Effective Sensitive Recommendation for Online Book with User Relationship Similarity

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Abstract - Recommender System (RS) is a subclass of facts filtering It allows in locating the user interested gadgets from a big amount of items. The exponential boom of the net and the explosion of online records come to be an records overhead problem. Recommender gadget suggests a personalized advice via filtering the records primarily based on customers' interest. With recognize to the person's search time period from the source domain, maximum similar items are endorsed from the target domain. Similarity between two different items can be achieved via sequential pattern mining. Social advice is famous and successful amongst various urban sustainable applications like products recommendation, on-line sharing and purchasing services. The customers in such social networks can rate a few interesting objects and deliver comments. The majority of the existing studies inspect the rating prediction and advice of items based totally on consumer-item bipartite graph and user-person social graph, so called social advice. With the rapid improvement of the provider of location-based totally social networks, the spatial facts gradually impacts the exceptional and correlation of score and advice of gadgets.

Keywords - Semantic Similarity, Ontology, Cross-Domain Recommendation, Collaborative Filtering, PrefixSpan.

I. INTRODUCTION

Recommender system is used to retrieve the user preferred information in internet. By using this, it could be increased the average order value and easily reduce the traffic in services and improve the delivery of relevant content to the user. RS are generally classified on the basis of how they recommend items. Usually, three methods are used namely Collaborative Filtering (CF), Content-Based Filtering (CBF) and Hybrid Filtering (HF).CF is used to recommend items preferred by other users having similar taste. Content- Based Filtering (CBF) is alien to CF and is used to recommend content according to user characteristics. Cross-domain recommender systems (CDRS) have the capability to access information belonging to one or more domains. CDRS can be improved by exploiting the knowledge from source domains and enhancing the recommendations in a target domain. By applying this, it can be accomplished better accuracy and overcome data sparsity. Knowledge representation technique can be used to represent the characteristics of different domains in a hierarchical manner. This helps in categorizing the concepts. Notions of mapping can be done more precisely resulting in better accuracy. Ontology is used for domain knowledge representation.

In this work, KG is used in calculating semantic similarity between two concepts belonging to 2 different domains. Semantic similarity can be calculated by finding the shortest distance between the concepts in the knowledge graph) .Semantic similarity is a technique that measures the similarity between different entities, words, sentences, or documents. It can be evaluated by describing topological ontology's. There are two main techniques for measuring the similarity between words viz. Group-wise and Pair- wise. There are three representation methods viz. Set graph and vector in one hand and on the other hand, the similarity between two sets of words can be calculated by combining the similarity between the words in the sets.

Sequential Pattern Mining (SPM) is used to find the frequent patterns from the sequences. PrefixSpan (i.e., Projected Sequential Pattern Mining) is one of the algorithms used for sequential pat-tern mining. It mines the sequences and is used in reducing the size of the database. It retrieves the most related sequences with the help of frequent search by fixing the prefix and only projecting the postfix sequences in the database. It gives better performance than the other pattern mining algorithms. Topseq rules algorithm is used to discover the Sequential Rules and helps in recommending items in filtered order. Semantic similarity is measured between concepts belonging to multiple domains using Wpath method and the most similar items are retrieved using CF. Item-item similarity and user-user similarity help in constructing sequences that represent the similar users' preference of items.

Finally, frequent patterns are identified using the PrefixSpan algorithm and Topseq rules (Fournier- Viger and Tseng. Items in the sequential rules will be given as a recommendation. Thus, the proposed cross- domain recommendation system will recommend the items based on semantic similarity measurement. Thus, this proposed work can provide cross-domain recommendation items in e-commerce by considering the user-item ratings.

II. MATERIALS AND METHODS

A. Problem Definition

Nowadays, users need to buy the best possible items and services to spend the minimum span of time. Hence a recommendation system is required to get the knowledge from multiple domains. The cross-domain a method of recommendation where in knowledge is gathered from multiple domains. With respect to the user's search term from the source domain, most similar items should be recommended from the target domain. Similarity between two different items must be found out using Ontology. Generating sequential patterns must be achieved and rule mining algorithm should be used for finding the frequent sequential rules.

Hence a new system is required which is capable to model a recommender system to get knowledge from multiple domains. It should find similarity from two different items. It should generate sequential pattern. It should make use of rule mining algorithm to find frequent sequential rules. It should predict age wise and location wise item rating. The exponential growth of the internet and the explosion of online data become an information overhead problem which should be solved out. To retrieve the user preferred information in internet. By using this, we can increase the average order value and easily reduce the traffic in services and improve the delivery of relevant content to the user.

B. System Flow Diagram

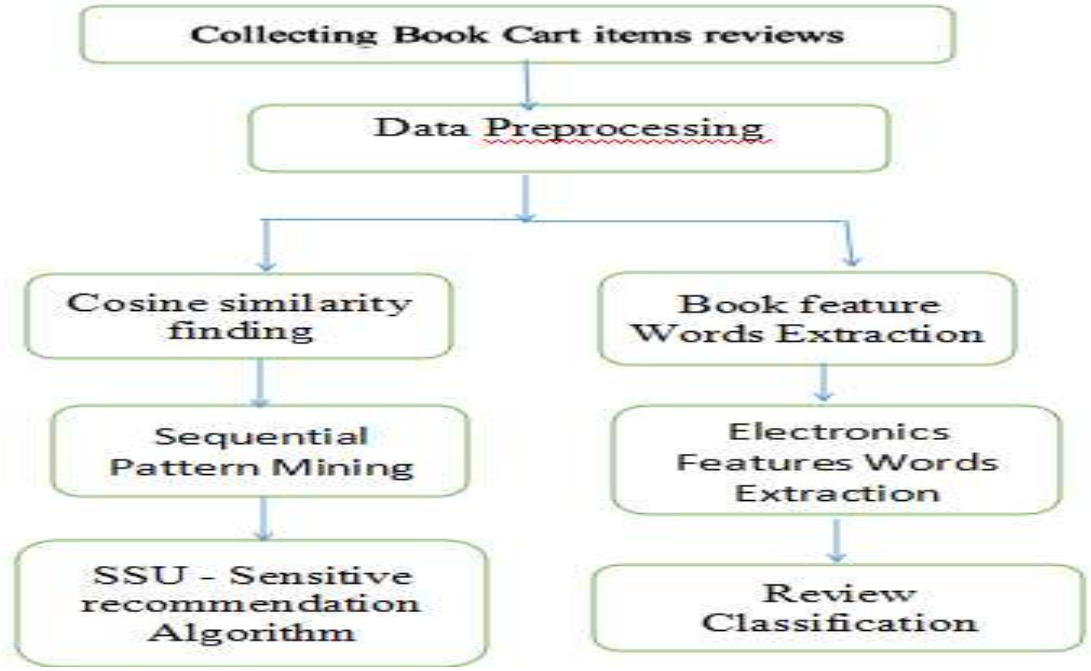

Fig. 1 System Flow Diagram

III. RESULTS AND DISCUSSION

A. Proposed System

In addition with all the existing system mechanism, the proposed study also presents age group based similarity measurement. Here Similarity measurement based on users' ages is also taken into study as simA (Age) along with simR (Rating), simA (User) and simD (Location). And so, Rating prediction and recommendation adopts the finalized similarity matrix with including simA to predict the missing ratings and provide the recommendations. In addition, time intervals are taken for matrix calculation. In addition, reviews for book domain and electronics domain contents are taken. Then term document matrix is prepared for both domains to get the feature words. Then the words are encoded to prepare input for neural network's input layer. Initial weight values are given for neurons and edges. The model is trained for some fixed repetitions. The weight values are updated in intermediate iterations. Then the final weight values are used for further data set model. Thus the recommendation features for combined cross domain can be fetched out to find the test data review whether it is given for book or electronic shopping cart items.

B. Implementation

When the initial design was done for the system, the client was consulted for the acceptance of the design so that further proceedings of the system development can be carried on. After the development of the system a demonstration was given to them about the working of the system. The aim of the system illustration was to identify any malfunction of the system. After the management of the system was approved the system implemented in the concern, initially the system was run parallel with existing manual system. The system has been tested with live data and has proved to be

error free and user friendly. Implementation is the process of converting a new or revised system design into an operational one when the initial design was done by the system; a demonstration was given to the end user about the working system. This process is uses to verify and identify any logical mess working of the system by feeding various combinations of test data. After the approval of the system by both end user and management the system was implemented.

System implementation is made up of many activities. The six major activities are as follows.

C. Coding

Coding is the process of whereby the physical design specifications created by the analysis team turned into working computer code by the programming team.

D. Testing

Once the coding process is begin and proceed in parallel, as each program module can be tested.

E. Installation

Installation is the process during which the current system is replaced by the new system. This includes conversion of existing data, software, and documentation and work procedures to those consistent with the new system.

F. Documentation

It is result from the installation process, user guides provides the information of how the use the system and its flow.

G. Training and support

Training plan is a strategy for training user so they quickly learn to the new system. The development of the training plan probably began earlier in the project. The best-suited application package to develop the system is R Studio under Windows 10 environment.

IV. CONCLUSION

This project investigates the rating prediction and generates location-sensitive recommendations in ad-hoc social networks. It presents spatial social union, an approach that combines three types of similarity matrices derived from user-item bipartite graph and user-user social graph. It evaluates and compares the proposed approach to the existing rating prediction and item recommendation algorithms. It shows that the SSU algorithm is more effective in predicting rating of items and recommending items in location-based ad-hoc social networks. It plans to develop similar techniques in other urban sustainable applications.

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