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Research Paper On Recommendation System

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ABSTRACT

This paper focuses on how recommendation systems Work in the real world and IT scenario.

Recommendation systems, which automatically understand user preferences and make recommendations, are now widely used. The recommendation system is one of the major technologies for implementing personalization services. Recommendation systems in ubiquitous IT environment should have the capability of context-knowledge.

INTRODUCTION

In this research paper we discuss how the recommendation systems have diluted the tedious tasks done by any individual for apt information. Recommendation systems recommend an item to which a user prefers by using automatic information filtering method. It deals with the detection and delivery of information that the user is likely to find interesting or useful. It assists users by filtering the data source and deliver relevant information to the users.

There are two main approaches to build a recommendation system - collaborative filtering and content based with the development of the internet, especially the mobile Internet, information has undergone an increase. More than 80% of the data in the world was created in recent years. With the increase of information, the access of people to useful information is more difficult. Hence, the role of recommendation systems have become inevitable.

For a series of personalized recommendations, a recommendation system integrates the requirements of a user into a user model and employs feasible and correct recommendation algorithms to fix the user model into the desired product/service recommendations. Every recommender system has three steps: obtaining the user's preferences (input); calculating the recommendation by appropriate techniques; and, giving the recommendation outcomes to the users. Global Positioning System has become widely popular, and has begun to be integrated into the user's mobile-phone, iPhone, has begun to integrate online Google maps to help users access. The recommendation systems uses various factors like location, music, shopping preferences into considerations to give users an effective output thus making it important. However, despite the popularity of recommendation systems, there are various reasons why users might feel uneasy about using them and/or relying on their recommendations.

RELATED WORK

Some algorithms have been proposed attempting to overcome valuable research papers seeking. This is usually defined as" Recommendation Systems". .Such systems are classified by their underlying method of recommendation**.**

Collaborative Filtering: based on similar users Collaborative recommendation systems aggregate ratings or recommendations of objects, recognize commonalities between the users on the basis of their ratings, and generate new recommendations based on inter-user comparisons. The greatest strength of collaborative techniques is they are not dependent of any machine-readable representation of the objects being recommended. Collaborative filtering is based on the assumption that people who agreed in the past will agree in the future and that they will like similar kind of objects as they liked in the past. Basically collaborative filtering is based on collecting and analyzing a large amount of information on users' behaviors, activities or preferences and predicting what users will like based on their similarity to other users. It make recommendations only based on how users rated products in the past, not based on anything about the products themselves. Basically it will used these formula

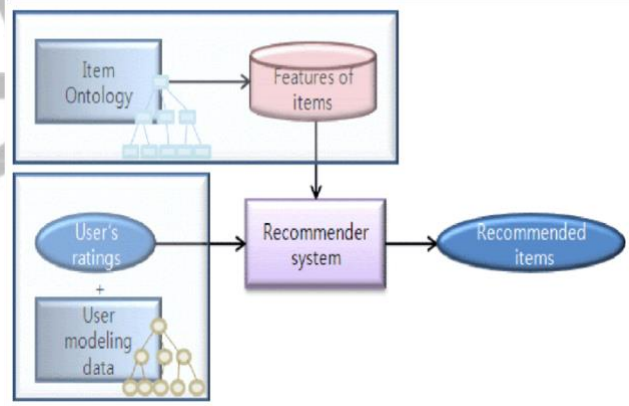
Cosine similarity:

$$\text{similarity} \quad \cos(\theta) \quad \frac{A \cdot B}{A \quad B} \quad \frac{\sum_{i=1}^{n} A_i \times B_i}{\sqrt{\sum_{i=1}^{n} (A_i)^2} \times \sqrt{\sum_{i=1}^{n} (B_i)^2}}$$

Pearson correlation similarity:

$$Pearson(x,y) = \frac{\sum xy - \frac{\sum x \sum y}{N}}{\sqrt{\left(\sum x^2 - \frac{(\sum x)^2}{N}\right)\left(\sum y^2 - \frac{(\sum y)^2}{N}\right)}}$$

Content-based Recommendation: based on description about the product and user's choices mainly continuation of information filtering research. In this system, the objects are mainly defined by their associated features and attributes. A content-based recommendation learns a profile of the new user's interests based on the features present, in objects the user has rated. It's basically a keyword specific recommender system here keywords are used to describe the items. Thus, in a content-based recommender system the algorithms used are such that it recommends users similar items that the user has liked in the past or is examining currently. In other words, these algorithms try to recommend items that are similar to those that a user liked in the past (or is examining in the present). Basically, these methods use an item profile (i.e., a set of discrete attributes and features) characterizing the item within the system. The system creates a content-based profile of users based on a weighted vector of item features.



Citation Indexing: Automatic citation indexing works by using a series of heuristics to process documents. We are exploring techniques through which collaborative filtering may be able to improve the utility of citation indexing systems. Citations are important in academic dissemination. Proper citations not only give credit to the work of others but also make it possible for readers to evaluate whether the cited works support the authors' claims. The literature review process usually starts with retrieving relevant documents, based upon a certain previous selected set of keywords, from

search engines such as Google Search or Microsoft Academic Search. Researchers then have to go through the documents manually to find works that need to be cited. Such a process is a difficult task for both the junior and experienced researchers for two reasons: (1) the tremendous growth in the number of research articles in the past decade, and (2) introduction of new terminology as the science progresses and new knowledge accumulates.

LITERATURE SURVEY: EXISTING RECOMMENDATION SYSTEMS

There are several types of recommender systems available which are helpful in various scenarios. This section reviews some of the existing recommendation systems in detail.

1 Amazon.com

Recommendation System The amazon.com recommendation system uses product to product collaborative technique that can be used for Ecommerce websites. They use recommendation algorithms to personalize the online store for each customer.

Remembrance Agent System

2 The Remembrance Agent is a software which augments human memory by displaying a list of documents which might be relevant to the user's current context. It runs without user intervention. It continuously monitors the user activities and identifies the information needs.

CHALLENGES AND ISSUES

We close by considering several current challenges for recommender systems:-
The first set of challenges concerns issues of bringing people together into communities of interest. A major concern here is respecting people's privacy. The second challenge is to create recommendation algorithms that combine multiple types of information, probably acquired from different sources at different times. The personal information of newly registered users can be obtained through registration. Contextual information such as location, time etc. can be obtained through their IP address and those items are recommended that have been mostly viewed, downloaded and purchased by other users having similar contextual information. This can easily avoid cold-start problem.
The profile having a great history.
Several current issues for recommender systems:-
One of the major problem faced by the recommendation system is that cold start which is a problem related to recommendations for novel users or new items. In case of novel users, the system does not have information about their preferences in order to make recommendations. So it becomes difficult for the system to recommend any suggestions.
Sometimes the reviews and ratings given by user who rarely uses his profile is inapplicable comparing to the profile having a great record.
Privacy is the main component for all the systems, to give the user the most precise recommendation, the system has to use the record of the user.

CONCLUSION

Recommendation Systems (RS) are software tools and techniques that providing suggestions for items to be of use to a user. The effectiveness of recommendation system relies on the algorithm it uses to find interesting resources.

In this paper, we propose a novel mobile information pushing platform based on GPS. Through this platform, users can easily obtain not only the Location-based Service based on the GPS, but also personalized recommendations.

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