

The untapped value of Machine Learning processes in Banking

MOORAD CHOUDHRY DESCRIBES AN IMPORTANT OPPORTUNITY

It is common to suggest that ‘FinTech’ and artificial intelligence (AI) are transforming the financial services industry. Certainly the possibilities offered by AI are immense, but in truth financial services firms have barely scratched the surface of what is offered by AI. A particular branch of AI known as machine learning has the potential to transform the way firms do business. Some large and small firms employ machine learning in their risk management processes, but the technique can add value in any services activity, not just risk management, and – significantly – is a capability that is not restricted to only the large firms. In theory any financial services firms can implement a machine learning system.

What is it?

Originally machine learning models were an extension of orthodox econometric techniques that draw out relationships between different sets of data; for example, between height and sporting ability. A well-fitted model will enable us to *infer*, or predict, an outcome based on the relationship between the independent variable and causal factors; but because relationships are complex, (extending the analogy, many factors drive sporting excellence, and as a causal factor height can be both a positive and negative driver), linear multi-factor econometric models are of less value when looking to derive deep understanding of a diverse data set.

Machine learning systems on the other hand, are designed around prediction, identifying strong correlations between variables. They enable us to predict outcomes with great certainty, and to understand relationships to a granular level. Systems vary widely, from logistic regression to neural networks and random forests. Every

Prospective clients who fit the pattern of specific peer group current clients can be the object of tailored marketing of specific products they are predicted to purchase

model is comprised of (i) the query or ‘problem’ to be solved; (ii) the data set; (iii) the model itself; and (iv) the optimisation algorithm. A fifth element is the validation and testing process.

Machine learning and Big Data

The value of machine learning lies in its ability to recognise general patterns in large data sets, particularly for variables for which no analytical solution is available. Exhibit 1 shows sources of data that are well suited to machine learning analysis.

Financial firms hold considerable data on their clients, their tastes and habits with respect to virtually every aspect of their lives. Applying pattern recognition to this dataset will enable them to serve clients in specific tailored ways. For example:

- Existing clients who fit a pattern that identifies a particular peer group, who have not purchased a financial product that their peers have, can be identified as predicted future buyers and marketed to specifically, using their preferred communications media (branch, smartphone, etc)
- Prospective clients who fit the pattern of specific peer group current clients can be the object of tailored marketing of specific products they are predicted to purchase
- Customer franchises that are ruled out *en masse* (for example,

charities, or offshore entities) can be considered individually based on patterns marking them out as ‘safe’.

These are instances of “*unsupervised learning*” problem pattern recognition, identifying relationships amongst customers. This is considerably more cost-effective than existing techniques such as postcode or age group targeting.

Machine learning can also assist a firm to target clients in the absence of extensive data, because the model itself will calculate the parameters that enable predictions to be made. The implication for client services provision is immense: specific tailoring, really knowing one’s client, whilst still offering human interaction for the times when the customer desires it.

Conclusions

Machine learning does not necessarily mean the replacement of one form of financial services by another. What it does enable firms to become are masters of data analytics – *their* data. And genuinely understanding one’s data in a bank is like fire for a stone age human: it enables one to conquer the environment. With machine learning, a firm can acquire more accurate control of its strategy setting, marketing, risk management, and client service processes. This, ultimately, is transformational for any firm that has the vision to use it.



EXAMPLES OF DATA SOURCES THAT CAN BE EXPLOITED USING MACHINE LEARNING

| DATA SOURCE | EXAMPLES |
|----------------------|----------------------------------------------------------------------------------------------------|
| Online social media | Facebook, Twitter, Linked In |
| Communications | Phone, email, WhatsApp |
| Government | Central bank, Social security |
| Mobile app | Countless examples, with data trends in purchases, locations, habits, frequency, demographics, etc |
| “Internet of things” | Fitbit, smart meter, etc |
| Banking | Bank general ledger and customer databases |
| | Trends in: |
| | Payments, purchases, locations, value, age group preferences, entertainment tastes, etc |
| | Financial products: |
| | Contact preference, frequency of renewal, retention, etc |

Note: “Big Data” is defined here as large volume data with low information density