Social Media to E-Commerce System

Aman Lodha¹
#¹Department of Information Technology, Savitribai Phule Pune University, India

Abstract: Now-a-days, the Online Media and E-Commerce is diminishing. Almost every single person in a metropolitan daily uses both social media like Facebook, Twitter etc. for networking and uses internet to make huge purchases using e-commerce sites like Flipkart, Amazon etc. We often login to e-commerce websites using our social accounts like FB or G+. We can also share our recent purchase details on the social media using the links to the product pages of e-commerce sites. We are focusing on the product recommendation to the users on e-commerce sites by leveraging the information or knowledge gained from the users’ social accounts. This will enable to assess the needs of the user in cold start situations. Cold Start is a state when user logs in to the e-commerce website for the first time and we don’t have any information about the history of purchases, shopping trends, etc. as it is not yet created or available. When we have users social account information (no confidential information will be accessed) like posts, friends, shares, etc. then we can harness this to our benefit. For example, we will be applying data mining algorithms to access the micro-blogs the user has created and extract the useful keywords and hence this data from the micro-blogs becomes the basis for product recommendation in cold start situations.

Keywords: Cold start, Product Recommendation, E-commerce, Micro-blogs, Product Demography, Data mining, Information Search.

1. Introduction

Now-a-days, product recommendation is a key area to focus for increased sales for any e-commerce website. For example, Netflix has re-leased an interesting fact that about 75% of its subscribers watchare from recommendations [2]. There are many algorithms which focus on connecting the social media to e-commerce but none are focused on product recommendation by leveraging the social media information like demographic, micro-blogs, location [1], etc.

Recommender systems currently used, focus on solving the information overload problem, by providing users with personalized and accurate information services. Typically, recommendation systems which use collaborative filtering, can automatically predict the need of an active user by collecting rating information from other similar users or items [3].

Another way of recommending products is based on online reviews a purchaser leaves after a purchase and has his/her feedback. The information from the product reviews can be used by analyzing the knowledge hidden in it. But, this technique cannot address the Cold Start situations when there are no purchases or very less purchases for a startup e-commerce website [4].

App recommender uses the information from the twitter followers of any app. There are millions of apps on Google Play store or Apple store, but if someone wants to use a certain app, then there are very rare chances that he/she will be able to find it if they don’t know the name. Hundreds of similar products will line up and hence it is difficult to find the right app for the users’ need. All of the apps has twitter accounts and hence the number of followers, can be used to recommend the best app out of a confusing list. Here as well cold start problem cannot be addressed and hence we cannot use this technique for product recommendation [5].

2. Literature Survey

[1] Steffen Rendle, “Social Network and Click-through Prediction with Factorization Machines”, The two tasks of KDDCup 2012 are to predict the followers of a microblogger (track 1) and to predict the click-through rate of ads (track 2). KDDCup 2012 [4] consists of two prediction tasks from the microblogging website. The first task is to predict which micro-blogger a user is following. For each user a set of recommended micro-blogs is given and the prediction task is to rank them in order of the user's interest. The two main variables in this problem are user and micro-blog which are variables of large domain. Other than this, other information is available: like user attributes such as gender and age, the social network about followers/ followees and time information about each recommendation of a micro-blog. The second task is to predict the click rate of an ad given a user and query. The main variables in this prediction problem are the ad, the user and the query which again are variables of large categorical
domains. This task also includes additional information, e.g. age, gender, query tokens, or the position of an ad.

[2] Mi Zhang, Jie Tang, Xuchen Zhang, Xiangyang Xue, “Addressing Cold Start in Recommender Systems”, In this paper the cold-start problem is addressed by proposing a context-aware semi-supervised co-training method. The method has several unique advantages over the standard recommendation techniques for addressing the cold-start problem. First, it defines a fine-grained context that is more accurate for modeling the user-item preference. Second, the method can naturally support supervised learning and semi-supervised learning, which provides a flexible way to incorporate the unlabeled data.

[3] Hao Ma, Tom Chao Zhou, Michael R. Lyu, Irwin King, “Improving Recommender Systems by Incorporating SocialContextual Information”, Here we consider recommender systems which are based on collaborative filtering, a technique that automatically derives the interest of any user by collecting and analyzing rating information from other similar users or items.

[4] Jinpeng Wang, Wayne Xin Zhao, Yulan He, Xiaoming Li, “Leveraging Product Adopter Information from Online Reviews for Product Recommendation”, The availability of the huge amount of online product feedbacks or reviews provides demographic information of product adopters from review documents. In this paper we extract product adopter information from online reviews. The extracted product adopters are then categorized into many demographic groups which can later be used for product recommendation.

[5] Jovian Lin, Kazunari Sugiyama, Min-Yen Kan, Tat-Seng Chua, “Addressing Cold-Start in App Recommendation: Latent User Models Constructed from Twitter Followers”, Millions of mobile applications (apps) are available, but users have difficulty in identifying apps that are relevant to their interests. Earlier recommender method that depend on previous user ratings (i.e., collaborative filtering, or CF) can address this problem for apps that have sufficient ratings from past users. But for newly released apps, CF does not have any user rating to base recommendations on, which leads to the cold-start problem. In this paper, a new method which uses twitter followers as a base for app recommendation, is used which can address the cold start situations.

3. Existing System

Below are the challenges involved when there is an interaction between users on social media and e-commerce sites:

- Social networks are private and hence direct access may lead to negation by the users. This can be damage the social network platforms as well, as users might stop accessing the site to avoid access of their privacy. At the same time, brands cannot ignore a platform which provides access to zillions of inter-connected users.
- Main aim of brands’ social media interaction should limit in customers and their retention.
- The other challenge is remain customer friendly during changing trends and competition. Consumers will not give much effort when they want to buy something online and this is more impacting for an new shopper who comes up on a e-commerce site because of a social network recommendation. The intent is very volatile and can go in case of complex application. Whatever be the modes in the application, the UI needs to be completely effortless.

Our work mostly addresses the new trend of social commerce connecting social and e-commerce domains. A very deep study of the growth and success of a social commerce site was performed. The investigation is finalized to the use of microblogs to target the customers. The following three concepts work concurrently to create a global community that has started to take the place of traditional commerce and socialization: Web technology, E-commerce, and social media. Research findings indicate that social commerce is very profitable because of the various offers given to users as they connect with others in spite of their identity and location. The focus of this paper is to augment understanding on swiftly developing Web based social media and their later effects on the evolving social commerce. Majority of the existing models use various methods for product recommendation to the users present on both social and commerce domains.

Now, we discuss some of the existing systems present for product recommendations before moving on to our proposed system.

Recommendation using twitter followers [5]
For two months since its release, the Evernote app did not have any ratings. However, its Twitter account had active tweets and followers. This shows that despite the no-ratings on the app or we can say a cold-start, there is still information present about the app, mainly on social networking services like Twitter.

4. Proposed System

The boundary between e-commerce and social networking has become blurred. E-commerce websites such as Bay has many of the traits of social networks, including real-time updates and interaction between 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.

None of the e-commerce systems have adopted the use of micro-blogging and other demographic information for cold start situation where a customer to e-commerce site is offered suggestion of the products. We are focused on the details of the microblogs, demographic information, location information, etc. to address the product recommendation. In this paper, we address the problem of recommending products to users who do not have any purchase records, i.e., in “cold-start” situations. We called it cold-start product recommender.

The below fig 1 shows that combining the socio and e-commerce. This system gives the more accuracy for analysing the both technology. In this system user can use both website same location. If any user can purchases the any product from e-commerce website. But user use that product and he allow to give the review of the product, like how it is, how work functionality etc. so he can send review of the product. Once user send that review then that post is updated on social to recommendation friends.

Due to the heterogeneous type of the data in the social network posts, information extracted from micro-blogs cannot be used directly for product recommendation on e-commerce websites [7] [8] [9]. Therefore, one huge challenge is to transform users’ micro-blogging information into another meaningful representation, which can be used more effectively for product recommendation.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic Attributes</td>
<td>Gender, Age, Marital status, Education, Career, Interests</td>
</tr>
<tr>
<td>Text Attributes</td>
<td>Topic distributions, Word embeddings</td>
</tr>
<tr>
<td>Network Attributes</td>
<td>Latent group preference</td>
</tr>
<tr>
<td>Temporal Attributes</td>
<td>Daily activity distribution</td>
</tr>
<tr>
<td></td>
<td>Weekly activity distribution</td>
</tr>
</tbody>
</table>

Advantages:

- Gain customer information like what they are, what they like, etc. which can transform our business.
- Increase brand awareness i.e. targets more people to our e-commerce.
- Run customer targeted ads with real time results.
- Generate valuable leads i.e. transform ad viewer to a customer.
- Increase website traffic and search ranking.
- Find out information about how competitor is performing and change ourselves according to that.
- Share content faster and easier.
5. Conclusion

We analysis the new problem: how to recommend the right product at the right time? Experimental results on a data collected by a user e-commerce website show that it can predict a user’s follow-up purchase behavior at a particular time with descent accuracy. Using a set of linked users across both e-commerce websites and social networking sites as a bridge, we can learn feature prediction of multiple users.

6. References


