

Making Search Personal

A Case study for Zappos Expertise - Data Science and Machine Learning

Challenges

Zappos was using a search tool that assigned points to each product based off attributes. A search term of “dresses” would give results most aligned with “dresses.” However, if it was determined that the search should return “evening dresses” to align with a more specific search query, programmers would create manual fixes to optimize the search.

Although this process worked, it simultaneously created technical debt and an increasing amount of tribal knowledge that enabled the system to be useful. Realizing that this wasn’t a long-term solution, Zappos began exploring engineering solutions to decrease the reliance on a process that would continue to grow in dependency - on manual fixes and personnel.

The Zappos Machine Learning team treated this challenge as a categorization problem.

Background

The Zappos “Wow” Customer Experience often starts with a simple search on Zappos.com. Providing more relevant search results not only creates a better customer experience, it is integral in building credibility and driving sales.

Most search tools have limitations that can only be improved with ad hoc patches.

Solution

The team created a point system with a baseline similar to the standard search tool. As customers interacted with the results of the tool, points could be added or decreased automatically to improve the overall results.

Each search term can have multiple meanings. By identifying the most commonly used meanings of a term and using a continuously updating system, there was no reliance on patches.

As this system was evaluated, the team realized you could assign values specific to an individual customer. The approach allowed the system to understand what the customer was looking for when they searched “dresses” and return appropriate results. Each customer would receive a unique set of search results for “dresses” that is customized based on their shopping history.

Writing patches to individual customers in the old system is not feasible, but because of the way the team was solving the previous problem, a new potential opportunity was discovered.

Results

The Zappos Data Science and Machine Learning team focused on creating modular solutions that act as building blocks instead of technical debt. What started as an engineering problem turned into an opportunity to personalize search to the individual customer.

As the customer interacts with their results for “dresses”, the system learns what they want and provides results that are most relevant to them. This improved the customer experience, leading to a *4% increase in revenue *by continually driving engagement and conversions.