

A Survey on Personalized Multimedia Content Search

Vanashri N. Sawant

Department of Computer Engineering,
Savitribai Phule Pune University

SKN Sinhgad Institute of Technology & Sciences, Lonavala,
Pune, Maharashtra, India,
vanashri.sawant@gmail.com

Prof. Supriya Sarkar

Department of Computer Engineering
Savitribai Phule Pune University

SKN Sinhgad Institute of Technology & Sciences, Lonavala,
Pune, Maharashtra, India,
supriya.sarkar@rediffmail.com

Abstract— Millions of users share opinions on different aspects of life every day. User can give opinions through their comments related to multimedia contents. For analyzing user's demands we can evaluate user comments as a common online resource. Comments given by user provide clues about them & also their interest area. In this paper, we done survey on different techniques used for personalized search in relevant information retrieval. Recommender systems or recommendation systems are a subclass of information filtering system that seek to predict 'rating' or 'preference' that are given by users. We propose a personalized search system, called MovieMine, enhance this proposed system to provide more relevant data summarized according to past & present comments left by user. Large movie data center provide movie review which can be utilized for more specific output. Experimental evaluations show that our proposed techniques are efficient and perform better than previously proposed methods. As in research work we can study more types of sentiment analysis with different recommender systems approach.

Keywords- Personalized search contents, user comments, Logistic regression, recommender system.

I. INTRODUCTION

Whenever we want to consider a multimedia data which mostly comes under Web mining. Web mining is one of the advanced feature of data mining which can be used to discover patterns from web. Web mining specifically categorized in 3 basic way i.e. web usage mining, web structure mining & web content mining. The evaluation of automated system and multimedia contents changes rapidly, also grows day by day in large size. At the end of data collection we have a huge volumes of data produced. For managing such type of data in some valuable format we can use many ways to store it. For that purpose we can use text mining, which help us to mine multimedia contents using opinion mining. Millions of users share opinions on different aspects of life every day. User can give opinions through their comments related to multimedia contents. For analyzing user's demands we can evaluate user comments as a common online resource. Comments given by user provide clues about user thinking and also their interest area.

Smart TV means connected TV, can be established from integrating Internet and web 2.0. Due to this advanced version TV, user can now has more facility to choose the respective program as per their wish among a wide range of multimedia contents [1]. Number of multimedia program available at the same time to watch on a single device which provide user choices.

Personalized web search focused on individual user preference considered for relevant information retrieval [1]. Personalized search work on user profiles generated on the web help to improve effectiveness of retrieval.

Personalized web search provide conformation to every user that they can definitely achieve desire data, also right data contents to right user in accordance with their preferences [1]. Recommender System can be defined as a subclass of Information retrieval system which will seek to predict user desire as per their preferences and rating. Recommender System mainly divided into 2 parts such as Content based filtering and Collaborative filtering. Both in academic and industrial area, new approaches to recommender system were developed in last decade. The interest in this area rapidly increasing because it constitute a problem rich research area and many of practical applications that support users to deal with data overload and supply personalized recommendations, services and content to them. Following are some examples of such applications- CDs, recommendation books, and news at VERSIFI Technologies (formerly AdaptiveInfo.com) [2], movies by MovieLens [3], products at Amazon [4]. Many vendors have preferred to incorporate recommendation capabilities into their commerce server. Recommender system also useful for calculating proper contents to smart TV. It aims at recommending items that users had not yet painstaking, but are likely to be favored. Recommender systems can be generally divided into three types: collaborative filtering [5], content-based filtering [6] and hybrid approach, which uses both of the two methods [7][8][9]. Collaborative filtering recommends contents by analyzing the common patterns of multiple users who contribute to the same interests [10][11][12].

Definitions:

- 1) **Recommender System:** It is a technique for information filtering, commonly used on e-commerce

Web sites that uses a collaborative filtering. Collaborative filtering used to present information on items and products that are likely to be of interest to the reader. In the recommendations, the recommender system will use details of the registered user's profile and opinions and habits of their whole community of users and compare the information to reference characteristics to present the recommendations.

- 2) *Personalized Search*: It can be defined as getting surety of information retrieval. In this right contents are provided to right user. Search mostly pointed towards user interest area.
- 3) *User comments*: This is most useful thing in case of movie mining. These may be in textual format or in the rating format. User comments thoroughly show predictable value of specific contents.

There are some problem occurs in the existing system like final result collected will be same for different preferences, some data not available in database, manual classification etc. Most system provides more relevant result there but them having more time complexity. Existing work used query expansion technique, recommender system, user profiles.

II. LITERATURE SURVEY ON MOVIE MINING

- **Title: Web information personalization: Challenges and approaches [13].**

Author: C. Shahabi and Y.C. Chen.

During browsing and searching WWW, the information overload become major challenge due to dramatically increased in web pages. Personalization becomes a popular remedy to customize the Web environment towards a user's preference. This paper proposed two methods as recommendation systems and personalized web search system. Personalized search system works on query refinement & personalized Meta system.

- **Title: Mining long-term search history to improve search accuracy [14].**

Author: B. Tan, X. Shen, and C. Zhai

Long-term search history contains rich information about a user's search preferences, which can be used as search context to improve retrieval performance. The paper introduces a statistical language modeling based methods to mine contextual information from long term search history and exploit it for a more accurate estimate of the query language model. But the paper has some drawbacks that it had used simpler model, can't provide any algorithm for contextual search on the client-side, also not beneficial for unstructured data.

- **Title: A large-scale evaluation and analysis of personalized search strategies [15].**

Author: Z. Dou, R. Song, and J.-R. Wen.

In this paper, we introduce the concept of a large-scale personalized search evaluation Framework based on query logs. In this framework, different personalized re-ranking strategies are simulated and the search accuracy is approximately evaluated by real user clicks recorded in query logs automatically. The framework enables us to evaluate personalization on a large scale. The paper proposed two click-based personalized search strategies and three profile based personalized search strategies. Personalization brings significant search accuracy improvements on the queries with large click entropy, and has little effect on the queries with small click entropy. Paper works on both long-term and short-term contexts are very important in improving search performance for profile-based personalization. We use 12 days of MSN query logs to evaluate five personalized search strategies. The profile-based personalized search strategies proposed in this paper are not as stable as the click-based ones. They could improve the search accuracy on some queries, but they also harm many queries. The system fails in terms of repeated queries, can't give more specific result.

- **Title: Personalized social search based on the user's social network [16].**

Author: Z. Dou, R. Song, and J.-R. Wen.

This paper investigates personalized social search based on the user's social relations – search results are re-ranked according to their relations with individuals in the user's social network. The work contains several social network types for personalization: Familiarity-based network, Similarity-based network, Overall network that provides both relationship types. Bookmarked based evaluation approached for off-line study. Investigation results showed that according to both evaluations, social network based personalization significantly outperforms non-personalized social search. In this work we simulated personal queries with tags used for bookmarking by the user, in the off-line study, and with tags the user was tagged with, in the user survey. In both cases these types of personal queries are limited and do not cover the whole spectrum of possible personal queries. System fails for long run queries.

- **Title: Personalized smart TV program recommender based on collaborative filtering and a novel similarity method [17].**

Author: H. Kwon and K. Hong.

Smart TV vastly expands the function of television sets by integrating the Internet and Web 2.0 features into contemporary television sets and set-top boxes. TV users can now access a wide range of contents not only from traditional broadcasting services but also from the Internet through a single device. While the availability of numerous contents on a TV means more choices, it also poses a great challenge to its users as they have to decide what to watch out of an almost infinite number of competing choices, highlighting the importance of content searches or recommendations that

consider each user’s individual preferences. In the context of a recommender system, various studies have been conducted in an effort to recommend proper contents to connected TV users in accordance with their individual preferences. This paper propose the context tagging-based user’s preference prediction mechanism by extending the widely known recommender algorithm, collaborative filtering (CF) in order to increase the user’s satisfaction about the recommender service. This method can’t evaluate relevant results for large data set in consideration of scalability so the given technique need an improvement in its scalability algorithm.

III. COMPARISION TABLE

Sr.No.	Title	Author	Work/Methodologies Used	Drawbacks
1	Web information personalization : Challenges and approaches	C. Shahabi and Y.C. Chen.	Personalized Web Search System, Recommender System(Yoda)	More Time Complexity & Space Complexity, Maintaining Efficiency major challenge.
2	Mining long-term search history to improve search accuracy	B. Tan, X. Shen, and C. Zhai.	Query Expansion, History Language Model	Recurring Queries-Time Complexity more, Works finely only on Click Through data
3	A large-scale evaluation and analysis of personalized search strategies	Z. Dou, R. Song, and J.-R. Wen.	Query Log, Re-ranking, Click-based Personalization Strategies.	Time Complexity more due to Re-ranking & Click entropy.
4	Personalized social search based on the user’s social network	D.Carmel, N.Zwerdling, I. Guy, S. OfekKoifman, N. Har’el, I. Ronen, E. Uziel, S. Yogev and S. Chernov	SaND(Social Network & Discovery) Tool, Re-ranking, Bookmark based evaluation	Limited Performance in Personalized Queries
5	Personalized smart TV program recommender based on collaborative filtering and a novel similarity method	H. Kwon and K. Hong	Recommender technique, Collaborative Filtering	Week Scalability in

IV. CONCLUSION

In this paper we have studied many different approaches for calculating result from user comments according to their preferences. Existing methods having many drawbacks and limitations for evaluating result. So for provide more specific and accurate relevant data to relative user we can use user comments for opinion mining of movie database. For future work we can use better algorithm as well as positive-negative comment values.

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REFERENCES

- [1] Hyung W. Kim, Keejun Han, Mun Y. Yi, Joonmyun Cho, and Jinwoo Hong, “Movie Mine : Personalized Movie Contents Search by Utilizing User Comments”, IEEE Trans. On Consumer Electronics, Vol. 58, No.4, November 2012.
- [2] D. Billsus, C.A. Brunk, C. Evans, B. Gladish, and M. Pazzani, “Adaptive Interfaces for Ubiquitous Web Access,” Comm. ACM, vol. 45, no. 5, pp. 34-38, 2002.
- [3] B.N. Miller, I. Albert, S.K. Lam, J.A. Konstan, and J. Riedl, “MovieLens Unplugged: Experiences with an Occasionally Connected Recommender System,” Proc. Int’l Conf. Intelligent User Interfaces, 2003.
- [4] G. Linden, B. Smith, and J. York, “Amazon.com Recommendations: Item-to-Item Collaborative Filtering,” IEEE Internet Computing, Jan./Feb. 2003.
- [5] H. Kwon and K. Hong, “Personalized smart TV program recommender based on collaborative filtering and a novel similarity method”, IEEE Trans. Consumer Electron., vol. 57, no. 3, pp. 1416-1423, August 2011.
- [6] H. Shin, M. Lee and E. Y. Kim, “Personalized digital TV content recommendation with integration of user behavior profiling and multimodal content rating”, IEEE Trans. Consumer Electron., vol. 55, no. 3, pp. 1417-1423, August 2009.
- [7] R. Sotelo et al., “TV program recommendation for groups based multidimensional TV-Anytime classifications”, IEEE Trans. Consumer Electron., vol. 55, no. 1, pp. 248-256, February 2009.
- [8] A. Martinez et al., “What’s on TV tonight? An efficient and effective personalized recommender system of TV programs,” IEEE Trans. Consumer Electron., vol. 55, no. 1, pp. 286-294, February 2009.
- [9] G. Adomavicius, and A. Tuzhilin, “Toward the next generation of recommender systems: A survey of the state-of-the art and possible extensions,” IEEE Transactions on Knowledge and Data Engineering vol. 17, No. 3, 2005, pp 734-749.

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- [10] J.A. Konstan, et al., "GroupLens: Applying collaborative filtering to usenet news," *Communications of the ACM* vol. 40, no. 3, 1997, pp 77- 87.
- [11] G. Linden, B. Smith, and J. York, "Amazon.com recommendations: item-to item collaborative filtering," *IEEE Internet Computing*, vol. 7, no. 1, pp. 76-69, Jan./Feb. 2003.
- [12] B.N. Miller, et al., "MovieLens unplugged: experiences with an occasionally connected recommender systems," In *Proceedings of. IUI,2003*.
- [13] C. Shahabi and Y.C. Chen. "Web information personalization: Challenges and approaches," In *Proceedings of 3rd Workshop on Databases in Networked Information Systems (DNIS), 2003*.
- [14] B. Tan, X. Shen, and C. Zhai, "Mining long-term search history to improve search accuracy," In *Proc. of ACM KDD*, pp 718–723,2006.
- [15] Z. Dou, R. Song, and J.-R. Wen. "A large-scale evaluation and analysis of personalized search strategies," In *Proceedings of WWW*, pp 581–590, ACM, 2007.
- [16] D. Carmel, N. Zwerdling, I. Guy, S. Ofek-Koifman, N. Har'el, I. Ronen, E. Uziel, S. Yogev and S. Chernov, "Personalized social search based on the user's social network," In *Proceedings of the 18th ACM Conference on Information and Knowledge Management (CIKM'09)*, 2009.
- [17] H. Kwon and K. Hong, "Personalized smart TV program recommender based on collaborative filtering and a novel similarity method", *IEEE Trans. Consumer Electron.*, vol. 57, no. 3, pp. 1416-1423, August 2011.