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Review on Service Recommendation System using Social User's Rating Behaviors

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Abstract— the research communities of information retrieval, machine learning and data mining are recently started to paying attention towards Service recommendation systems. Traditional service recommendation algorithms are often based on batch machine learning methods which are having certain critical limitations, e.g., mostly systems are so costly also new user needs to pay the certain cost for new login, can't capture the changes of user preferences over time. So that to overcome from that problem it is important to make service recommendation system more flexible for real world online applications where data arrives sequentially and user preferences may change randomly and dynamically. The proposed system present a new framework of online social recommendation on the basis of online graph regularized user preference learning (OGRPL), which incorporates both collaborative user-services relationship as well as service content features into an unified preference learning process. Also provide aggregated services in only one application (social networking) which increases user's interest towards the services. Proposed system also provides security about subscribed services as well as documents/photos on online social network application. Proposed system utilizes services like Active Life, Beauty & Spas, Home Services, Hotels & Travel, Pets, Restaurants and Shopping.

Keywords: *Online social recommendation, user preference learning, low rank.*

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I. INTRODUCTION

With the increasing popularity of social media, social recommendation has attracted a lot of attention recently in the research communities of information retrieval [1], machine learning [2] and data mining [3], due to the potential value of social relations [4], [5], [6]. We have witnessed the many popular commercial social recommender systems such as Douban [6] and Epinions [7]. A variety of social recommendation models are proposed, which can be generally grouped in two categories: matrix factorization based methods and probabilistic model based methods. The methods of both categories are trained from the partially observed user-service matrix and users' social relations. The matrix factorization based approaches [8], [9], [10] factorize the partially observed user-service matrix into two latent low-rank matrices with the regularization of users social relations, and then fill the missing data entries by spanning two low-rank matrices. On the other hand, the probabilistic model based approaches [11], [12], [13] infer the probabilistic model from the partially observed user-service matrix and then predict the missing entries based on the probabilistic model. Despite the extensive studies of social recommendation systems [8], [10], [11], [12], [13], most traditional social recommendation algorithms are based on batch training techniques which assume all user ratings are provided in the user-service matrix. Such assumption makes them unsuitable for real-world online recommendation applications. First, the user ratings arrive sequentially in an online application. Moreover, if the size of training data is too large, it is difficult for handling all the data. Second, it is common that user preference could drift over time in real-world online application, which makes the batch learning processes fail to capture such changes on time.

1.1 Motivation

In this era, as the humans are being social and spend most of their time on social sites, they always try to find places, products, services online. But users always wants a things in easy way, like if user wants information regarding any place, product or service they can get it by visiting lots of web sites. But this process takes lots of time.

By considering this, a proposed system will help the user to find the service and also recommends services on the basis of their friend and friend of friend's comments as well as rating. Analyzing this rating and comments and the user preferences the proposed system will recommend the various services to the new as well as old users as per there point of interest.

1.2 Objective

1. To develop a secure web application in which we automatically find User-Service Rating and recommend services accordingly

2. To develop a DSS reports to increase the performance of the system as well as to find out user's requirements

3. To provide aggregated services in only one application(social networking) which increases user's interest towards the services

4. To maintain security about subscribed services as well as documents/photos on online social network application.

1.3 Scope

Humans are prone to make rating errors and the rating data always contain noise in practice. Thus, the direct learning of user preference may be over-fitting and is therefore not robust.

II. LITURATURE SERVEY

2.1. Social Recommendation

The social recommendation models are trained from the partially observed user-service matrix and users' social relations. Gao et. al. [8] studies the point of interest recommendation based on the content information from the location-based social networks. Qian et. al. [11] incorporates the CircleCon model with probabilistic matrix factorization method for social recommendation. Wang et. al. [14] design a joint social content recommendation framework to suggest users which video to import or re-share in the online social network. Jiang et. al. [12] present the social contextual information based probabilistic matrix factorization for recommendation. Qiao et. al. [15] study the event recommendation by combining both online and offline social networks. Luo et. al. [16] devise the social-based collaborative filtering recommendation using users' heterogeneous relations. Lu et. al. [17] models the dynamic user interest evolving effect and suggestions made by the recommender instigate an interest cascade over the users. Ding et. al. [6] study the celebrity recommendation based on collaborative social topic regression. Wang et. al. [13] presents the tag recommendation based on social regularized collaborative topic regression. Tang et. al. [10] proposes the global and local regularization for social recommendation. Gao et. al. [9] studies the location recommendation on location-based social networks with temporal constraints. Liu et. al. [18] proposes point of interest recommendation system with topic and location awareness in social networks. Zhang et. al. [19] presents the domain specific recommendation system TopRec, which mines community topic in social networks. Hu et. al. [14] proposes a framework MR3 to jointly model ratings, item reviews and social graph for rating prediction. Wang et. al. [20] studies the news recommendation in social media. Zhou et. al. [21] studies the user recommendation in social tagging systems based on users' personal interests.

2.2 Existing System

In the task of online recommendation, the number of user ratings collected at each timestamp is much smaller than the ratings in the offline recommendation, which means all the items have to be recommended in a cold-start manner. Currently, social networking and knowledge sharing sites like Twitter and Douban are popular platforms for users to generate shared opinions for the items like item review and summary [14]. Thus, the user generated content provides the auxiliary information for the items, which has been widely used to tackle the problem of cold-start item [9]. Unlike the existing online collaborative filtering methods [11], OGRPL is a hybrid model utilizing both CF information via the partially observed user service matrix as well as the auxiliary content features for each service. Given a stream of user ratings, OGRPL incrementally learns the user preference on the content features of the items. However, humans are prone to make rating errors and the rating data always contain noise in practice. Thus, the direct learning of user preference may be over fitting and is therefore not robust.

2.3 Limitations of Existing System

1. There is no secure web application in which we automatically find User-Service Rating and recommend services accordingly.

2. Existing System does not have any Decision support system to increase the performance of the system as well as to find out user's requirements.

III. PROPOSED SYSTEM

3.1 Modules

Admin Panel:

Proposed system's admin panel can allows admin to register service categories, create service admin login, View service administrator details and View end user details log.

Social activities:

Social activity module allows user to Search friend, Send friend request, View friend requests, Add friend , View friends , Like/rate services, View notifications on timeline, Like/rate friend's subscribed services, Communicate with friends, Comment on any post.

User management:

User management module allows user for Registration, Change password, Password recovery, Upload articles, images, Set security settings, View friend uploads as per access permission, edit profile.

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Services Management:
Service management module provides facilities like Register category wise services, Edit service details, Upload service related ads and offers, Upload service related articles.

User-Service Rating Prediction
User-Service Rating Prediction module allows to Track users behavior when user rate any service/ comment on any service**,** When user comment on any service, system will automatically analyze the comments and find out whether the comment is positive/negative/neutral**,** Depending on comments and ratings, user's preferred services will be predicted automatically**,** User can view current updates of preferred services and User can set his preferences any time.

Interpersonal rating prediction
Interpersonal rating prediction provides facilities for new users whose preferences are not available, system will consider preferences of other users with similar profile as that of logged in user**,** System will suggest services related to other user's preferences for new users and If users with similar profile are not available, system will suggest most popular services as well as profile wise services.

DSS (Decision Support System)
DSS System will develop graphical and textual reports on the basis of user rating, profile & requirements.DSS reports will help admin and service admin to improve system performance

3.2 Working

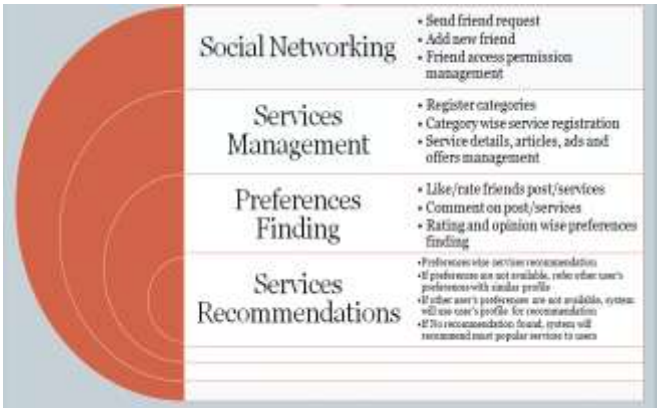

Fig. 1 Working of the Proposed System

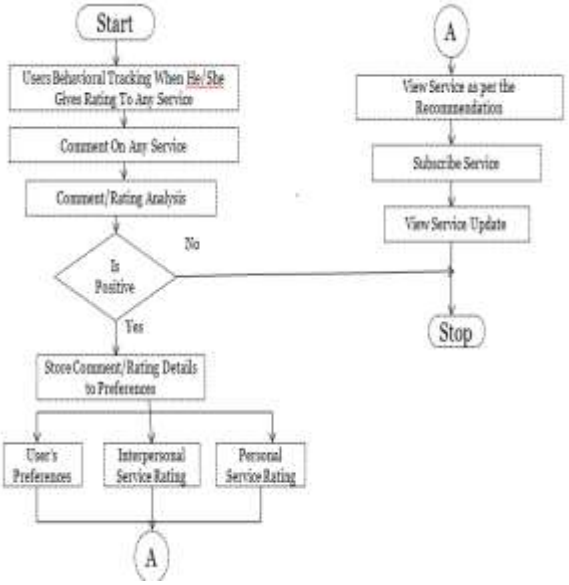

Fig 2 Flowchart of Proposed System

1. At first the user will register himself on the website the system will recommend the various services on the basis of the users profile and also on the basis of his/her social relationship. If no matching profile will be found then the system will recommend the most popular services to the user**.**

2. After using any service by user he/she will rate/comment to the service about the experience. If the comment and rating is positive it will be store to the database.

3. The user rating will be stored in three matrix like user's preferences, interpersonal rating, personal service rating.

4. System will recommend the user various services on the basis of his profile as well as his/her social relationship.

5. Then the user will subscribe for the particular service user will be able to see new updates and also users rating and comments will stored to the database for preference learning.

6. User can also manages permission to view his/her post that who can see the post and who cannot, also upload articles ,images, documents etc.

IV. CONCLUSION

The paper presented a new approach of online service recommendation from the view point of online user preference learning, which incorporates both collaborative user-service relationship as well as service content features into an unified preference learning process.

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