

University of Science and Technology
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Application for Recommendation System using Collaborative Filtering item based technique

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Abstract

Recommendation Systems became widely use to recommend items for users according to the preferences of users on items by using collaborative filtering technique.

"Collaborative" is a collection of people whom interested in the items that define their preferences in order to create the recommendation system which can be used to enhance and facilitate for user to select item that he might like.

This research aims to introduce approaches of using social media and trend analysis to generate recommendation system . In addition, the research will use the features of items neighbors from social media.

Recommendation systems are based on actual user behavior by watching people in their natural environment and making design decisions directly on the results.

In this research we used data collected from MovieLens dataset, published by GroupLeans research group, the dataset contain 1109 Items, 2106 Users, Preferences of users on items, Neighbor information items, calculate the similarity between all of the items, also we but in our consideration the nearest neighbors rating and the time factor (360 days) in order to generate more efficiency and effectiveness of recommendation system.

المستخلص

أصبحت أنظمة التوصية مستخدمة بكثرة في مجال الويب والتي تساعد المستخدم في اختيار جزء بسيط من الخدمات (مقاطع الفيديو ، الكتب ، الموسيقى ... الخ) المفضلة للمستخدم من بين ملايين الخدمات التي تقدم من قبل المواقع الاجتماعية .

هنالك انواع كثيرة لهذه الانظمة استخدمنا منها تقنية الترشيح التعاوني والتي تعتمد علي المراجعات السابقة للمستخدم نفسه (المقاطع التي تم اختيارها مسبقا من قبل المستخدم) اضافة الي اختيارات المستخدمين القريبين للمستخدم. للتمكن من تكوين نظام يهدف الي تسهيل اختيار الخدمات (مقاطع الفيديو) المفضلة بالنسبة للمستخدم.

يهدف هذا البحث لاستخدام الخدمات الموجودة في المواقع الاجتماعية (مقاطع الفيديو) بالاضافة لاستخدام مميزات المستخدمين (الجيران) و ياخذ في الاعتبار سلوك المستخدم (المقاطع التي تم اختيارها مسبقا من قبل المستخدم) لاستخدامها مباشرة في تحسين أنظمة التوصية و صنع القرار.

في بحثنا هذا استخدمنا بيانات مجمعه من موقع اجتماعي وهي تحتوي علي 1109 مقطع ، 2106 مستخدم ، بالاضافة الي مراجعات المستخدمين (الافضليات) ومعلومات عن الجار الاقرب . وقد قمنا بحساب العناصر المتشابهه بين المستخدم وبين جيرانه بناء علي مراجعات المستخدم نفسه ، وكذلك قد اخذنا في الاعتبار اهمية عامل الزمن (360 يوم) وقد توصلنا الي نظام يتنبأ للمستخدم بقائمه من العناصر (مقاطع الفيديو) المحببه له واستخدامنا هذه القائمه في تكوين نظام توصيه يعمل بكفاءة عاليه.

1.1 Introduction:

Recommendation Systems are software tools and techniques providing suggestions for items to be of use to a user [1,2,3]. The suggestions provided are aimed at supporting their users in various decision-making processes, such as what items to buy, what music to listen, or what news to read.

Recommendation systems techniques are based on users, items and preferences of users on items. For example a case in point is a book recommender system that assists users to select a book to read. In the popular Web site, Amazon.com, the site employs a RS to personalize the online store for each customer [4]

Recommendation systems have proven to be valuable means for online users to cope with the information overload. While, the users of these web applications are increasing exponentially parallel to the extended number of items; they face the problem of information overload, and found difficulty to select small set of items from millions of available items. Social media is getting more popular nowadays, offering a lot of different information about users and their preferences. In addition, there are many time variation aspects about users' opinions and popularity of items. This research investigates ways of using social media and trend analysis to enhance the efficiency of Recommendation Systems.

Social media provides a huge amount of information that can be mined to predict trends. Trend analysis and social media features can be used to enhance the efficiency and the effectiveness of recommendation systems. This proposal introduces techniques to predict the trend from social media datasets in the way of viewing movies feature from the GroupLeans research group Data base. Trends can be (360) days per year, (52) Weeks per year, (7) Days per week or (24) Hours per day. In the proposed solution, the feature of viewing movies that are depend on the preferences of users on items can be used to enhance the recommendation systems. Also the new Techniques can use Markov chain model to predict items to users.

1.2 Problem statement:

Recently, Social media websites provide a huge amount of information 'They have been used by recommender systems to predict the needed items or services to users. The prediction using social media [5] is a big challenge. Known Prediction methods are Regression, K-nearest neighbor classifier, Artificial Neural network, Decision tree and Model based prediction

many web-applications [6] have been published in the World Wide Web. They provide millions of items and services to millions of users, users of these applications faced by the problem of selecting a suitable small set of items, from millions of available items and services. Recommendation systems [7] have been used, by many web applications, to recommend items to users. They based on users, items and preferences of users on items.

Users' preferences can be sharing files, tagging, publishing articles, watching movies, purchasing products and so forth.

Much information that can be used to enhance recommendation systems is now available in the increasing number and types of social media websites. In addition, there are many time variation aspects about the users' opinions, items and services' popularity that can be mined to make recommendation systems even better.

Trends prediction from social media using trend analysis and social media features can be used to enhance the efficiency and effectiveness of recommendation system.

1.3 Research Scope:

The main area of the proposed solution can be identified as follows:

1.3.1 Use collaborative filtering technique to generate recommendation system

1.3.2 Use item base to calculate recommender items

1.3.3 MovieLens dataset, published by GroupLens research group it contain 1109 items will be mined for recommendation systems.

1.3.4 neighbor features of Movies will be used to enhance recommendation list.

1.3.5 Trend analysis will used to recommend items to users.

1.4 Research Objectives:

To develop recommendation system technique based on social media and trend analysis.

To identify social media features and develop techniques used these features to improve recommendation systems.

Use item base to compute the items similarity to predict trends and to use these trends to improve recommendation systems.

1.5 Research methodology and Implementation Tools:

In this research we applied the techniques of collaborative filtering by using item base, trend analysis and social media feature.

The proposed solution uses data collected from MovieLens dataset, published by GroupLens Research Group, it contain 1109 items will be mined for recommendation systems.

We used Pearson Correlation to calculate the similarity between items also we used feature of neighbors whom watched movies with considered the time factor (360 Days), finally we Compute Prediction for recommended items.

The implementation of this model is done by using (matlab language r2009a).

1.6 Research Question:

1. How can social media predict items those users like it?
2. How can social media and trend analysis be used to enhance recommendation systems?
3. What social media features can be used to enhance recommendation systems?
4. What is trend analysis be used in recommendation systems?
5. What techniques can be used to predict trends from social media?

1.7 Research organization:

Chapter one is an introduction which a brief the recommendation systems and social media, chapter two will be literature review and the related work, chapter three proposed model for recommendation systems, chapter four will introduce the result of the research, the last chapter will be the conclusion and future work.

