

How machine learning can help you create a better search experience for customers

And why it's critical your machines don't learn the wrong thing

E-commerce provides an unprecedented opportunity for businesses to analyze consumer behavior and enhance the customer experience like never before. For retailers that do a substantial portion of their business online, search is a key aspect of that experience. Successful companies are reaping the rewards of investing in machine learning to improve search.






More than three-quarters of retailers are planning to make a significant investment in artificial intelligence by 2021¹, according to Zebra Technologies. In addition to improving search functionality, businesses are using the technology to provide personalized recommendations and streamline the checkout process. But while machine learning can bring huge benefits, simply including it in your toolkit isn't enough.


The value of machine learning is tied to the quality of information the machine takes in, how the machine uses the information, and how this information is integrated into a comprehensive strategy that aims to refine the online search process and tailor the consumer experience. Unfortunately, too many retailers today are investing in machines that are learning the wrong thing — and that means their investment isn't delivering the returns they were expecting.

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“Use of search is one of the highest intent-to-buy activities on an eCommerce website, and it's even more important for retailers in mobile,” says Michael Roberts, Bank of America Merchant Services' chief marketing and digital strategy officer. “Businesses with significant product catalogs must curate effective experiences that meet customers' ever-growing expectations for relevance and personalization, which are only achievable through machine learning.”

When thinking about how to optimize machine learning in your business, it's useful to focus on these key principles that help ensure your machines are learning the right things:

-  Clean your product data automatically
-  Use behavioral data for seamless personalization
-  Enrich machine learning with external data
-  Enhance findability within search
-  Leverage your data in real time for maximum value

Let's dig deeper on these principles 

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30%

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9 IN 10

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Clean your product data automatically

For retailers, effective machine learning efforts start by keeping detailed and accurate product data. This means classifying data consistently and intuitively so they contain no gaps, duplicate records or outdated information. This approach provides a strong foundation for advanced analytics that can provide a clear view of product performance and customer behavior — information that can in turn be used to continually refine the search experience for customers. And better results lead to increased sales.

Failure to clean your product data can result in an inaccurate or incomplete picture of who is buying what from your company — and why. “Dirty” product data can even result in lost customers and decreased revenue. Studies have shown that 40 percent of consumers have returned an online purchase within the past 12 months due to poor online product descriptions.² More than 30 percent of consumers have abandoned an online shopping cart for the same reason, and nearly nine in ten consumers say they would be unlikely to make a repeat purchase with a retailer that provided inaccurate or incomplete product information.³

Retailers often deploy large teams to clean missing or erroneous product data attributes, but it can sometimes take until the following season to complete the job — right when many of the products are being replaced. Companies using machine learning tools, however, can implement changes in real time — capturing a greater share of sales they might otherwise miss.

Automatically cleaning your product data can also improve search engine optimization. Clean product data will give your business a higher ranking in organic search, which means that you’ll get more hits from people looking for your products on major search engines. Not only will this drive traffic to your site, it may allow you to spend less on paid search.



Use behavioral data for seamless personalization

The next step in optimizing machine learning for retail is to blend in data about how customers make purchases.

“Having good, clean product data is important,” says Roberts. “But when you combine that with behavioral data, you can start to create personalized shopping experiences in a way that wasn’t previously possible.”





73%

of consumers prefer to do business with companies that use personal information to make their shopping experience more relevant⁴

Pure play eCommerce businesses don't have the luxury of observing in-store customer behavior, but they can tap into specialized analytics as consumers navigate their online storefront. Is the shopper using the website, mobile web environment or a mobile app? How much time did she spend on the site? What did she search for? Has she searched for similar items multiple times on your site? Does she typically view ratings and reviews before making a purchase?

Each click from each customer who visits a website or mobile app is a data point. Visits and conversion rates are important, but it's also important to monitor what happens between the moment someone enters your website and the moment she decides to make a purchase — or leave. Companies that fail to capture this full range of data could miss out on crucial insights that spark new sales or new engagement points with the consumer.

For example, many shoppers abandon their cart at the very first step of checkout. One common reason is that retailers often make the experience more complicated than necessary — such as asking if the shopper is a new or returning customer, rather than launching right into checkout. (Businesses can still whisk returning customers into a streamlined process.) Other retailers may lose customers because of a jarring difference in the website's look and feel during shopping versus check out.

Online payments and sign-ups for reward programs and special offers add another valuable layer of customer information. Machine learning tools can use all of this data to target specific demographics — even individual customers — personalizing the shopping experience to an unparalleled degree.

Predictive analytics can anticipate, with a high degree of accuracy, shoppers' needs based on aggregate consumer behavior. Some retail chains use apps that detect when customers step into the store and deliver customized offers to their smartphones. Other merchants feature customized digital rewards programs, taking into account each customer's buying history and location.



Fortunately, consumers are growing increasingly comfortable with companies collecting personal data. According to a recent survey, 73 percent of consumers prefer to do business with companies that use personal information to make their shopping experiences more relevant.⁴ Many people understand that sharing this data gives them a better customer experience in return. For companies that believe in the power of behavioral data, growth and customer satisfaction can go hand in hand.

Enrich machine learning with external data

The bigger and richer the data set, the more information machine learning algorithms have to work with — and the “smarter” they become.

Leading retailers collect internal *and* external data. The external data can then be used to target individual consumers with specific products at strategic moments. Two of the most commonly used external data categories are weather and geographical location, which can be used to refine recommendations and search results.

For instance, a customer searching for outerwear in Buffalo may see trending items that include mittens and hand warmers, while a customer performing the same search in Seattle may see rain jackets and waterproof pants. By anticipating shopper needs based on location and climate, customers are directed toward likely purchases from the moment they enter a website or open an app.

Even current events can play a role in demand for certain products. Say a celebrity wears a dress to a high-profile event and mentions the retailer that sells it. By associating the celebrity's

name with the dress in their site-search function, the retailer can facilitate quick matches and encourage purchases. This can't be accomplished by machine learning alone — yet — but once the timely search tag is in place, a smart search function will integrate it into its data set to produce ever more refined results.

Enhance findability in search

Optimizing online search function is one of the most powerful applications of machine learning.

“Ineffective search is rampant in retail,” says Jennifer Allie, product program director for industry solutions and platforms at Bank of America Merchant Services. “Search can be what makes the difference between success and failure. Too many businesses neglect this area to focus on other aspects of digital infrastructure. But improving search function should be at the top of every retailer's to-do list.”

Many retailers' site-search tools present unnecessary friction or lead consumers astray. For example, a search for “curly hair products” might bring up products that help curl straight hair, while a search for “tents” might deliver results for backpacking gear as well as party items.

A recent study found that 70 percent of the top 50 retail websites were unable to return relevant search results for product synonyms.⁵ The same study found that 34 percent don't return useful results when consumers search for a model number or misspell a single character in the product they're looking for.

“We've all had that experience of a search tool seeming to read our minds,” says Allie. “That comes from machine learning technology that takes in and processes customer data, constantly refining the search experience through iterative learning.”

Businesses that don't deliver personalized, relevant results risk alienating customers and losing revenue, says Allie. In fact, shoppers who perform in-site searches end up buying from that business at twice the rate of visitors who don't use search.⁶ Businesses must ensure they are delivering the best possible experience for these shoppers.



Leverage your data in real time for maximum value

One of machine learning's most transformative innovations is its ability to adapt to new input. Frequently shopped-for items can be identified quickly as hot new trends, which can be recommended to customers searching for similar items.

Likewise, a retailer may find that hammers are often bought with nails, or — more specifically — the steel drilling hammer is often bought with a chisel and pry bar. Once such associations have been identified, retailers can use them to make recommendations or deliver personalized search results.

With machine learning, the consumer experience can even be fine-tuned in real time. The newest technology allows companies to listen continually to customer input, helping shoppers find what they want with unprecedented speed. Artificial intelligence improves both the accuracy and impact of search by understanding each searcher's particular history.

For example, a customer might come to a retailer website looking for jeans. The moment she starts typing "jeans" into the search bar, a smart search engine will start suggesting types of jeans that have been trending recently (skinny jeans, say, or work jeans) — or jeans it knows the customer is interested in from previous visits or purchases. If the customer has recently deleted a pair of jeans from her cart, she may be presented with an "add to cart" option in the search-bar suggestion itself.

Often customers don't know exactly what they want until they are presented with the product itself.

This sort of personalized real-time response should continue throughout the purchase journey. If a shopper has added a coffee machine to his cart, recommendations for compatible filters or popular types of coffee might pop up just before he is asked to complete his purchase. Often customers don't know exactly what they want until they are presented with the product itself. Machine learning helps businesses combine data from multiple sources to better anticipate customer needs and desires.

Data collection shouldn't end when the customer moves offline. Purchases made in store should feed into the same data set as purchases made online, creating a seamless experience for the consumer and maximizing sales opportunities across channels. In this way, a pair of shoes bought in store, for example, might shape a customer's search results next time she uses the same retailer's mobile app.

Making the most of data

As investments in machine learning continue to expand, eCommerce companies that fully harness the power of data in order to customize the shopper experience will be the ones that thrive. By improving the accuracy of their data, modernizing search functionality and leveraging big data and consumer behavior, retailers can boost revenues, improve customer experience and differentiate themselves in the marketplace.

Data is essential to eCommerce success, but it's only useful if it is accurate, clean and harnessed to inform and guide business decisions and investments.

For more information on how Bank of America Merchant Services can help you optimize your business and customer experience, call your Bank of America Merchant Services business consultant or 855.833.3614. Visit us online at www.merch.bankofamerica.com. We're here to help.



¹ Business Insider, "Amazon Looks to Gain a Machine Learning Advantage," Sept. 2017 (<http://www.businessinsider.com/amazon-looks-to-gain-a-machine-learning-advantage-2017-9>)

² Shotfarm Product Information Report, May 2016 (<http://www.shotfarm.com/product-information-report>)

³ Ibid.

⁴ PSFK Labs, "The Future of Retail 2016."

⁵ Baymard Institute, "ECommerce Search Usability: Report and Benchmark," 2014 (<https://baymard.com/blog/ecommerce-search-report-and-benchmark>)

⁶ Smart Insights, "ECommerce Conversion Rates," April, 2016 (<http://www.smartinsights.com/eCommerce/eCommerce-analytics/eCommerce-conversion-rates>)

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