



Insight commercial case studies

Sector: **Smart Economy**

Insight

Centre for Data Analytics

Helping online retailers to increase sales and profits



Nitrosell uses data analytics to automate product recommendations for small-scale retail web sites

Executive Summary

Challenges

NitroSell is a global leader in providing integrated e-commerce solutions helping retailers to increase sales and profits. The key challenge was to provide a recommender system for small-scale retailers to address the following issues:

- Small amount of returning customers makes user-centric recommendations inapplicable
- Data sparsity – users view or purchase only a small part of the catalogue
- Insufficient data to build an accurate user profile

What Insight Delivered

Insight collaborated with NitroSell to research and develop a hybrid recommender system using item association rules and text based similarity matching:

- Analysed data from small-scale retail web sites
- Prototyped association rules and text based item similarity algorithms
- Designed, developed and tested an item-centric recommender engine
- Conducted trials on retail web-sites to validate performance

Measurable Impacts

A trial period for the new hybrid approach for small-scale retailers on two live websites showed:

- Increase in completed orders and revenues using the hybrid recommender
- Increase in click-through for recommended products
- Improved recommendation panel helping to entice customers to make further purchases



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Background

The benefits that recommender systems (RSs) can bring to e-businesses are widely recognized. In addition to direct increase of revenue, RSs have been shown to increase customer loyalty and direct customers to new items in the product catalog. Well-known examples of e-commerce recommenders, such as those used by Amazon, attract a large user community and typically rely on techniques that exploit the target user's often extensive shopping history. However, a small-scale retail setting poses additional challenges for product recommendation. Users of small-scale e-commerce websites often do not have extensive shopping history records, many customers being one-time visitors.

Consequently, traditional rating-based personalization techniques (i.e., user-based or item-based collaborative filtering) are inapplicable in such settings.

Insight collaborated with NitroSell to develop and test a hybrid recommender system based on an item-centric approach to produce more accurate recommendations and entice customers towards further purchases.

Solution and Outcome

The item-centric product recommender first computes relatedness scores between every pair of products in the retailer's catalog. Relatedness is based on similarity in product description and co-occurrence in browsing sessions. The product relatedness scores can be pre-computed, since they do not depend on the user. Then, given a product viewed by the user, the system can obtain the scores between the viewed product and other products in the catalog, rank them according to the scores, and recommend the top-N products to the user.

Insight ran live user trials to measure the benefits of the hybrid item-centric recommender system. Tests were conducted with two small-scale online retailers, comparing the hybrid recommender with recommendations that had been proposed manually by the retailers. The results from the trials showed that, among users who engaged with the product recommendations panel, click-through rates were two to three times higher for the recommender system than they were for the manual recommendations.

Nitrosell

For further details on NitroSell's products and services see <http://www.nitrosell.com>

"NitroSell's partnership with Insight provided an invaluable opportunity to work with leading academics who are experts in recommendation systems. It resulted in a practical and ingenious solution for small-scale retailers. It will increase the appeal of our service to new customers and make it easier to attract new business. We wholeheartedly recommend Insight and look forward to continuing to work and innovate with them."
Donogh Roche, President & CTO, Nitrosell

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