

WHITEPAPER

Machine Learning Applications in Retail/E-Commerce

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Overview

As a shopper, do you find that websites seem to be getting ‘*smarter*’? – Even though there are more products on every site do you find it easier to track down what you are looking for? Searches are getting easier, product recommendations are more relevant, even communications more personalized? This is the result of machines learning from our interactions and reactions to the experiences they are creating. The future we were all anticipating is here, and will continue to rapidly evolve. Gartner indicates that “by 2020, artificial intelligence will be used by at least 60% of organizations for digital commerce.” In addition, “by 2020, 30% of digital commerce revenue growth will be attributable to artificial intelligence technologies.” ¹

Read on to learn more about how machines are making our online shopping experiences better.

Artificial Intelligence and Machine Learning

Artificial Intelligence (AI) is a broad field that represents intelligence exhibited by machines, as compared to human intelligence. AI machines are trained to achieve certain goals, and can learn and problem solve, mimicking brain functions. There are varied sub-fields of AI such as robotics, vision (image recognition), speech, natural language processing and machine learning.

Machine Learning is the science of getting computer systems to learn from data without being explicitly programmed. Machine learning is a central pillar of narrow AI that focuses on learning concepts and algorithms (predictive analytics and deep learning). Retailers are using machine learning in a number of applications to enhance the customer experience.

Meaningful Product Recommendations

Product recommendations are one of the earliest applications of machine learning in retail. Current recommendation systems can recommend items based on their recency, popularity, profitability, availability, expiration date, etc. They can also present similar items, in any product or category, to what a customer has engaged with previously. In addition, they can display complementary products based on what other customers, who share similar tastes, have purchased along with those products.

Search and Ranking Algorithms

Some customers want more than a list of products that match keywords, which makes contextual prediction a hot feature. Recent advances in visual search have enabled pixel-by-pixel image search. Through searching by image (or by parts of the image), retailers improve the shopping experience by decreasing the time and effort customers invest in finding specific items.

Anomaly and Fraud Detection

This popular e-commerce application works to identify fraudulent transactions from stolen credit cards. It also looks for customers that retract payments via their credit card company after receiving the products.

Dynamic Pricing

In many scenarios, dynamic pricing is used extensively in the hotel and airline industries. This is due largely to the fact that these industries continuously update prices based on demand, seasonality, supply, competitors' prices, known or unknown visitors, time of day, and more.

Further Uses

Other applications include inventory forecast by predicting market demands, anticipatory shipping (before an order is placed), customized website layouts (to match each user's preferences), and adaptive chatbots and personal shopping assistants.

ES Engage Platform – Individualized Offers Powered by Machine Learning

Exchange Solutions gives retailers the tools they need to leverage machine learning to derive individualized offers for your customers. ES Engage provides a scalable, efficient, easy-to-integrate, and adaptive solution that combines multiple (diverse and accurate) machine learning models.

Our machine learning application accurately predicts the probability of conversion and the expected order value using clickstream data real-time, in-session – whether or not the customer is known or shopping as a guest. These predictions are combined with the economics of the cart, including the available margin, to create a margin-aware, highly personalized and optimized offer for the customer that results in incremental revenue, margin and orders for your online store.

If you'd like to read a more in-depth whitepaper on the types and applications of Machine Learning in Retail & E-Commerce please click [here](#) to download.²

¹ – Gartner, How to Apply Artificial Intelligence to Digital Commerce, Sandy Shen, Jason Daigler, 16 May 2017

² – Download the in-depth whitepaper at:
<https://www.exchangesolutions.com/whitepaper-ml-in-retail-ecommerce/>

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