A Survey of Mobile Personalized Recommendation Through Social Network Trends

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Abstract: Online social networks are experiencing an explosive growth in recent years in both the number of users and the amount of information shared. The users join these social networks to connect with each other, share, find content and disseminate information by sending short text messages in near real-time. As a result of the social networks, the users are often experiencing information overload since they interact with many other users and read ever increasing content volume. Recommendation systems have been proposed to help users cope with information overload by predicting the items that a user may be interested in. The user's preferences are shaped by personal interests. At the same time, users are affected by their surroundings, as determined by their geographically located communities.

One of the approach takes into account both personal interests and local communities. A new dynamic recommendation system model that provides better customized content to the user is described provides the user with the most important tweets according to his individual interests. Study of how changes in the geographical community preferences can affect the individual user's interests is done through this. These community preferences are generally reflected in the localized trending topics.

Keywords: Recommendation systems, social networks, topics modeling, trending topics etc.

I. INTRODUCTION

Online social networks are experiencing an explosive growth in recent years in both the number of users and the amount of information shared. Through these message streams, the users can connect with each other, share, find content, and disseminate information. Some of these sites provide social links (e.g., Twitter and Face book). The online social Network face different challenges in providing these streams of information to the user. While tweets may contain valuable information, many are not interesting to the users. Twitter, Face-book is a social networking applications which allows people to micro-blog about a broad range of topics. It helps users to connect with their followers. The goal of one application is to automatically classify incoming tweets into different categories so that users are not over irritated by the raw data.

Twitter, one of the most popular micro-blogging social media platforms, was launched in July 2006 and has about 328 million monthly active users and about 500 million postings per day. Twitter poses a question to its users, "what is happening?" and the answer to this question is restricted to 140 characters. Twitter users receive information feeds, either by subscriptions: where subscription is related to the updates that the user request from his online community. The approach is more general when compared with the Tweet Stand. It classifies incoming tweets into categories such as News (N), Events (E), Opinions (O), Deals (D), and Private Messages (PM) based on the author information and features within the tweets.

Personalized recommender systems can be a promising solution for the information overload problem in social network sites. Three recommendation problems on social network sites are explored, being recommending people, recommending information, and recommending conversation.

The most well-known recommendation technique is collaborative filtering. Collaborative filtering makes recommendations by leveraging similarities of preferences among users. One classical example of this technique is the online news recommender Group Lens. Group Lens works by first letting individual users read and rate online news articles. Recommendation techniques that use content modeling have been studied for years. Such techniques are often used in domains where extensive textual content is available, such as for recommending websites, books, and news articles.

With the goal of helping users find known offline contacts and discover new friends on online social network sites.

Social networks became an important source for generating recommendations. Using social networks to understand the relations between users and their friends as well as the information obtained about them can improve the

knowledge about users' behaviors and ratings. Also, integrating recommendation systems into social networks can provide new observations and thus decisions that cannot be achieved through using traditional recommendation systems. Research studies have also found that different properties of social networks encourage the integration of recommendation systems with social networks. In these paper, the study is varied and address areas such as network structure, trust, information credibility, event detection, social tagging, Geo fencing etc. The recommendation systems aim is returning items that are similar to the users' demand.

Empirical results show that the authorship plays a crucial role in classification. Authors generally adhere to a specific tweeting pattern i.e., a majority of tweets from the same author tend to be within a limited set of categories.

The goal of this paper is to provide the user with personalized recommendation for online social network information. This is based on both the individual level and the geo-located community level.

It indicates the shortest distance between locations and whether these distances affect the appearance of trends in these locations. The system can be show the number of users they can be login in the trend set location. This system can be useful for new friend creation. Also in this system it is easy to identify favourite category for tweets for the purpose of read or write the tweets.

The users' preferences are shaped by personal interests. At the same time, users are affected by their surroundings, as determined by their geographically located communities.
Ever since the dawn of civilization, human beings have always been a part of one tribe or another, brought together by their shared interests and a common way to communicate the same.

Capturing user's interest, which change over the time, is important nowadays. So, focusing on suggestions provided by the social media need to be improved. The social media can suggest the trending topics to the users based on their location will reflect positively on their online experience. User can show message that correspond to dynamic interest. Hence, it is important to mine user`s interest from social network.

II. IMPORTANT TERMS

Since the paper focuses on the interplay between personal interests and public trends, study of information propagation process in social networks and trending topics in geo-located communities is important.

A. Recommendation Systems:

Recommendation systems had first emerged as an independent research area in the mid-1990s when researchers started focusing on recommendation problems that depend on the ratings structure. These recommendation problems were reduced to the problem of estimating ratings for the items that have not been seen by a user. This estimation is usually based on the ratings given by this user to other items. The recent popularity of online social network sites and the overwhelming amount of information available today made it difficult for users to find useful information. As a solution to this problem, many recommender systems were introduced to help users find interesting information. The personalized recommendation systems to recommend only useful content to the users proposed a collaborative filtering method to generate personalized recommendations in Twitter through a collaborative ranking procedure.

B. Topic Modelling

Topic Modelling is a rapidly growing field of research in the area of text mining and statistical modelling. As text comprises about 85% of data worldwide, topic models have been widely used to address the problem of "information overload" associated with this huge collection of text and corpuses. Topic models, such as latent Dirichlet allocation (LDA), had been applied successfully on articles and documents, their application on micro blog contents.

C. Information and Influence Propagation in Social Networks

In recent years, information propagation on social networks has been attracting much attention in academic and industrial circles. Understanding the mechanisms of information propagation is vital to finding the factors affecting the information propagation process.

Two factors affect the information propagation process: the importance of the information and the level of interactions between the users. The studies of the first factor mainly consider the analysis of the messages propagation and the decay with respect to the time since the posting of the message.

The second factor is the level of interactions between the users, along with the geographic, demographic, topical, and contextual features that affect the propagation between the users.

D. Trends in Social Networks

Trending topics in social networking (e.g. twitter) are words and phrases, appearing on the main page of social networking side, that are currently popular in users' tweets, and are identified for the past hour, day, and week. They represent the popular topics of conversations among the social networking users. A limited work has been done to analyse the relation between trends and geography.

Following are some of the important concepts that can be inferred from some references:

- Short Text Classification in Twitter to Improve Information Filtering

In microblogging services such as Twitter, the users may become overwhelmed by the raw data. One solution to this problem is the classification of short text messages. As short texts do not provide sufficient word occurrences, traditional classification methods such as "Bag-Of-Words" have limitations. To address this problem, it is proposed to use a small set of domain-specific features extracted from the author's profile and text. The proposed approach effectively classifies the text to a predefined set of generic classes such as News, Events, Opinions, Deals, and Private Messages.

- Tweets you like: Personalized tweets recommendation based on dynamic users interests

In this paper, a dynamic personalized recommendation system is proposed that provides the user with the most important tweets. The proposed system captures the user's interests, which change over the time, and shows the messages that correspond to such dynamic interests.

- Toward the Next Generation of Recommender Systems: A Survey of the State-of-the-Art and Possible Extensions

This paper also describes various limitations of current recommendation methods and discusses possible extensions that can improve recommendation capabilities and make recommender systems applicable to an even broader range of applications. These extensions include, among others, an improvement of understanding of users and items, incorporation of the contextual information into the recommendation process, support for multcriteria ratings, and a provision of more flexible and less intrusive types of recommendations.

- Recommending Twitter users to follow using content and collaborative filtering approaches

In this paper focus is on one of the key features of the social web, namely the creation of relationships between users. Like recent research, this as an important recommendation problem for a given user, UT which other users might be recommended as followers but unlike other researchers the attempt is to harness the real-time web as the basis for profiling and recommendation

- Short and tweet: Experiments on recommending content from information streams

In this paper study of content recommendation on Twitter is done to better direct user attention. In a modular approach, explored three separate dimensions in designing such a recommender: content sources, topic interest models for users, and social voting

- Analyzing user modeling on Twitter for personalized news recommendations

Analysis of how strategies for constructing hashtag-based, entity-based or topic-based user profiles benefit from semantic enrichment and explore the temporal dynamics of those profiles is done. The performance of the user modeling strategies in context of a personalized news recommendation system is measured and compared.

III. SURVEY OF PREVIOUS PAPERS

In [1] paper, study of domain-specific features, extracted is from the user's profile and text is done. The advantage is effectively classifies the text to a predefined set of generic classes such as News, Events, Opinions, Deals, and Private Messages. The limitation of these paper is less intrusive recommendation process.

In [2] paper, a novel model that is based on topics in that corpus and the history of the user activity in each topic. The advantage of these paper is identify the important tweets to a user in his/her timeline. The limitation is rigid recommendation methods are proposed.

In [3] paper, a numerous content-based, collaborative, knowledge and data engineering, and hybrid methods were proposed. Advantage is recommendation capabilities and make recommender systems applicable to an even broader range of applications. Limitation is Utilization of multi-criteria ratings is not used.

In [4] paper, tweets and relationships of their Twitter social graphs is shown. Advantage is to demonstrate the potential for effective and efficient recommendation. Limitation of that noisy content are not properly removed.

In [5] this paper, Twitter has rapidly grown to a popular social network in recent years and provides a large number of real-time messages for users. Tweets are presented in chronological order and users scan the followers' timelines to find what they are interested in. However, an information overload problem has troubled many users, especially those with many followers' and thousands of tweets arriving every day. In this paper, focus is on recommending useful tweets that users are really interested in personally to reduce the users' effort to find useful information. Many kinds of information on Twitter are available for helping recommendation, including the user's own tweet history, re-tweet history and social relations between users. A method of making tweet recommendations based on collaborative ranking to capture personal interests is proposed. It can also conveniently integrate the other useful contextual information. The final method considers three major elements on Twitter: tweet topic level factors, user social relation factors and explicit features such as authority of the publisher and quality of the tweet. The experiments show that all the proposed elements are important and the method greatly outperforms several baseline methods.

Dynamic Subject Creation:

It first introduces a model that provides better subscription to the user through a dynamic personalized recommendation system that provides the user with the most important tweets. The proposed model captures the user's interests, which change over the time, and shows the messages that correspond to such dynamic interests. The dynamic subject creation method manly used to analysis the tweet from the raw tweet and give the important tweet as per the user requirement.

Following are some advantages of different methods used:

1) Worldwide Connectivity

If you are searching for a former college roommate, your first grade teacher, or an international friend, no easier or faster way to make a connection exists than social media. Such as, Face book, Twitter, LinkedIn and interest are probably the most well-known social networking communities, new websites are popping up regularly that let people connect and interact over the Web.

These connections can help with a variety of things such as:

- Seeking a new job
- Locating assistance
- Getting and giving product and service referrals
- Receiving support from like-minded individuals
- Making or receiving career or personal advice
- Sharing political beliefs
- Accessing news in real time

2) Commonality of Interest

If participating in a social network community, one can pick and choose individuals whose likes and dislikes are similar to yours and build your network around those commonalities. It can also be a great way to share tips and ideas.

3) Real-Time Information Sharing

Social networking can provide a tool for managers to utilize in team meetings, for conference organizers. To use to update attendees and for business people to use as a means of interacting with clients or prospects. Some leaders are going so far as to include Tweets or other social media updates during presentations.

IV. CONCLUSION

The proposed approaches are to classify tweets into general but important categories by using the author information and features within the tweets provide better way of recommendation. With such a system, users can subscribe to or view only certain types of tweets based on their interest.

The concept of dynamic LoI for micro-blogs users can be used to identify the important tweets to a user in the user's timeline and also to develop a model that will allow to predict whether a trend will be appearing in a certain city in the future, and if it will appear, when it would appear. Diffusion models that are designed for modelling information spread between users, and are not suitable for modelling trends diffusion across cities, where no real friendship relations exist. The main aspect of Trend Fusion is a new information cascade model, SC model. The model assumes that an activated node in a graph will always be contagious.

REFERENCES

[1] B. Sriram, D. Fuhry, E. Demir, H. Ferhatosmanoglu, and M. Demirbas, "Short text classification in Twitter to improve information filtering," in *Proc. 33rd Int. ACM SIGIR Conf. Res. Develop. Inf. Retr.*, New York, NY, USA, 2010, pp. 841–842.

[2] *Twitter Home Page*, accessed on Jun. 23, 2017. [Online]. Available: http://twitter.com

[3] D. Laniado and P. Mika, "Making sense of Twitter," in *Proc. 9th Int. Semantic Web Conf. Semantic Web*, vol. 1. Berlin, Germany, 2010, pp. 470–485.

[4] R. Mehrotra, S. Sanner, W. Buntine, and L. Xie, "Improving LDA topic models for micro-blogs via tweet pooling and automatic labeling," in *Proc. 36th Int. ACM SIGIR Conf. Res. Develop. Inf. Retr.*, New York, NY, USA, 2013, pp. 889–892.

[5] Z. Ren, S. Liang, E. Meij, and M. de Rijke, "Personalized time aware tweets summarization," in *Proc. 36th Int. ACM SIGIR Conf. Res. Develop. Inf. Retr.*, New York, NY, USA, 2013, pp. 513–522.

[6] Altingovde, I.S., Demir, E., Can, F., and Ulusoy, O. Site-based dynamic pruning for query processing in search engines. In Proc. SIGIR (Singapore, July 2008), 861-862.

[7] Banerjee, S., Ramanthan, K., and Gupta, A. Clustering short text using Wikipedia. In Proc. SIGIR (Amsterdam, the Netherlands, July 2007), 787-788.

[8] H. Baars and H.-G. Kemper, "Management support with structured and unstructured data—An integrated business intelligence framework," *Inf. Syst. Manage.*, vol. 25, no. 2, pp. 132–148, Mar. 2008.

[9] J. Martinez-Romo and L. Araujo, "Detecting malicious tweets in trending topics using a statistical analysis of language," *Expert Syst. Appl.*, vol. 40, no. 8, pp. 2992–3000, 2013.

[10] J. Weng, E.-P. Lim, J. Jiang, and Q. He, "TwitterRank: Finding topicsensitive influential twitterers," in *Proc. 3rd ACM Int. Conf. Web Search Data Mining*, New York, NY, USA, 2010, pp. 261–270.

[11] M. Steyvers, P. Smyth, M. Rosen-Zvi, and T. Griffiths, "Probabilistic author-topic models for information discovery," in *Proc. 10th ACM SIGKDD Int. Conf. Knowl. Discovery Data Mining*, New York, NY, USA, 2004, pp. 306–315.

[12] W. X. Zhao *et al.*, "Comparing Twitter and traditional media using topic models," in *Proc. Eur. Conf. Inf. Retr. (ECIR)*, Berlin, Germany, 2011, pp. 338–349.