience tells us that Blockchain is going to be an important part of the InsurTech revolution. Blockchain benefits will include improved underwriting accuracy, reduced administrative costs, and improved success in preventing claims fraud.

In the research paper "*Chain Reaction: How Blockchain Technology Might Transform Wholesale Insurance*," Michael Mainelli identified the three most viable use cases as: placement and contract lifecycle; KYC/AML; and, claims management:

- 1. *Placement and Contract Lifecycle*. The placement process is typically heavily paper-based. Each participant must ensure that there are no mistakes, and this often results in rework and wasted effort/money when discrepancies are found. If a Blockchain kept all contracts, it would store documents consistently across all users and would remove the need for participants to check the same record twice. It would also reduce processing cost and time and would introduce a universal ledger with accurate, current, immutable information.
- 2. *KYC/AML*. Distributed ledger technology could reduce the cost and time of these expensive, laborious and slow processes, for example, by eliminating the need for third-parties to produce reports. The Blockchain would create a digital

identity system that would allow broker and insurer to manage their documents (such as credit reports, patient record, etc.) without fear of losing control of personal data and other sensitive information.

- 3. *Claims Management*. It is highly feasible to design a Blockchain ledger of all documents created in the claim process and make them available for interested underwriters and other parties. This would make the process transparent and reduce cost, delay, and reputational risk.
- 4. *Fraud detection*. FBI.gov reports that "The total cost of insurance fraud (non-health insurance) is estimated to be more than \$40 billion per year. Increased effectiveness in fraud detection, e.g., falsified injury or damage reports, can be achieved by automatically validating and confirming ownership as well as authenticity of documents and location changes.

Top tips for implementing Blockchain:

- Find a small problem and improve the process that is running behind it.
- Use private Blockchains such as Chain.com and Hyperledger for improved peace of mind. Public Blockchains are still young and subject to security exploits and attacks; e.g., in 2016, Bitfinex was hacked; Bitcoin worth \$74 million were stolen; and, Ethereum suffered two attacks that resulted in the loss of \$60 million USD.
- Blockchain is a distributed network of trust, so consider looking for partners that share the same goals. It could unlock new catalysts to internal transformations and shed light on new opportunities.
- Blockchain experts are rare and hard to employ, but it is crucial that you have a knowledgeable expert in your team. Hiring an experienced consultancy is often the best option.

Final advice whether adopting ML or Blockchain or both: brainstorm with representatives of lines-of-business and business functions; create a list of POCs to execute over the next 9 to 18 months; use partners with real expertise and verifiable experience; fail early on some POCs while finding gems in others; keep experimenting; and, gradually build robust business cases on those successful POCs.

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Cliff Moyce, Global Head of <u>DataArt's</u> Financial Practice, has spent most of his career transforming organizations in financial services and capital markets, including everything from building and launching major new companies; to automating trading at Europe's largest derivatives exchange; to setting up a UK private equity company for a large Japanese conglomerate. Prior to joining DataArt, Moyce was COO at Credit Market Analysis, where he led the company through a period of significant change culminating in its acquisition by McGraw Hill Financial.

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