

**5 Brass tacks to  
achieve compliance  
with AI and ML**



**T**he lucrative business of banks selling their customers “financial advice” coupled with financial products has been in the spotlight recently with the events that have shaken up the banking and financial services world. The most notable ones are the investigations of the Royal Commissions into the misconduct of the banking and superannuation industry<sup>1</sup>, the misconduct charges of £264 billion fined by EU on the top 20 banks<sup>2</sup>, the Wells Fargo fake accounts scandal<sup>3</sup> and the nearly 1000 cases of fraud reported to FINRA resulting in a fine of \$61 Million in 2018<sup>4</sup>.

In an industry that relies heavily on trust surely everybody could benefit from banks taking the high ground as customers continue to bank on the trustworthiness of the advice they receive, thus, creating a positive feedback loop.

Interestingly, as boards of banks and their senior leadership take action on getting a fair and objective assessment of their risk appetite and solutions available to deal with fraud and compliance, the CIO organization needs to step up by recommending some of the strategic capabilities offered by AI and ML solutions as these will help immensely.

The following five brass tacks are key in exploring of how AI and ML can help in fraud detection and achieving compliance.

### **Brass Tack 1: A shift to pattern-based detection for improved control**

The traditional approach to detect anomalies and frauds relies heavily on rules and as such, follow simple instructions laid by humans. This approach has its own limitations. Rules are rigid, straightforward and produce a large amount of false positives that banks need to investigate by

spending a lot of money. While doing so, banks have realized that fraudsters find their way in circumventing these rules by evolving newer ways of perpetrating crimes. Therefore, banks that are tied to rule-based systems find it hard, time-consuming and costly to adapt to evolving patterns of fraud.

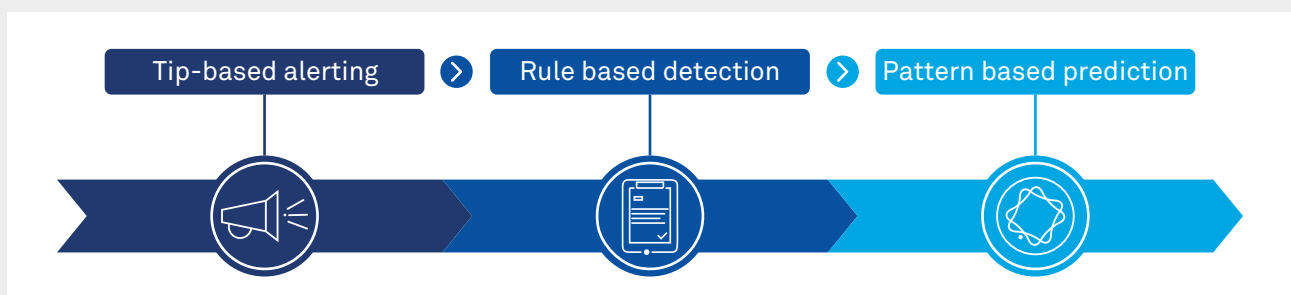
They need to look at augmenting rule-based models with mechanisms to self-learn over time. Understanding patterns in data is something that cannot be achieved by traditional systems and that is the key here as new patterns of fraud emerge.

### **Brass Tack 2: Appreciation of the importance of large volumes of datasets**

Ask any data scientist what their “holy grail” is. Bang comes the response – large volumes of “labelled” datasets.

Getting large volume of relevant datasets that have been labelled with the outcomes of events that occurred earlier is easier said than done. Why? This is because:

1. The labels on the data might not be readily available. Do banks capture information on which customer have complained about product mis-selling and integrate this with the CRM system? If the two are separate datasets, then can you tie a customer in one system with the same one in the other with a unique key or identifier?
2. Not all data is born equal. Data needs to be profiled and outliers need to be detected and treated before the same is deemed fit for consumption by AI & ML models. Techniques such as Box-plot, Cook’s distance and Z-score come handy in detecting outliers.





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3. Dealing with issues of data security has never been more difficult. Sharing data with outside firms is all the more difficult. Anonymization, pseudonymizing, encryption, localization of data is needed for compliance with data security regulations such as GDPR. Banks are grappling with an appropriate strategy for the same.

### Brass Tack 3: Applying specialized algorithms to detect anomalies and fraudulent behavior





Selecting the right algorithms on which to train

your data and predict on is the real deal. It is like finding a needle in the haystack.

There are ample of choices here and along with that, there are a few considerations.

On one side are the traditional ML algorithms such as Linear Regression, Logistic Regression, Naïve Bayes, K-NN classification while on the other hand there are specialized neural networks such as DFF, CNN, RNN, GAN, etc.

As we can see, there is no one solution that fits all. A combination of traditional ML algorithms with neural networks is needed if you have

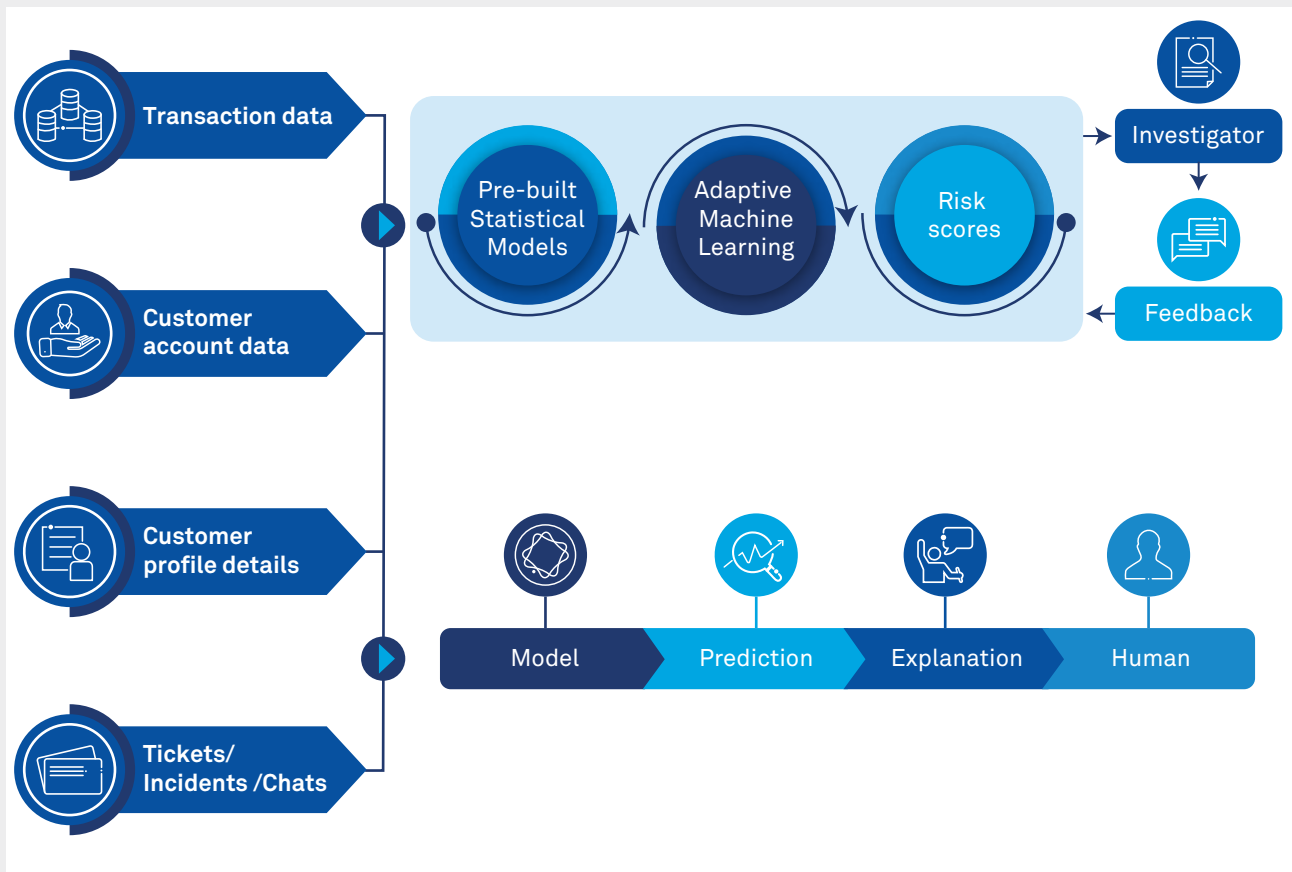
	Traditional ML	Neural Networks
 Adaptability to cases and data types	Detecting anomalies over large sets of transaction data, customer classification, risk scoring based on historical patterns.	Very effective results in image and video recognition, natural language processing and recommender systems. Especially suited when the complexity of problem is high such as capability to learn the feature extraction part.
 Data Volumes	Works best with large volumes of data. However, can be trained on medium volumes as well.	Especially suited when data volumes are enormous.
 Dimensional data sets	Works well after extensive tuning and optimization of hyper parameters on high-dimensional data sets with many parameters.	Naturally capable of handling very large, high-dimensional data sets with millions of parameters that pass through nonlinear functions.
 Horsepower	Can run on machines or clusters with medium to large number of CPUs, memory and disk space.	Computationally intensive operations on unstructured data means heavy clusters with faster CPUs, GPUs and huge amounts of memory.

structured and unstructured data of varying volumes and dimensions. Also, the simultaneous application of supervised learning with unsupervised learning techniques ensures that constraints around labelled data sets are taken care of as unsupervised learning models perform well to detect outliers with un-labelled data. The solution thus formed presents the best opportunity for getting optimally accurate predictions.

### Brass Tack 4: Continuous feedback learning loop to better model performance

High quality, accurate and long-term AI prediction are only possible through continuous

feedback learning. While AI and ML models are initially trained on large sets of labelled data sets, their performance could decline over time as new patterns of data emerge. Therefore, “closing the loop” is critical and a combination of AI prediction and Human Label is used to further optimize model performance. The predicted outcome of the AI models is compared to the actual label as updated by the human at the fag end of the process. The model learns from the actual labels as updated by the human and this process continues and helps in predicting the next set of outcomes.



### Brass Tack 5: Real-time integration to shift the focus to “proactive” from “reactive”

Finally, a post-mortem analysis of the problem is just that – a post-mortem or a post-facto analysis. This might not help in improving customer experience and satisfaction or from preventing a fraud from happening. The need of

the hour is an integration of the AI pipeline with real-time or near real-time data as it arrives.

This will help banks and financial services firms in identifying insurance proposals to prospects that are potential candidates of product mis-selling or request for additional spouse card where there is high possibility of first party fraud.

Actions can be taken swiftly to help prevent the proposal from being converted to a contract or an additional credit card being dispatched thus preventing credit losses.

Therefore, as we have seen, when properly implemented AI and ML can form the key

foundational pillars for solutions that can help prevent fraud and achieve compliance. The CIO organizations need to put forward the right set of concerted effort to get a piece of mindshare with boards of banks and their leadership to duly embark on the strategy.

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