A Cocktail Approach for Travel Package Recommendation

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Abstract- **Recent years have witnessed an increased interest in recommender systems. Despite significant progress in this field, there still remain numerous avenues to explore. Indeed, this paper provides a study of exploiting online travel information for personalized travel package recommendation season topic (TAST) model. This TAST model can represent travel packages and tourists by different topic distributions, where the topic extraction is conditioned on both the tourists and the intrinsic features (i.e., locations,. A critical challenge along this line is to address the unique characteristics of travel data, which distinguish travel packages from traditional items for recommendation. To that end, in this paper, we first analyze the characteristics of the existing travel packages and develop a tourist-area-travel seasons) of the landscapes. Then, based on this topic model representation, we propose a cocktail approach to generate the lists for personalized travel package recommendation. Furthermore, we extend the TAST model to the tourist-relation-area-season topic (TRAST) model for capturing the latent relationships among the tourists in each travel group. Finally, we evaluate the TAST model, the TRAST model, and the cocktail recommendation approach on the real-world travel package data.**

Index Terms- **:- A cocktail approach for travel package recommendation, to providing the list of Personalized travel package recommendation.**

I. INTRODUCTION

Indeed, there are many technical and domain difficulties natural in developing and applying an effective recommender system for customized journey program suggestions. First, journey information are much fewer and sparser than conventional products, such as movies for suggestions, because the costs for a journey are much more expensive than for watching a movie. Second, every journey program includes many scenery (places of interest and attractions), and, thus, has implicit complex spatio-temporal relationships. For example, a journey program only includes the scenery which are geographically co located together. Also, different holiday offers are usually designed for different journey periods. Therefore, the scenery in a journey program usually have spatial temporary auto correlations. Third, conventional recommender systems usually rely on customer precise scores. However, for journey information, the customer scores are usually not ideally available. Lastly, the conventional products for suggestions usually have a long duration of constant value, while the values of holiday offers can easily devalue eventually and a program usually only can last for a certain time interval. The journey companies need to actively tour offers to replace the old ones in accordance with the passions of the visitors. To address these difficulties, in our initial work, we suggested a mixture strategy on customized journey program suggestions. Specifically, we first evaluate the key features of the existing holiday offers. Along this line, journey efforts and holiday destinations are separated into different periods and areas. Then, we develop a tourist-area-season subject (TAST) design, which can signify holiday offers and visitors by different subject withdrawals. In the TAST design, the removal of topics is programmed on both the visitors and the implicit features (i.e., locations, journey seasons) of the scenery. As a result, the TAST design can well signify the content of the holiday offers and the passions of the visitors. Depending on this TAST design, a mixture strategy is designed for customized journey program suggestions by considering some other elements including the periodic actions of visitors, the prices of holiday offers, and the cold start problem of new offers. Lastly, the trial results on real-world journey information show that the TAST design can effectively catch the improvements of journey information and the mixture suggestions strategy works much better than conventional techniques.

A) EXISTING SYSTEM:

A critical challenge along this line is to address the unique characteristics of travel data, which distinguish travel packages from traditional items for recommendation. To that end, in this paper, we first analyze the characteristics of the existing travel packages and develop a tourist-area-season topic (TAST) model. We first analyze the key characteristics of the existing travel packages. Thus, the users are the tourists and the items are the existing packages. Meanwhile, most of the landscapes will keep in use, which means nearly all the new packages are totally or partially composed by the existing landscapes. Since TAST Content can only capture the existing travel interests of the tourists, thus it may also suffer from the overspecialization problem.

B) PROPOSED SYSTEM:

We propose a cocktail approach to generate the lists for personalized travel package recommendation. Furthermore, we extend the TAST model to the tourist-relation-area-season topic (TRAST) model for capturing the latent relationships among the tourists in each travel group. Finally, we evaluate the TAST model, the TRAST model, and the cocktail recommendation approach on the real-world travel package data. Experimental results show that the TAST model can effectively capture the unique characteristics of the travel data and the cocktail approach is, thus, much more effective than traditional recommendation techniques for travel package recommendation. We evaluate the erformances of the proposed models on real-world data, and some of previous results (25) are omitted due to the space limit.

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II. IMPLEMENTATION

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective.

The implementation stage involves careful planning, investigation of the existing system and it's constraints on implementation, designing of methods to achieve changeover and evaluation of changeover methods.

A) MODULES:

Module description:

1. Tour inn Disney land
2. Honking
3. Amusement parks
4. Niagarafalls discovery
5. Central park
6. Maple leave adventure

B.SYSTEM ARCHITECTURE:

A cocktail recommendation approach:

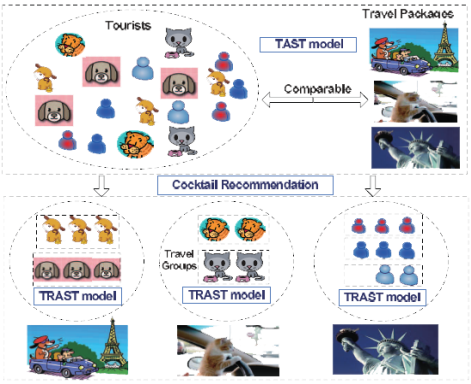
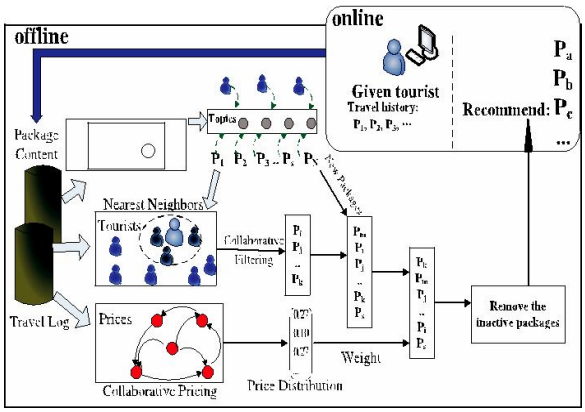


Fig. 1. An illustration of the paper contribution.



III. INPUT AND OUTPUT DESIGNS

A) INPUT DESIGN:

The input design is the link between the information system and the user. It comprises the developing specification and procedures for data preparation and those steps are necessary to put transaction data in to a usable form for processing can be achieved by inspecting the computer to read data from a written or printed document or it can occur by having people keying the data directly into the system. The design

of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy. Input Design considered the following things:

- What data should be given as input?
- How the data should be arranged or coded?
- The dialog to guide the operating personnel in providing input.
- Methods for preparing input validations and steps to follow when error occur.

B) OBJECTIVES:

1. Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data input
2. process and show the correct direction to the management for getting correct information from the computerized system.
3. It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.
4. When the data is entered it will check for its validity. Data can be entered with the help of screens. Appropriate messages are provided as when needed so that the user will not be in maize of instant. Thus the objective of input design is to create an input layout that is easy to follow

C) OUTPUT DESIGN:

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of processing are communicated to the users and to other system through outputs. In output design it is determined how the information is to be displaced for immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient and intelligent output design improves the system's relationship to help user decision-making.

1. Designing computer output should proceed in an organized, well thought out manner; the right output must be developed while ensuring that each output element is designed so that people will find the system can use easily and effectively. When analysis design computer output, they should Identify the specific output that is needed to meet the requirements.
2. Select methods for presenting information.
3. Create document, report, or other formats that contain information produced by the system.

The output form of an information system should accomplish one or more of the following objectives.

- Convey information about past activities, current status or projections of the Future.
- Signal important events, opportunities, problems, or warnings.
- Trigger an action.
- Confirm an action.

IV. SYSTEM STUDY

FEASIBILITY STUDY

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are

1. ECONOMICAL FEASIBILITY
2. TECHNICAL FEASIBILITY
3. SOCIAL FEASIBILITY

ECONOMICAL FEASIBILITY

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

TECHNICAL FEASIBILITY

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

SOCIAL FEASIBILITY

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

IV. LITERATURE SURVEY

Literature survey is the most important step in software development process. Before developing the tool it is necessary to determine the time factor, economy n company strength. Once these things r satisfied, ten next steps are to determine which operating system and language can be used for developing the tool. Once the programmers start building the tool the programmers need lot of external support. This support can be obtained from senior programmers, from book or from websites. Before building the system the above consideration are taken into account for developing the proposed system.

"*Cyber-Guide: A Mobile Context-Aware Tour Guide," Wireless Networks*"

Future computing environments will free the user from the constraints of the desktop. Applications for a mobile environment should take advantage of contextual information, such as position, to offer greater services to the user. In this paper, we present the Cyberguide project, in which we are building prototypes of a mobile context-aware tour guide. Knowledge of the user's current location, as well as a history of past locations, are used to provide more of the kind of services that we come to expect from a real tour guide. We describe the architecture and features of a variety of Cyberguide prototypes developed for indoor and outdoor use on a number of different hand-held platforms. We also discuss the general research issues that have emerged in our context-aware applications development in a mobile environment.

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

This paper presents an overview of the field of recommender systems and describes the current generation of recommendation methods that are usually classified into the following three main categories: content-based, collaborative, and hybrid recommendation approaches. 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 multicriteria ratings, and a provision of more flexible and less intrusive types of recommendations.

"*fLDA: Matrix Factorization through Latent Dirichlet Allocation,"*

We propose fLDA, a novel matrix factorization method to predict ratings in recommender system applications where a "bag-of-words" representation for item meta-data is natural. Such scenarios are commonplace in web applications like content recommendation, ad targeting and web search where items are articles, ads and web pages respectively. Because of data sparseness, regularization is key to good predictive accuracy. Our method works by regularizing both user and item factors simultaneously through user features and the bag of words associated with each item. Specifically, each word in an item is associated with a discrete latent factor often referred to as the topic of the word; item topics are obtained by averaging topics across all words in an item. Then, user rating on an item is modeled as user's affinity to the item's topics where user affinity to topics (user factors) and topic assignments to words in items (item factors) are

learned jointly in a supervised fashion. To avoid overfitting, user and item factors are regularized through Gaussian linear regression and Latent Dirichlet Allocation (LDA) priors respectively. We show our model is accurate, interpretable and handles both cold-start and warm-start scenarios seamlessly through a single model. The efficacy of our method is illustrated on benchmark datasets and a new dataset from Yahoo! Buzz where fLDA provides superior predictive accuracy in cold-start scenarios and is comparable to state-of-the-art methods in warm-start scenarios. As a by-product, fLDA also identifies interesting topics that explains user-item interactions. Our method also generalizes a recently proposed technique called supervised LDA (sLDA) to collaborative filtering applications. While sLDA estimates item topic vectors in a supervised fashion for a single regression, fLDA incorporates multiple regressions (one for each user) in estimating the item factors.

"Map-Based Interaction with a Conversational Mobile Recommender System,"

Recommender systems are information search and decision support tools used when there is an overwhelming set of options to consider or when the user lacks the domain-specific knowledge necessary to take autonomous decisions. They provide users with personalized recommendations adapted to their needs and preferences in a particular usage context. In this paper, we present an approach for integrating recommendation and electronic map technologies to build a map-based conversational mobile recommender system that can effectively and intuitively support users in finding their desired products and services. The results of our real-user study show that integrating map-based visualization and interaction in mobile recommender systems improves the system recommendation effectiveness and increases the user satisfaction.

"Latent Dirichlet Allocation,"

Two new extensions of latent Dirichlet allocation (LDA), denoted topic-supervised LDA (ts-LDA) and class-specific-simplex LDA (css-LDA), are proposed for image classification. An analysis of the supervised LDA models currently used for this task shows that the impact of class information on the topics discovered by these models is very weak in general. This implies that the discovered topics are driven by general image regularities, rather than the semantic regularities of interest for classification. To address this, ts--LDA models are introduced which replace the automated topic discovery of LDA with specified topics, identical to the classes of interest for classification. While this results in improvements in classification accuracy over existing LDA models, it compromises the ability of LDA to discover unanticipated structure of interest. This limitation is addressed by the introduction of css-LDA, an LDA model with class supervision at the level of image features. In css-LDA topics are discovered per class, i.e., a single set of topics shared across classes is replaced by multiple class-specific topic sets. The css-LDA model is shown to combine the labeling strength of topic-supervision with the flexibility of topic-discovery. Its effectiveness is demonstrated through an extensive experimental evaluation, involving multiple benchmark datasets, where it is shown to outperform existing LDA-based image classification approaches.

V. CONCLUSION

In this paper, we present study on personalized travel package recommendation. Specifically, we first analyzed the unique characteristics of travel packages and developed the TAST model, a Bayesian network for travel package and tourist representation. The TAST model can discover the interests of the tourists and extract the spatial-temporal correlations among landscapes. Then, we exploited the TAST model for developing a cocktail approach on personalized travel package recommendation. This cocktail approach follows a hybrid recommendation strategy and has the ability to combine several constraints existing in the real-world scenario. Furthermore, we extended the TAST model to the TRAST model, which can capture the relationships among tourists in each travel group. Finally, an empirical study was conducted on real-world travel data. Experimental results demonstrate that the TAST model can capture the unique characteristics of the travel packages, the cocktail approach can lead to better performances of travel package recommendation, and the TRAST model can be used as an effective assessment for travel group automatic formation. We hope these encouraging results could lead to many future works.

VI. ACKNOWLEDGEMENT

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