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TruQua Enterprises Whitepaper

Machine Learning…Demystified

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Artificial Intelligence (AI), Machine Learning (ML), Predictive Analytics, Blockchain – with so many emerging technologies (and the associated buzzwords), it can be a challenge to understand how they can fit into your business. Here's a short primer to help anyone new to the topic make sense of Machine Learning in the Enterprise.

What is Machine Learning?

There are quite a few technical definitions of machine learning, but they all boil down to the same concept: Machine Learning is a technique that uses advanced math to learn how different pieces of data are related to each other.

Three of the best ways to use ML in the business world are:

- Regression models learn how to make numeric predictions
- Classification models learn how to classify samples into different known groups
- Clustering models learn how to group samples all by themselves, i.e., without a predefined set of sample groups.
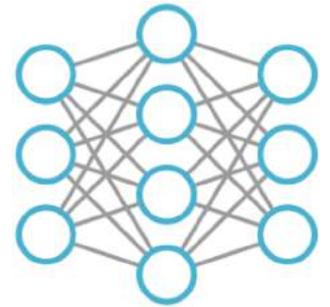
Let's run through an example of when each could be used.

Predicting Sales Volume, a Regression example

Almost any organization that sells something goes through a process where they forecast future sales. This process usually entails analyzing some mix of historical performance, external influences (market conditions, etc.), and internal strategy (pricing changes, etc.)

The forecasts are often performed by different groups, like Sales and Operations, and then passed to the Management team for review.

So why might we want to use Machine Learning to forecast sales instead of staying with the existing procedure? One reason is to minimize bias. In this case, the bias we're trying to remove is a human one. Forecasts have consequences that impact the very people creating the forecasts, so it's only natural for bias to creep in.

By creating a Machine Learning model, we could remove the human bias and introduce additional value-adding features like explainability (why the Machine Learning model is predicting a number) and what-if analysis (what would happen to our sales forecast if one or more inputs were to change).

Detecting Fraud, a Classification Example

We live in a period of rapidly evolving, and expanding, Financial solutions targeted directly to consumers. These solutions are collectively known as the FinTech industry, and although each company's offerings are different, they all share a common problem… Fraud. And this problem is by no means a new one. Fraudulent transactions originating within a company can be an even bigger problem than by outside actors.

So, what's the best way to start solving the fraud problem?

We could hire a huge team of analysts to comb through every transaction looking for tell-tale signs of fraud. This solution is doomed to fail. It would be expensive, have varying effectiveness (depending on the analyst), slow down transaction throughput, and maybe worst of, do nothing about fraud originating within a company.

Another idea would be to have a smaller team analyze past fraudulent transactions, creating tests that could be used to programmatically check for fraud. This is certainly a better option, but with transaction volume (and the risk of internal fraud), it also has a number of drawbacks.

Machine Learning could go much further in solving this problem. By creating a model based on historical Fraudulent and non-Fraudulent transaction details, an organization could benefit from a mathematically sound analysis of much larger sets of data. And, since creating a model is much less labor intensive, it could be recreated (retrained in ML speak) to more rapidly identify new forms of fraud.

Customer Segmentation Analysis, a Clustering Example

In this age of technology, one thing organizations aren't at a loss for is data. They have so much data that it can be difficult, if not impossible to analyze it all in any traditional respect. This can lead to huge potential losses both from in strategic and monetary terms.

Clustering models are amazing in their ability to identify relationships within huge amounts of data that could otherwise go undetected. One concrete example of Clustering is Customer Segmentation Analysis. Here the model could group customers based on any number of patterns, such as purchasing behavior, product mix, and timing. These insights ultimately lead to a better understanding of any organizations most profitable asset… their customers.

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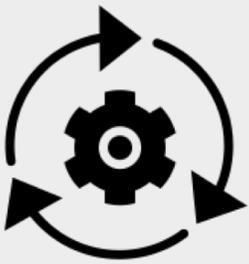
Machine Learning Implementation Process

Now that you have a better understanding what types of problems Machine Learning can solve, you might be wondering what it takes to implement. The basic process includes the following steps:

1. Understanding the problem that needs to be solved
2. Analyzing and preparing the data
3. Creating an accurate model
4. Integrating that model with existing systems and processes

Another key question you'll need to ask is, who can do all of this? In some cases, a software vendor can deliver Machine Learning capabilities out-of-the-box. This works best when a problem is well defined and common within a specific business or industry process.

For example, SAP's Cash Management Application is a perfect example of a solution that can harness the full benefits of machine learning because Cash Management challenges across organizations are so similar.

But what if an out-of-the-box solution doesn't exist? This is where you'll need to go a step further and employ the skills of a data scientist and an area where TruQua can help.

Conclusion

Machine Learning provides incredible possibilities for an organization to not only automate Finance Processes (through categorization and regression), but also to discover new insights from their data (through explainable AI and segmentation).

A successful ML implementation requires a cross functional team that takes a critical look at everything from data selection and preparation to the way the model's insights will be used. As such, it's critical to not only pick the right problem, but the right partner.

How TruQua can help

TruQua's team of consultants and data scientists merge theory with practice to help our customers gain deeper insights and better visibility into their data. Whether it is scenario identification, building out your Machine Learning Models or integration with Finance systems, TruQua has the tools needed for success. So, if you're looking to make more informed business decisions utilizing the latest predictive analytic and Machine Learning capabilities from SAP we'd love to hear from you. Contact us today at info@truqua.com or visit our website at www.truqua.com/contact-us