

The benefits of machine learning for retail

Machine learning, a type of artificial intelligence powered by large-scale data that provides computers with the ability to learn without being explicitly programmed, will change the face of retail over the next few years.



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According to Dunnhumby, a customer science company, machine learning will bring about changes of a similar scale or greater to that seen in the industrial revolution of the nineteenth century.

The information can also get better over time – the more data and feedback they get. The impact of this technology is that it provides tasks we previously thought only humans could only do through a scalable, untiring, consistent quality digital workforce.

Machine learning is helping our lives become more enabled, more streamlined, more friction-free. The learning techniques have been known about for three or four decades but it is only with the dual advances of fast parallel computing and massive data sets that machine learning has proven its worth.

Predicting the future

Managing director of Dunnhumby SA, Graeme Tulloch comments, “Through new data science techniques and increases in available data, the company is now using machine learning to assist retailers in predicting the future, by simulating scenarios that forecast outcomes and pinpoint critical action areas within an enormous amount of possibilities.

“Most retailers are already forecasting to some extent. When a product goes on promotion, they have an idea of the amount of extra product they might expect to sell, however, a large percentage of the promotions are not profitable, so predicting with accuracy the performance of the promotions using advanced machine learning (to replace simple linear regression) is critical. Improving predictability helps ensure promotions will deliver great ROI and optimises the ordering inventory to ensure stock is available in store to avoid customer dissatisfaction.”

Data increases incrementally

Retailers (as with many other sectors of business) have never had more data and yet in the future, they will never have so little data. A wealth of data about products, prices, sales performance, costs, availability, logistical activities and consumer

behaviour is now available. The combination of stores' delivery channels, products and time-consuming product attributes, creates a vast field of metrics to keep in check.

Every form of data can be analysed for every category, multiplying again the already vast amount. In addition, with so many data points it is a seemingly impossible task for even the most experienced retailer to be able to identify key under- and over-performing areas. Thanks to machine learning, retailers and category managers are now able to better understand product trends, by analysing not only structured sales history but also unstructured data (such as social networks and call centre data).

Collecting and analysing sentiment from customers, using machine learning, helps retailers to identify trends faster than before, which in turn delivers great competitor advantage and improved sales and customer loyalty.

Complex predictions still in the future

Some things are far more complex to predict. Economic, social, legislative and technology changes can have dramatic impacts on customers' behaviours. For example, the impact of a tax on added sugar in products may well reduce demand due to the change in price, but there may well be other unforeseen changes, such as a change in the acceptance of giving children sugary drinks or the willingness of retailers to stock certain items in certain locations. Tools such as agent-based modelling and reinforcement learning will allow companies to investigate the consequences of their own actions coupled with external forces.

When it comes to the scale of impact machine learning will have on the retail industry, this is really just the tip of the iceberg. However, the revolution is here for retailers willing to take the next step with data science.

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