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Connecting Social Media to E-Commerce Product Recommendation using Top-K

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Abstract: ***Now a days online shopping has achieved a tremendous popularity within very less amount of time. Recently few ecommerce websites has been developed their functionalities to a extent such that they recommend the product for their users referring to the connectivity of the users to the social media and provide direct login from such social media such as facebook, Twitter, whatsapp. Recommend the users that are totally new to the website client novel solution for cross-site cold-start product recommendation that aims for recommending products from e-commerce websites. In specific propose learning both users and products feature representations from data collected from e-commerce websites using recurrent Top-K to transform user's social networking features into user embeddings. The survey paper develops a Top-k approach which can manipulate the learnt user implanting for cold-start product recommendation.***

Keywords: Datamining, E-Commerce, Social Media, Top-K

1. Introduction

Data mining is a process of extracting interesting knowledge or patterns from large databases. There are several techniques that have been used to discover such kind of knowledge, most of them resulting from machine learning and statistics. The greater part of these approaches focus on the discovery of accurate knowledge. Though this knowledge may be useless if it does not offer some kind of surprisingness to the end user. The tasks performed in the data mining depend on what sort of knowledge someone needs to mine.

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 Facebook, Twitter or Google+. Both Facebook and Twitter have introduced a new feature last year that allow users to buy products directly from their websites by clicking a "buy" button to purchase items in adverts or other posts. Product recommendation is a key area to focus for increased sales for any e-commerce website. 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 etc.

Figure: System Architecture

2. Literature Survey

J. Wang and Y. Zhang [1]Most of existing e-commerce suggester systems aim to recommend the proper product to a user, supported whether or not the user is probably going to buy or sort of a product. On the opposite hand, the effectiveness of recommendations conjointly depends on the time of the advice. Allow us to take a user World Health Organization simply purchased a laptop computer as an example. She might purchase a replacement battery in a pair of years (assuming that the laptop computer's original battery typically fails to figure around that time) and get a brand new laptop in another a pair of years. During this case, it's not a decent plan to suggest a brand new laptop computer or a replacement battery right when the user purchased the new laptop computer. It may hurt the user's satisfaction of the recommender system if she receives a doubtless right product recommendation at the incorrect time. We have a tendency to argue that a system mustn't solely suggest the foremost relevant item, however conjointly suggest at the proper time.

M. Giering[2]this paper outlines a retail sales prediction and products recommendation system that was enforced for a sequence of retail stores. The relative importance of client demographic characteristics for accurately modeling the sales of every client kind square measure derived and enforced within the model. Knowledge consisted of daily sales data for 600 product at the shop level, broken out over a collection of non-overlapping client varieties. A recommender system was designed supported a quick on-line skinny Singular worth Decomposition. It's shown that modeling knowledge at a finer level of detail by clump across client varieties and demographics yields improved performance compared to one mixture model designed for the complete dataset. Details of the system implementation square measure represented and sensible problems that arise in such real-world applications square measure mentioned.

G. Linden, B. Smith[3] Recommendation algorithms area unit best glorious for his or her use on e-commerce internet sites, wherever they use input a couple of customer's interests to come up with an inventory of suggested things. Several applications use solely the things that customers purchase and expressly rate to represent their interests, however they'll additionally use alternative attributes, together with things viewed, demographic information, subject interests, and favourite artists. At Amazon.com, we tend to use recommendation algorithms to change the web store for every client. the shop radically changes supported client interests, showing programming titles to a engineer and baby toys to a replacement mother. There area unit 3 common approaches to resolution the advice problem: ancient cooperative filtering, cluster models, and search-based strategies. Here, we tend to compare these strategies with our algorithmic program, that we tend to decision item-to-item cooperative filtering.

V. A. Zeithaml [4] the underlying premise of this text is that dynamic demographics can result in a breakage of the mass markets for grocery product and supermarkets. A field study investigated the relationships between five demographic factors-sex, feminine operating standing, age, income, and matrimonial status-and a large vary of variables related to preparation for and execution of food market looking. Results indicate that the demographic teams dissent in important ways that from the standard food market shopper. Discussion centers on the ways in which dynamic demographics and family roles might have an effect on retailers and makers of grocery product.

Y. He, H. Jiang, Y. Wu, and X. Li [5] product recommender systems square measure usually deployed by e-commerce websites to boost user expertise and increase sales. However, recommendation is proscribed by the merchandise data hosted in those ecommerce sites and is barely triggered once users square measure playing e-commerce activities. During this paper, we tend to develop a completely unique product recommender system known as breed, a merchandiser Intelligence recommender System, that detects users' purchase intents from their microblogs in close to time period and makes product recommendation supported matching the users' demographic data extracted from their public profiles with product demographics learned from microblogs and on-line reviews. Breed distinguishes itself from ancient product recommender systems within the following aspects: 1) breed was developed supported a microblogging service platform. As such, it's not restricted by the knowledge obtainable in any specific e-commerce web site. Additionally, breed is in a position to trace users' purchase intents in close to time period and build recommendations consequently.2) In breed, product recommendation is framed as a learning to rank drawback. Users' characteristics extracted from their public profiles in microblogs and products' demographics learned from each on-line product reviews and microblogs square measure fed into learning to rank algorithms for product recommendation.

3. Existing System

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 last year that allow users to buy products directly from their websites by clicking a “buy” button to purchase items in adverts or other posts. 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.

Disadvantages

- 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.

4. Proposed System

This survey paper proposed system to use the joined user across social networking site and e-commerce websites user social networking accounts and have created purchases on e-commerce websites as a bridge to map users’ social networking options to latent options for product recommendation. In definite have a tendency to propose learning each users’ and products ’ feature representations (called user embeddings and product

embeddings, respectively) from knowledge collected from ecommerce websites exploitation continual neural networks then apply a changed gradient boosting trees methodology to rework users' social networking options into user embeddings. A tendency to then develop a Top-K approach which might leverage the learnt user embeddings for Top –K product recommendation.

Easy to advertise product exploitation social networking web site. Increase the interaction between user and social networking website. This system believes that our study can have profound impact on each analysis and business communities. The system Top-k technique to rework users' microblogging attributes to latent feature illustration which may be simply incorporated for product recommendation.

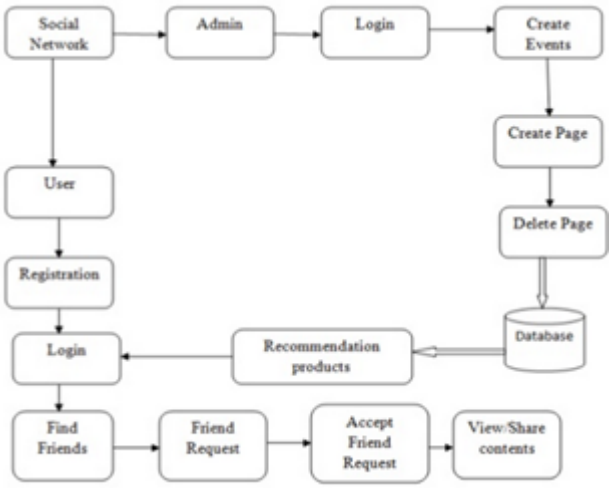

Figure 3: Proposed Systems

Modules

- Product Recommendation Module
- Product Embedding Module
- User Embedding Module
- Heterogeneous Representation Mapping Module

Module 1

Product Recommendation Module

The 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. This problem cross-site cold-start product recommendation. Although online product recommendation has been extensively studied before most studies only focus on constructing solutions within certain e-commerce websites and mainly utilize users' historical transaction records. 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 latent features for product recommendation. In specific, learning both users and products feature representations (called user embedding and product embedding, respectively) from data collected from ecommerce websites using recurrent neural networks and then apply a modified gradient boosting trees method to transform users social networking features into user embedding.

Module 2

Product Embedding Module

Given a set of symbol sequences, a fixed-length vector representation for each symbol can be learned in a latent space by exploiting the context information among symbols, in which "similar" symbols will be mapped to nearby positions. If treat each product ID as a word token and convert the historical purchase records of a user into a time stamped sequence then use the same methods to learn product embedding. Unlike matrix factorization, the order of historical purchases from a user can be naturally captured.

Module 3

User Embedding Module

The user embedding in a similar way explores the correlated representations of a user and products for product recommendation. The purchase history of a user can be considered as a "sentence" consisting of a sequence of product IDs as word tokens. A user ID is placed at the beginning of each sentence and both user IDs and product IDs are treated as word tokens in a vocabulary in the learning process. The user embedding representation for each user ID reflects the users personalized purchase preference; second, the surrounding context, i.e., product purchases is used to capture the shared purchase patterns among users. Compared to the traditional matrix factorization, the (window-based) sequential context is additionally modeled in addition to user preference, which is expected to potentially yield better recommendation results.

Module4

Heterogeneous Representation Mapping Module

To construct a micro blogging feature vector a_u from a micro blogging site and learn a distributed representation v_u from an e-commerce website respectively. In the cross-site cold-start product recommendation problem considered in this project (i.e., make a product recommendation to a user u who has never purchased any products from an ecommerce website) only obtain the micro blogging feature vector a_u for user u. The key idea is to use a small number of linked users across sites as a bridge to learn a function which maps the original feature representation a_u to the distributed representation v_u. Specifically construct a training set consisting of feature vector pairs, $\{a_u, v_u\}$ usual and cast the feature mapping problem as a supervised regression task: the input is a micro blogging feature vector and the output is a distributed feature vector v_u.

Sub Modules

- Registration
- Add Product
- View Product
- Friend Request
- Search Friend List
- E-Commerce

Registration
This module is designed for new users who visit this project to buy software. The new user has to register with the proper details. This system requires a proper user authentication for accessing the features behind in this system. For getting the rights to access the features users have to register their identity to this system. Once registered the system will provides the accessibility rights to the users to work in this system.

Add Product
In this add product module, product id, name, category, description, image files will be uploaded in the admin. The admin is the only person has the rights to upload their files in the database. In other side the user will search the product. In add product uploads the unwanted product files will be deleted as well as the products will be blocked.

View product
The view module used to view the products which are uploaded already in the product. The uploaded product is maintained securely in the data it can be view at any time only by the authorized users. The product can view their different products which are uploaded by them and also the user can also view the product from user to view the items.

Friend request
The Friend Request Module is used for requesting product for friends then all other users get benefit on ordering products. The user can also view the different product Details From different users.

Search friend list
Search friend request module were been used for searching recommended friends from a list of friends.

Ecommerce
E-commerce (electronic commerce or EC) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. These business transactions occur either as business-to-business, business-to-consumer, consumer-to-consumer or consumer-to-business. Here the E-commerce is used for Login user and the number of product have been viewed and all sales details and total bill payment were been printed.

5. Conclusion

This paper recommending products from e-commerce sites to micro blogging individuals without historical purchase documents. Our main point is that on the e-commerce sites, individuals as well as product can be represented in the very same latent attribute Making use of a collection connected individuals throughout both e-commerce sites as well as social networking websites as a bridge, Find out attribute mapping features utilizing a customized slope increasing trees approach, which maps individuals' attributes removed from social networking websites into attribute representations learned from e-commerce websites. The mapped individual attributes could be successfully integrated into a Top-k algorithm using datamining technique strategy for cold start product recommendation.

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