Survey on Connecting Social Media to E-Commerce: Cold-Start Product Recommendation Using Microblogging Information

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ABSTRACT

In recent years, a point that indicates where two things become different is confused. Many e-commerce websites supports the mechanism of social login where users can sign in by using their social networking identities such as facebook or twitter. User can post their newly purchased things on microblog which means posting frequent brief messages about personal activities with link to the e-commerce product websites. Cold start is one of the most challenging and potential problem .The drawback in this is that the system cannot produce the sufficient information which was gathered earlier . .In this paper we propose a different 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. We planned to use the 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' (called user embeddings and product embeddings, respectively)
Keywords: E-Commerce, Microblogs, Cold Start, Recomendation

I. INTRODUCTION

Today's world is becoming fully automatic through Internet. Internet provides the most needed information. The access to Internet creates large amount of data day by day. 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 Facebook, Twitter or Google+. Both Facebook and Twitter which has introduced a new feature last year had attracted more buyers which allowed more number of users to buy products directly from their websites by clicking a "buy" button to purchase items based on some 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- the reviews, leveraging product adopter information, extracted from e-commerce and profile details of social networking sites used for the development of the cold start product recommendation systems .In this Recommendation plays a important role in many fields and has attracted a lot of research interest. For example, Netflix has released an interesting fact that about 75% of its subscribers watch are from recommendations. In a recommender system such as Netflix and Amazon, e-bay, Flipkart, users can browse items and choose those items they are interested in, the advertisement also plays a major role were in the system also recommend the product to the users. Then the items that the system thought as a best one will be the best match of preference to the product recommendation. Afterward, the user may provide feedback (such as rating, usually represented as a score between, for example, 1 and 5, also the reviews make a huge decision in the product purchase) on how the user

thinks about an item after she/he has experienced the item. One important task for the recommendation engine is to understand users' personalized preferences from their historic rating behaviours. In this paper, we study an interesting 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. We called it cross-site cold-start product recommendation. Although online product recommendation has been extensively. Most studies only focus on constructing solutions within certain e- commerce websites and mainly utilise user's historical transaction records. To the best of our knowledge, cross-site cold-start product recommendation has been rarely studied before. Another challenging task is how to improve the recommendation accuracy for the new (or rarely rated) items and the new (or inactive) users. Comparing to the popular items, for the newly released ones and the old items that are rarely rated by users, it is difficult for the standard recommendation approaches such as collaborative filtering approach to provide high-quality recommendations.

II. METHODS AND MATERIAL

A. Extracting and Representing Microblogging Activities

Three steps:

✓ Prepare a list of potentially useful microblogging attributes and construct the microblogging feature vector for each linked user.
✓ Learn the mapping function, which transforms the microblogging attribute information to the distributed feature representations in the second step. It utilises the feature representation pairs.

B. Microblogging-Feature Selection

We study about how to extract information from microblogging from rich user. By this microblogging feature representation can be constructed.

C. Demographic Attributes

A demographic profile is often called as demo- graphic. It is very important in marketing and mainly in product adoption. Users information such as gender, age and education can be used by e-commerce to provide personalized service. We extract users demographic attributes from their public profiles on SINA WEIBO. By studying it earlier, we have identifies six major demographic attributes: Gender, age, marital status, education, career and interest.

1. Text Attributes
In this user often reflect their   opinions and interest about certain topics. Unabsorbed products will be asked to take a look.
2. Network Attributes
In the online social media space, it is often observed that users connected with each other (e.g., through following links) are likely to share similar interests.
3. Temporal Attributes
Temporal activity patterns are also considered since they reflect the living habits and lifestyles of the microblogging users to some extent. As such, there might exist correlations between temporal activities patterns and users' purchase preferences. Temporal activity distributions. We consider two types of temporal activity distributions, namely daily activity distributions and weekly activity distributions for product recommendation.

D. Existing System

The existing is the novel problem of recommending the products from an e-commerce website to social networking users users in "cold- start" situations. The recurrent neural network is used which is used for learning correlated feature representations for both users and products. It is the connection between units form a directed cycle, which allows it to exhibit dynamic temporal network. And modified gradient boosting tress method to transform user's microblogging attributes to latent feature representation which can be easily incorporated for product recommendation. It is a machine learning technique for regression and classification problems. Regression is the measure of the relation between the mean value of one variable (eg:output) and corresponding value of other variable(eg: time and cost) or a return to a former or less developed state. A feature –based matrix factorization approach is instantiated by incorporating user and product feature for cold-start product recommendation.

MODULES

➤ Admin Modules

Login

The authorized administrator of e- commerce and social media provides the username and password to login in this module.

Add Categories

The administrator is able to add new categories of products to the e-commerce site from this module categorising will be very for identification.

Add Products

New products are added to the ecommerce site under a pre-defined category by the administrator in this module.

View User

The administrator can view the registered social media users in this module. The profile of the user along with the purchase history can be viewed here.

View History

The previous search made by the registered users can be viewed by the administrator in this module.

➤ **User Module**

Register

This module allows the new user to get registered in the social media by providing the basic necessary information.

Login

The registered users provide their username and password and login in this module to access the social media.

Search Friend

In this module the users can find the friends they are looking for in the social media if they have registered in the same media.

Send Friend Request

The registered social media users can send friend request to the other registered users in this module. If they are not registered in the social media then the request given by then is not valid.

View Friend Request

The requests received from other users can be viewed in this module. In this module the user can either accept or deny the request given by them.

Post Recommendation

The registered users can send product recommendation to their friends in social media through this module.

View Recommendation

The product recommendation sent from friend in the social media can be viewed in this module.

Search Products

The users of social media can also search desired products in this module

III. RESULTS AND DISCUSSION

More advanced deep learning models such as Convolution Neural Networks can be explored for future learning. Convolution neural network is a type of artificial neural network where connection between the units does not form a cycle. As such it is different from recurrent neural network. Here the information will be from the input nodes, through the hidden nodes and to the output node. We will also consider improving the current feature mapping through ideas in transferring learning.

IV. CONCLUSION

By using this proposed model a secured path can be established for communication. The system provides security at different point in time starting from cluster head election (SLEACH), secure data transfer through session establishment CKM with inclusion of pair wise key establishment (RCD and RMCM) in case of intra-cluster communication and triple key establishment in case of inter-cluster communication and watchdog nodes with rules definition and KDD data set. Hence, as a system it provides different layer of security and monitoring. Certain rules for internal attackers have been defined in the model. The KDD dataset have been used as a protective measure in the model. The KDD dataset can be well trained and implemented in the future so that a better secured system can be implemented. Also with respect to key distribution and establishment randomized combinatorial design theory and markov chain model has been used. RMCM is surely grant security in terms of key distribution but

further improvements can be made on successful key generation rate.

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