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E-Commerce Connected By Social Media: Microblogging Information Recommitted to Cold-Start Product

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SURVEY PAPER

1 ABSTRACT: In recent years, the boundaries between e-commerce and social networking have become increasingly blurred. Many e-commerce websites support the mechanism of social login where users can sign on the websites using their social network identities such as their Face book or Twitter accounts. Users can also post their newly purchased products on micro blogs with links to the e-commerce product web pages. In this paper we propose a novel solution for cross-site cold-start product recommendation which aims to recommend products from e-commerce websites to users at social networking sites in “cold-start” situations, a problem which has rarely been explored before. A major challenge is how to leverage knowledge extracted from social networking sites for cross-site cold-start product recommendation. We propose to use the linked users across social networking sites and e-commerce websites (users who have social networking accounts and have made purchases on e-commerce websites) as a bridge to map users’ social networking features to another feature representation for product recommendation. In specific, we propose learning both users’ and products’ feature representations (called user embeddings and product embeddings, respectively) from data collected from e-commerce websites using recurrent neural networks and then apply a modified gradient boosting trees method to transform users’ social networking features into user embeddings. We then develop a feature-based matrix factorization approach which can leverage the learnt user embeddings for cold-start product recommendation. Experimental results on a large dataset constructed from the largest Chinese micro blogging service SINA WEIBO and the largest

Chinese B2C e-commerce website JINGDONG have shown the effectiveness of our proposed framework.

2 INTRODUCTION: In recent years, the boundaries between e-commerce and social networking have become increasingly blurred. E-commerce websites such as eBay features many of the characteristics of social networks, including real-time status updates and interactions between its buyers and sellers. Some e-commerce websites also support the mechanism of social login, which allows new users to sign in with their existing login information from social networking services such as Face book, Twitter or Google+. Both Face book and Twitter have introduced a new feature that allow users to buy products directly from their websites by clicking a “buy” button to purchase items in adverts or other posts. In China, the e-commerce company ALIBABA has made a strategic investment in SINA WEIBO¹ where ALIBABA product adverts can be directly delivered to SINA WEIBO users. With the new trend of conducting e-commerce activities on social networking sites, it is important to leverage knowledge extracted from social networking sites for the development of product recommender systems.

The problem of recommending products from e-commerce websites to users at social networking sites who do not have historical purchase records, i.e., in “cold-start” situations is studied. It is called cross-site cold-start product recommendation. Although online product recommendation has been extensively studied before, most studies only focus on constructing solutions within certain ecommerce websites and mainly utilize users’ historical transaction records. The cross-site cold-start product recommendation has been rarely studied before.



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In problem setting, only the users' social networking information is available and it is a challenging task to transform the social networking information into latent user features which can be effectively used for product recommendation. To address this challenge, the use of linked users across social networking sites and e-commerce websites (users who have social networking accounts and have made purchases on e-commerce websites) is proposed as a bridge to map users' social networking features to latent features for product recommendation. In specific, learning both users' and products' feature representations (called user embeddings and product embeddings, respectively) is proposed from data collected from e-commerce websites using recurrent neural networks and then apply a modified gradient boosting trees method to transform users' social networking features into user embeddings. Then, a feature based matrix factorization approach is developed which can leverage the learnt user embeddings for cold-start product recommendation. The dataset is built from the largest Chinese Micro blogging service SINA WEIBO2 and the largest Chinese B2C e-commerce website JINGDONG3, containing a total of 20,638 linked users. The experimental results on the dataset have shown the feasibility and the effectiveness of our proposed framework.

3 SURVEY

3.1 Social Media Ecommerce "Here we studied about the complete structure of ecommerce and social shopping, the main thing here objected to social media grew from connecting friends on Face book to uniting brands and communities across platforms. Over the past decade, social media has become an integral part of people's lives and, in turn, you're marketing strategy. Consumers today are online, they're mobile and they're very social. And don't think brands haven't noticed the shift. Many businesses use social media ecommerce strategies to target their audience on social networks before consumers visit their online stores. Everything from taking a class to balancing a budget to buying a car can be done online. It's up to brands to move to social to find new customers.

Social media has played a critical role in the evolution of online shopping. In fact, 9 out of 10 consumers turn to social media for help with a buying decision and 75% of people bought something because they saw it on social media.

If you're still on the fence about adopting a social media ecommerce strategy, here are three important reasons why you need to do so, and fast: People are

talking about you whether you're using social media or not. Without an active presence, you let users control the story. This isn't necessarily a bad thing after all; word-of-mouth continues to be the most credible form of advertising. But it's when that story is told with negative sentiment, or when a user's complaint goes unnoticed, that it becomes a problem. Remember that ecommerce is driven by website traffic. Social media is absolutely critical for directing followers to your landing or product pages. If people talk about you online, they're generating awareness. But if you talk back, you create connections and build relationships that'll benefit you well beyond a simple link share. Some objectives to think about:

- How many new social media followers do you want?
- How much social media traffic do you want to receive?
- What's the ideal ratio of visitors to conversions?
- What's the ideal ratio of audience growth and engagement to sales?"

3.2 Social Commerce "Here mainly survey about world best social media connectivity on face book business, the owners often wonders about the 'ROI of social media'. Is my Face book page actually driving sales? Is all this tweeting really doing anything for my bottom line? Should I be on Interest and Instagram?

Well it turns out, when it comes to ecommerce, being social matters.

To better understand how social media is impacting the ecommerce industry, we analyzed data from 37 million social media visits that led to 529,000 orders.

Here are some interesting data points we surveyed:

Face book dominates as a source of social traffic and sales. Nearly two thirds of all social media visits to Shoplift stores come from Face book. Plus, an average of 85% of all orders from social media comes from Face book.

Orders from Reedit increased 152% in 2013.

Perhaps most interesting and surprising was community style site Polypore which is generating the highest average order value ahead of Face book, Interest and Twitter. Also noteworthy in this category is Instagram which is also generating higher average orders than those same sites. This is especially impressive considering the only clickable links in Instagram are those in profile bios.

Face book has the highest conversion rate for all social media ecommerce traffic at 1.85%



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In addition to these stats, we've also analyzed specific industries to determine which platforms are performing well for them. You can check out all of our findings in the info graphic below. Please click on the image to view it in full-screen.”

3.3 Ways Ecommerce Companies Should Use Social Media for Marketing “Today, social media spending makes up a small fraction of most business’ marketing budgets. A recent Duke University survey found that, on average, social media spending accounted for just 9% of the overall budget. But that number is projected to expand to nearly 22% in the next five years.

Clearly, ecommerce marketers recognize the power of social media to connect with an audience. Face book, Twitter, LinkedIn, and Instagram are nearly ubiquitous in our lives. They’re like the 21st-Century Main Street; we use them to communicate, find information quickly, and increasingly, to shop for products. For Web businesses, effective social marketing represents real value. Social networks offer new ways to reach first-time customers, engage and reward existing customers, and showcase the best your brand has to offer. Your social network profiles and the content you share are as important as a business’ storefront signage and displays in the 1950s.

Why? Social networks are evolving from merely places to find and distribute content; they’re becoming commerce portals. Businesses that integrate social media into their marketing strategy – from customer acquisition, to sales, to re-engagement campaigns – will benefit. Here are a few ways ecommerce businesses can maximize their social marketing efforts:” this survey we covered object are

Research: Marketers can see in real-time what your audience cares about most, their interests, the conversations they’re having and what they like. Use your social networks to better segment audience and understand your target demographics. This will help you optimize your campaigns and deliver more targeted messaging.

Service: Immediacy is big in social media; we want information and we want it now. That’s why social networks are so great for customer service. They enable businesses to quickly respond to customer inquiries. Plus, social media makes it easier to spot and respond to unpleasant customer experiences. Develop a strategy for responding to customer inquiries via social media.

Acquisition: Your social profile is really your storefront. Customers are now using social networks to research companies and products. Your Yelp, Face book, LinkedIn and other social pages provide the perfect opportunity to make a lasting impression. Start by optimizing your profiles and making important information easy-to-find. Also, encourage your existing customers to review your company on Face book, Google, or Yelp.”

3.4 What Social Networks Work Best For Ecommerce? “As inbound marketers, we know that you should always make decisions on data. Ideally, the data is our own - we track our efforts and the sales and customer value that we generate. However, sometimes it's useful to discover new opportunities to explore by looking at what's driving success for the ecommerce industry as a whole.

The awesome research team at Shoplift put together this awesome info graphic, analyzing 37 million visits from the social networking websites and collecting data from 529,000 orders (making it one of the few studies on this topic with a decent sample size and statistical significance)Driving traffic and sales is an important metric for measuring your effectiveness in social media. There are, of course, other applications of social media - such as customer service and positively influencing SEO. However, knowing which networks drive traffic that turns directly into sales will help you know what networks may be worth engaging in more proactively.

What would be an interesting expansion in this study would be to break the sales down by the type of content marketers are sharing in each network. Obviously, the highly visual networks are going to rely heavily on whether or not an image is included. It would be interesting to break this data down into marketers sharing coupons, educational content, social proof, contests, simple product detail pages, etc. We know from survey and anecdotal evidence that just spamming product detail pages, for example, isn't the best way to drive sales and that educational or social-proof content is more likely to drive traffic. It makes sense, given Face book’s massive size and dominance in overall share of social media users, that Face book would have a significant share of the traffic. Face book has an extremely sticky user interface, making it more active than ‘idle browsing’ sites like Interest.

It seems unlikely, even given the reported nervousness by Face book’s executives that they're becoming un-cool to the next generation, that ecommerce marketers will be able to ignore this channel. Even given Face



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book's increasing costs based on the lower organic engagement they're allowing, sales from Face book grew 129% last year and ecommerce marketers will need to continue to be heavily engaged on Face book.”

3.5 The Impact Of Social Media On E-Commerce

“When the World Wide Web first came out, it began as a competitive advantage for every business that embraced it. Very quickly, the Web became a business necessity. It simply wasn't possible to remain competitive without having an online presence. In fact, companies now generate roughly \$2.4 million every minute through e-commerce. Though a large chunk of this revenue comes directly from social media, with Face book, Interest and Twitter helping to generate more than \$40,000 every 60 seconds. These properties represent just a tiny slice of the larger social media pie. It's almost impossible to calculate the indirect influence that social media has on consumer spending. A user might learn of a new brand or promotion from her Face book feed and decide to purchase that product many weeks after the fact. Yet according to Epsilon Data Management, social media campaigns are a key driver of shopping habits, responsible for more customer engagement than any other marketing channel currently available.”

3.6 Dealing with the new user cold-start problem in recommender systems: A comparative review

“The Recommender System (RS) is an efficient tool for decision makers that assist in the selection of appropriate items according to their preferences and interests. This system has been applied to various domains to personalize applications by recommending items such as books, movies, songs, restaurants, news articles and jokes, among others. An important issue for the RS that has greatly captured the attention of researchers is the new user cold-start problem, which occurs when there is a new user that has been registered to the system and no prior rating of this user is found in the rating table. In this paper, we first present a classification that divides the relevant studies addressing the new user cold-start problem into three major groups and summarize their advantages and disadvantages in a tabular format. Next, some typical algorithms of these groups, such as MIPFGWC-CS, NHSM, FARAMS and HU-FCF, are described. Finally, these algorithms are implemented and validated on some benchmark RS datasets under various settings of the new user cold start. The experimental results indicate that NHSM achieves

better accuracy and computational time than the relevant methods.”

4 CONCLUSION

Using this survey finally we conclude that a novel problem, cross-site cold-start product recommendation, i.e., recommending products from e-commerce websites to Micro blogging users without historical purchase records is studied. The main idea is that on the e-commerce websites, users and products can be represented in the same latent feature space through feature learning with the recurrent neural networks. Using a set of linked users across both e-commerce websites and social networking sites as a bridge, feature mapping functions can be learned using a modified gradient boosting trees method, which maps users' attributes extracted from social networking sites onto feature representations learned from e-commerce websites. The mapped user features can be effectively incorporated into a feature-based matrix factorization approach for cloud start product recommendation. A large dataset is constructed from WEIBO and JINGDONG. The results will show that the proposed framework is indeed effective in addressing the cross-site cold-start product recommendation problem. Currently, only simple neutral network architecture has been employed for user and product embedding learning. In the future, more advanced deep learning models such as Convolution Neural Networks¹³ can be study for learning.

OTHER REFERENCES

- [1] J. Wang, W. X. Zhao, Y. He, and X. Li, “Leveraging product adopter information from online reviews for product recommendation,” in ICWSM, 2015.
- [2] W. X. Zhao, Y. Guo, Y. He, H. Jiang, Y. Wu, and X. Li, “We know what you want to buy: a demographic-based system for product recommendation on microblogs,” in SIGKDD, 2014.
- [3] J. Wang and Y. Zhang, “Opportunity model for e-commerce recommendation: Right product; right time,” in SIGIR, 2013.
- [4] M. Giering, “Retail sales prediction and item recommendations using customer demographics at store level,” SIGKDD Explor. Newsl., vol. 10, no. 2, Dec. 2008.



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- [5] G. Linden, B. Smith, and J. York, “*Amazon.com recommendations: Item-to-item collaborative filtering*,” IEEE Internet Computing, vol. 7, no. 1, Jan. 2003.
- [6] Y. Seroussi, F. Bohnert, and I. Zukerman, “*Personalised rating prediction for new users using latent factor models*,” in ACM HH, 2011.
- [7] T. Mikolov, I. Sutskever, K. Chen, G. S. Corrado, and J. Dean, “*Distributed representations of words and phrases and their compositionality*,” in NIPS, 2013.
- [8] Q. V. Le and T. Mikolov, “*Distributed representations of sentences and documents*,” CoRR, vol. abs/1405.4053, 2014.
- [9] J. Lin, K. Sugiyama, M. Kan, and T. Chua, “*Addressing coldstart in app recommendation: latent user models constructed from twitter followers*,” in SIGIR, 2013.
- [10] T. Mikolov, K. Chen, G. Corrado, and J. Dean, “*Efficient estimation of word representations in vector space*,” CoRR, vol. abs/1301.3781, 2014.
- [11] Y. Koren, R. Bell, and C. Volinsky, “*Matrix factorization techniques for recommender systems*,” Computer, vol. 42, no. 8, pp. 30–37, Aug. 2009.