

ARTICLE

A NOVEL APPROACH TO DEVELOP BUSINESS MODEL FOR E-COMMERCE USING CUSTOMER REVIEW THROUGH SOCIAL MEDIA

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ABSTRACT

Background: The communication between E-commerce website and social media site has become more unclear. Most of the social media sites like Facebook, Google+, twitter etc. support to login E-commerce sites. The user can use social media sites, and send a link of purchased product from E-commerce web sites. **Methods:** In this paper the cross-site cold star product recommendation methodology is used. Cross-site cold star product recommendation methodology objective is, recommending the purchased product details from E-commerce site to social media site. **Results:** In this methodology main challenge is to manage the extracted data from the social media site for the cross-site cold star product recommendation. **Conclusions:** The paper proposes a method to use the link between social media site and E-commerce site as a bridge this method uses the reviews of the customer given for the products through social media.

INTRODUCTION

KEY WORDS

Cold-start product recommendation, METIS recommender system, Co-Factorization Machines (COFM).

Initially the paper presents study about how to extract the micro blogging feature by the feature based matrix factorization and transfer them into distributed feature representation, for the product recommendation it includes the learned distributed feature representation. In the work flow it consists of some steps product recommendation and feature mapping which is shown in architecture. ALIBABA is an E-Commerce company in china which has developed a strategic investment in SINA WEIBO, to the SINA WEIBO users ALIBABA Company directly delivered the product. To develop the product recommendation system extraction of knowledge from the social media site is important, this process is a new development of presenting e-commerce activities on social media site.

The system developed simulates the problem of product recommendation in e-commerce website for the social media, the site user who do not have the historical purchase record. The online product recommendations focuses build the solution with in the e-commerce site and also apply the transaction record. The challenge involved in this task is to transform the social media information into latent user features which is used for product recommendation.

RELATED WORK

The existing system is when user in a cold star situation and recommending the product to the social medial from the e-commerce website. Recurrent neural network are used users and the product for learning connected feature representation. To display the dynamic temporal network connection between the units in directed cycle. To transfer the user's micro blogging feature to latent feature using gradient boosting tree method which is easily associated for product recommendation. It is a machine learning strategy for relapse and arrangement issues. Regression is the measure of the connection between the mean estimation of one variable (e.g.: output) and Corresponding estimation of other variable (e.g.: time and cost) or a return to a previous or less developed state. For the cold star product recommendation feature based matrix factorization approach is instantiated by joining user and item feature.

The author proposed knowledge of both user and item feature representation using recurrent neural network, from the e-commerce website data collected then transfer to the user in social media feature into user embedding by applying the modified gradient boosting trees method. After that for cold star product recommendation they build a feature-based matrix factorization approach to control the learned user embedding. The experimental results of SINA WEIBO the biggest china micro blogging service it constructed a big dataset it shows the efficiency of proposed framework have Chinese B2C web based business site JINGDONG [1].

Attribute-based feature extraction

Demographic Attributes

Demographic attribute like "gender" are considered in an earlier research. In this demographic attribute author work on their propose work. In our research work consider the feature of users which is related to the demographic attribute value e.g. "female and male". Demographic attribute are used to find out the more fine grained information. In previous paper author increase collaborative method in random forest

Received: 27 Nov 2017
Accepted: 31 Dec 2017
Published: 8 Jan 2018

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which shows selection of random features. Each attribute has its important score using the demographic attribute extraction. Separating entire characteristics instead of extrication portion of qualities in view of significance score of each attribute. It selects its related attribute value feature after selection of attribute. The significance score of each attribute is set to the extent of the characteristics that have its value posted to the user's social media profile.

Text Attributes

Commercial goal of user are contains in social media it is shown in last study. On the social media user can sent their recommendation, suggestion, or interest by the blogs/comments. Because of this reason it is required to have a possible relation between the purchase history and text attribute. Text attribute extracted by product name purchase history, etc. Wayne Xin Zhao was used few strategies: Learning with CoFM, Optimization with user decisions, Optimization with content, Co-Factorization Machines, Author review the three lines of related research work:

- Collaborative filtering and ranking,
- Collaborative filtering with content integration, and
- Twitter user and content modeling.

Link them with their tasks and discuss the novelty of work as well. Propose the system of product recommendation of social networking [Fig-1]. In the Explicit Factor Model (EFM) which is generate understandable recommendations, for the short term, it keeps high calculation accuracy. Firstly extract the features of the product and user views, according to the product features generate the both recommendation and condemnation to the users' and learned hidden features. In used competitive baseline algorithm, real-world datasets show the advantages in the offline experimental result. The benefits of online experiment calculating the performance of rating prediction and top-K recommendation tasks of the framework. In online experiment, the result makes the recommendation and condemnation from the detailed explanation and more inertial on user's purchasing behavior. In online experiments investigate the effect which is automatically generated intuitional feature-level explanations with real-world e-commerce users, and focused on how to explain the acceptance of the affect users' recommendations. The online experimental analysis shows that on the various product features different users are the focus, and experiments suggest that the users care about the changes from different domains, users, and countries for the size of the primary feature space. In online experiment and offline experiment displayed that compares framework positively with three baseline methods: top-K recommendation, rating prediction, and explanation based user persuasion. For recommendations first step to adding detailed of sentiment analysis for feature based reasonable hybrid factorization models, and improvements of there much room [2].

In the Context-Aware Semi-supervised co-training method called CSEL challenges the cold start problem. To capture the excellent-grained user item context, exactly factorization model used. After building the model can increase the recommendation performance by the power the context, they propose an algorithm is semi-supervise ensemble learning. This algorithm constructs weak prediction modes using examples with dissimilar contexts and by the employing co-training strategy allows each weak prediction model from another prediction model. There are several well-known advantages for addressing the cold star problem over the standard recommendation method. The first method defines the fine grained context which is accurate user's item preference for modeling. Second, provides a way to include the untagged data; the method naturally supports semi-supervised learning and supervised learning. Real-world datasets are two; the proposed algorithms are evaluated. The experimental result from method shows that increasing recommendation accuracy by compared to the standard algorithm. In recommended systems to solve the cold-star problem, there are recourses for semi-supervised learning methods. Firstly, into the model combine the items and contexts of users for compensating the absence of ratings. Secondly, proposed a semi-supervised co-training framework to combine the untagged examples [3]. After a discussion about the how to extract the leverage knowledge from the social media for the crosssite cold star production recommendation nowhere discuss a novel product called METIS recommender system (MErchanT Intelligence recommender System) and Co- Factorization Machines (CoFM)[4]. In METIS recommender system identifies user's purchase product in near real-time create the product recommendation from the user's microblogs and corresponding the user's demographic information the information extracted from the user's public profiles. In CoFM models is for user decisions in Twitter and at the same time to handle multiple aspects of the dataset. For this analysis used some methods Co-Factorization Machines, Learning with CoFM, Optimization with content, Optimization with user decisions [4]. In METIS for matching the users' demographic information there are methods are used like Demographics Extraction from Microblogs, Product Demographics Learning, and Demographics Extraction from Online Product Reviews. From recent years ago, there is some work for identifying individual's demographic characteristics such as gender, age, and interests from social media networking data. Directly extract users' demographic information from their public profiles in Sina Weibo. Their feature work is exploring automatic methods in inferring users' demographic attributes [5]. Describe the method for up-and-coming information culled from social media site to provide the important recommendation in the cold- start situation. For the important recommendation and to access the apps uses the Twitter handles and extract users' ID and an account of the Twitter followers. Create pseudo-documents to include the users' ID for Twitters users for which user are interested in the app and create hidden groups, at the testing time the recommendation is mapped to the hidden group which user is target user. Then estimate

the probability of users how many users as the app by using the transitive relationship of the hidden group to the app. From the above description about the Twitter user ID shows that gathering information from Twitter, the difficulty of app recommendation and considerably other state-of-the-art recommendation is up to 33% disable. Firstly explain the problem which is occurred during the research, the relation between twitter followers and apps and how to use them in feature work. Then, using data of twitter followers and apps user's preferences create pseudo-documents and pseudo-words. After that generate sets from the pseudo-documents, finally, for the estimated probability of a target user sets is used as a central factor in the algorithm [6].

MATERIALS AND METHODS

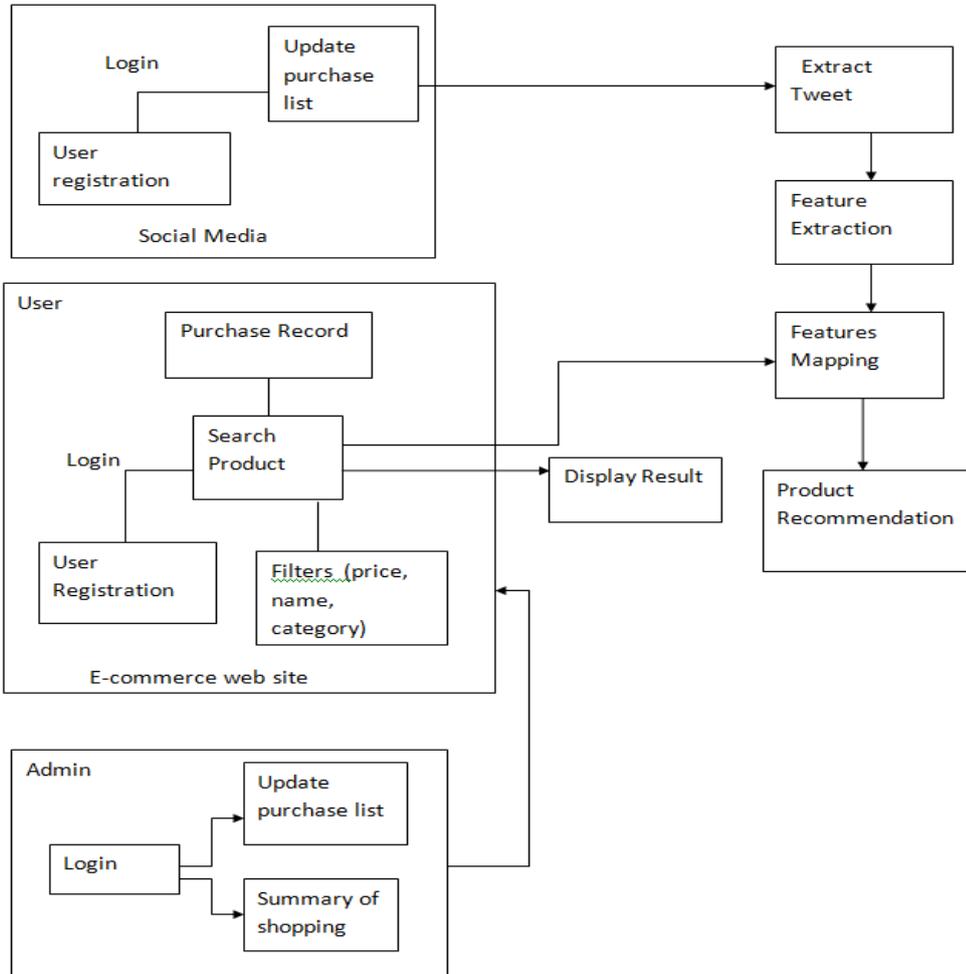


Fig. 1: System architecture

Modules

Purchase intent tweet

Recommendation of any product and showing an interest in product through the social media it means a Purchase-intent tweet and this is also called as tweet. Here we consider an explicit expression. Because of detecting is difficult implicit purchase is ignored. Some time it happen that there more client/user who wanted to purchase item who write a tweet. User needs to sign in to its represented account for recommending product. Updated tweets are classified by user into two categories of purchase target i.e. Containing buy plan and not buy purposes. Filters are applied in the proposed work for different feature of item like Category, Name and Price.

Extract tweet information

For the both users and product information is extracted. Blogs and information about user available publically on social media is extracted. By using the API user's information are extracted if publically available like profile picture, followers and following. Through the blogs extracted information about the product from social media and sent reviews on e-commerce website. In our proposed work we have developed one sample E-commerce website. By using the feature extraction mapped the user information and blogs which sent by user on social medial. A profile on social media presents acceptable information

regarding users and products. It also recognizes purchase targets correctly to considering the negative blogs. Extracting the information and product recommendation from social media is possible. This process behind reason is the customer of that item post may be the positive opinions on that product. If users like the product reviews it will be treated as possible target viewers for product. We will consider following parameters which will shows user support of certain product.

Following: It shows for the particular product how many users follow that product. A large number of the items have their official record on social media site. Consider the followers of official record of product as the possible target viewer.

Mentioning: To retrieving the blogs used keyword matching which covers name of product. Then through the machine learning method identifies the split of positive blogs and negative blogs. Who give the positive blogs it consider as target viewers and positive feedback/blogs are given be the author which is consider as supporting indication.

Here considering three cases:

- On the E-Commerce website product price is given.
- Product name is clearly mention e.g. Samsung Grand2 dual sim; and
- Product category are mention in E-Commerce website, e.g. "Electronics and Mobile."

After that apply filtering on target viewers users. By applying this filter Followers, following, contents of blog and communication with other user are considered. Sometime in both classes following and specifying client may not focused to the wanted product i.e. Nokia 1100 it might be related to the brand Nokia.

Product recommendation

The final module of the research is Product recommendation. The core module of proposed system is product recommendation which show list of product which is recommended to user. In our proposed work similarity is measured by implementing demographic based recommendation algorithm. This measuring similarity is based on features which are obtained from its demographic information. Accuracy of the product recommendation is increased by ranking framework which is obtained by learning these combined features.

RESULTS

Final result of the implemented work shows that it is effective in addressing the cross site cold start products recommendation problem. Results shows our 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, we can learn feature mapping functions using a modified gradient boosting trees method, which maps users' attributes extracted from social networking sites onto feature representations learned from e-commerce websites [Fig-2].

After applied item-based collaborative filtering method get the comments and rating. On that comments apply NLP. The use of NLP is, to translate the comments into the calculation how to grow the business. It shows the online business growth. It shows how many positive scores for the similar and different products. It shows how many negative scores, natural score and compound score for the products as shown in Fig-3.

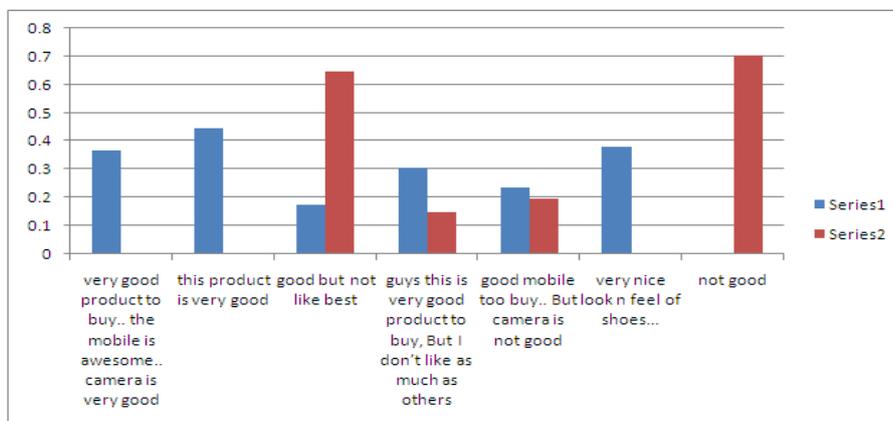
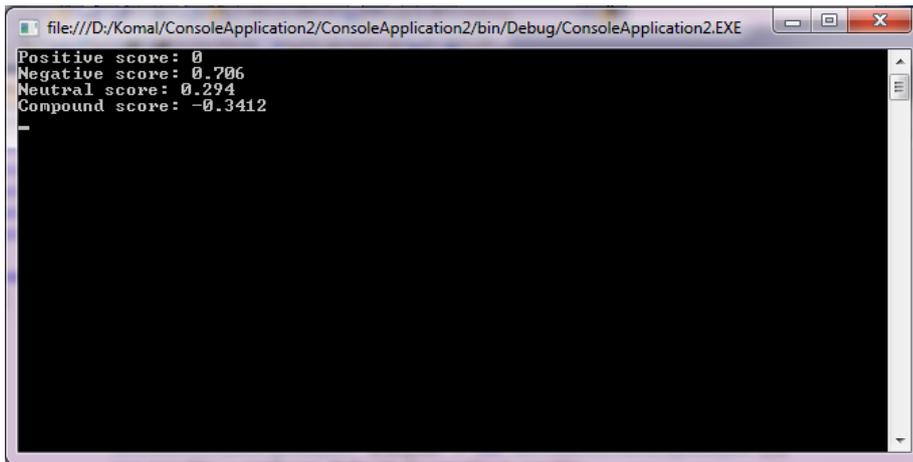


Fig. 2: Graph of product comments



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file:///D:/Komal/ConsoleApplication2/ConsoleApplication2/bin/Debug/ConsoleApplication2.EXE
Positive score: 0
Negative score: 0.706
Neutral score: 0.294
Compound score: -0.3412
  
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Fig. 3: Product recommendation review score

CONCLUSION

The system has analyzed a new problem i.e. cross site cold start product recommendation. To post the product recommendation from E-commerce website to social media without any historical purchase record. The primary idea is that the user can represent recommendation of certain product on social media from the E-commerce website. The dissertation presents a system which is a sample E-commerce website. The result of the analyzed review can be used by the vendors to modify the product development as per the analysis of the customer reviews. The customers can use this analysis to select the product to purchase. Effectively the e-business is improved.

CONFLICT OF INTEREST

There is no conflict of interest.

ACKNOWLEDGEMENTS

To prepare proposed methodology paper on "A Novel Approach to Develop Business Model for E-Commerce Using Customer Review through Social Media" has been prepared by Komal A. Dhabale and Prof. Mrunal Subodh Bewoor. Author would like to thank my faculty as well as my whole department, parents, friends for their support. Author has obtained a lot of knowledge during the preparation of this document.

FINANCIAL DISCLOSURE

None

REFERENCES

- [1] Dhabale AK, Bewoor MS. [2016] A Survey on Methods of Information Extraction from Social Media Site. IJCTA, 9(44): 491-494.
- [2] Zhao WX, Guo Y, He Y, et al. [2014] We know what you want to buy: a demographic-based system for product recommendation on microblogs. SIGKDD, 1935-1944. Doi:10.1145/2623330.2623351
- [3] Wang J, Zhao WX, He Y, Li X. [2015] Leveraging product adopter information from online reviews for product recommendation. Proceedings of the Ninth International AAAI Conference on Web and Social Media. 464-472.
- [4] Zeithaml VA. [1985] The new demographics and market fragmentation. Journal of Marketing, 49: 64-75.
- [5] Giering M. [2008] Retail sales prediction and item recommendations using customer demographics at store level. ACM SIGKDD Explorations Newsletter, 10(2): 84-89.
- [6] Linden G, Smith B, York J. [2003] Amazon.com recommendations: Item-to-item collaborative filtering. IEEE Internet Computing, 7(1):76-80.