Big shifts

Machine learning: the next frontier in the fight against anti-money laundering

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Transformation Happens Here

A brief history of the big shifts

Dirty money. Each year, between $800 billion and $2 trillion of it is laundered through the international financial system. Meanwhile, the history of anti-money laundering (AML) has been marked by huge, periodic shifts in the way that financial institutions fight money laundering, and we are on the verge of yet another.

In 1970, Congress passed the Bank Secrecy Act, one of the earliest and most important modern tools to fight money laundering. For the next 30 years, companies largely focused on creating AML programs and departments that had mature governance, policies, processes, and strategies that would respond to evolving legislation. AML investigations and analysts relied heavily on collaboration with law enforcement to identify suspicious actors. Compliance was a product of proper organization, record-keeping, and collaboration with regulators and law enforcement.

The September 11 terrorist attacks on America triggered a monumental shift in the fight against money laundering and terrorist financing. Institutions saw unprecedented prioritization of AML as a critical component of their compliance requirements. The PATRIOT ACT, revisions to the Bank Secrecy Act, and other considerable regulations escalated the requirements on financial institutions. The organization, processes, technology, and culture of AML programs had to expand and adapt to these wide-scale shifts.

As pressure to thwart terrorist financing continues to build, financial institutions have implemented technological solutions designed to detect suspicious activity within their stream of transactions. Institutions, regulators, and the industry at large have applied so much focus and effort to these large-scale systems that financial institutions' programs have become largely transaction monitoring centric. Once again, organization, processes, technology, and culture have changed to respond to this shift.

Reliance on transaction monitoring

Today, many AML programs are determined by how transaction monitoring systems function. Regulators are increasingly focused on analyzing the transaction monitoring rules and models, validating their effectiveness, and auditing alert response procedures and incidents.

Financial institutions are spending more of their budgets on transaction monitoring technology and staff. They have hundreds of analysts whose sole job is to investigate the alerts that these technologies generate. They dedicate some of their smartest "quant" type analysts to tuning, improving, and validating the models that these technologies enforce. They have auditors and quality assurance teams who must validate the work of these analysts. They have scaled up their internal technology staff and brought in contractors to support these systems. Significant investments have also been allocated to implementation, hosting, support, and training for these systems.

Is the approach working?

The technology is inadequate

Generally, transaction monitoring technology examines financial transactions against a set of discrete rules and generates alerts on the transactions that match one or more rule. For example, a cash deposit of more than $10,000 would be flagged for a currency transaction report.

While some rules are more sophisticated, all are based on decade-old data processing, computation, and analytic techniques. As a result, they are rampant with false-positive alerting issues. From a technology perspective, current systems are plagued with architectural deficiencies, including data management in relational databases, processing within "n-tier"-style business layers, and lack of elastic resourcing.

The catch-22

In many cases, hundreds of thousands of transaction alerts are being generated, which require investigation. The resources needed to support these investigations require an army of analysts, investigators, and auditors,

and represents the largest expense of AML programs within most financial institutions.

Understandably, a company cannot survive if it spends all its earnings hiring AML analysts. Therefore, programs consistently feel under-resourced compared to the volume of alerts and reports they must review. Consequently, AML leaders are forced to select arbitrary thresholds upon which they decide which alerts to review and which to ignore. This leads to the glaring catch 22 in the AML world:

Set the transaction monitoring thresholds too low, and you are forced to hire more and more people. Set the threshold too high and risk heightened attention from regulators.

This has led to the notion that paying the price to deal with up to 95% false positive rates is just the cost of doing business.

At the same time that monitoring systems do not help to reduce the cost of compliance, they still produce false negatives and miss subtle money laundering behavior, which leads to stiff regulatory penalties, fines, and citations. And analysts are so busy addressing alerts that they often have no time to proactively seek out, prioritize, and mitigate risks facing the institution.

Enter: Machine learning and data science

With the rapid evolution in distributed computing and the growing sophistication of data science, the adoption of machine learning (ML) has been a game changer for many industries. Through ML, companies have constructed algorithms that can learn from and make predictions based on data. In particular, the retail industry has benefited by improving the online shopping experience, predicting products that users may prefer, based on previous buying habits. Healthcare companies have also benefited from ML by incorporating it into research and development, using it to suggest new compounds for drug development. The government has also adopted ML to learn the behaviors of criminals and terrorists and prevent incidents before they occur.

The advent of ML has introduced a major change for data scientists. Before, data scientists had to know what exactly they were looking for before exploiting the data. With ML, these data scientists can allow the machine to discover hidden or non-obvious insights from the data. ML and advanced data science present a powerful solution to the current problems facing AML programs at financial institutions and is the next big thing in the evolution of AML.

Machine learning applied to AML

ML can transform the way that transaction monitoring technologies identify suspicious activity. It can be used to:

- Learn transaction behavior for similar customers
- Discover transaction activity of customers with similar traits (business type, geographic location, age, etc.)
- Pinpoint customers with similar transactions behavior
- Identify outlier transactions and outlier customers

- Learn money laundering typologies and identify typology-specific risks
- Dynamically learn correlations between alerts that produced verified suspicious activity
- Continuously analyze false-positive alerts and learn common predictors

The next big shift

The AML industry has witnessed several significant turning points over the past 40 years that have led us to where we are today. The most recent shift in AML has been the prioritization of and emphasis on transaction monitoring technology.

But current transaction-monitoring-centric approaches are not solving the problem. The technology is inadequate, and monitoring systems are forcing analysts to spend most of their time reviewing alerts, which neither helps to reduce the cost of compliance nor prevents regulatory penalties, fines, and citations.

Meanwhile, rapid advances in technology have enabled us to create smarter systems that can detect patterns across enormous data sets. Machine learning is the next big shift in AML.

About Genpact

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