ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 5, Issue 12, December 2017

A Survey on a New Approach to Travel Recommendation Using Dynamic Topic Model and Matrix Factorization Based

Harshvardhan Hanmnatrao Patil, Prof. S.D. Satav

ME Student, Department of Computer Engineering, Jayawantrao Sawant College of Engineering, Hadapsar, Pune, India

Professor, Department of Computer Engineering, Jayawantrao Sawant College of Engineering, Hadapsar, Pune, India

ABSTRACT-On web the rapid growth of online travel information has to face for tourists who have to choose from a large number of travel available packages to satisfy their personalized requirements to travel. The sparsity of user-location interactions makes it difficult to learn travel preferences, because a user usually visits only a limited number of travel locations. Static topic models can be used to solve the sparsity problem by considering user travel topics. However, all travel histories of a user are regarded as one document drawn from a set of static topics, ignoring the evolving of topics and travel preferences. In this paper, we propose a dynamic topic model (DTM) and matrix factorization (MF) based travel recommendation method. A DTM is used to obtain the temporally fine-grained topic distributions (i.e., implicit topic information) of users and locations. In addition, a large amount of explicit information is extracted from the metadata and visual contents of CCGPs, Check-ins, and POI categories datasets. The information is used to obtain user-user and location-location similarity information, which is imposed as two regularization terms to constraint MF. User can view recommended places route on map.

KEYWORDS-Travel recommendation, geo-tagged photos, social media, multimedia information retrieval, check-in record, dynamic topic model, travel recommendation.

I.INTRODUCTION

With the prevalence of intelligent cell phones and digital cameras with global positioning systems (GPS), people can casually take photos with geo-tags, and share these photos on social network sites (e.g., Panoramio and Flickr), which encourage users to upload the metadata information associated with photos . The number of community-contributed geotagged photos (CCGPs) has rocketed every day , and such large-scale CCGPs on the Internet are publically obtainable and cover most of the countries in the world . To alleviate the data sparseness problem in CCGPs data, additional information (e.g., category) is employed to obtain location similarity, which is then imposed as an extra regularization term of matrix factorization (MF) However, these methods ignore a large amount of important information (e.g., tourists' gender and age), which can be obtained and further exploited in similarity computation. Recently, static topic model (STM) is employed to model travel preferences by extracting travel topics from past traveling behaviors which can contribute to similar user identification. However, the travel preferences are not obtained accurately, because STM consider all travel histories of a user as one document drawn from a set of static topics, which ignores the evolutions of topics and travel preferences. To address these problems, in this paper, a dynamic topic model (DTM) and MF based method is proposed to recommend travel locations using ubiquitous data. In particular, a DTM is used to obtain the temporally fine-grained topic distributions (i.e., implicit topic information) of users and locations. A large amount of explicit information of users and locations are mined from the metadata and visual contents of CCGPs, Check-ins, and Point of Interest (POI) categories datasets. To address the sparsity of user-location interactions, the information is used to obtain user-user and location-location similarity information, which is imposed as two regularization terms to constraint the factorization of user-location matrix. After that, the completed user-

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 5, Issue 12, December 2017

location matrix is obtained and each entry is used as a particular user's preference indicator of visiting a particular travel location.

II.EXISTING SYSTEM

Existing system general travel route planning cannot well meet users' personal requirements. Personalized travel recommendation recommends the POIs and routes by mining user's travel records. The most famous method is location-based collaborative filtering (LCF). To LCF, similar social users are measured based on the location co-occurrence of previously visited POIs. Then POIs are ranked based on similar users' visiting records. Recently, static topic model (STM) is employed to model travel preferences by extracting travel topics from past traveling behaviors which can contribute to similar user identification. However, the travel preferences are not obtained accurately, because STM consider all travel histories of a user as one document drawn from a set of static topics, which ignores the evolutions of topics and travel preferences.

III. REVIEW OF LITERATURE

1. We propose to conduct personalized travel recommendation by further considering specific user profiles or attributes (e.g., gender, age, race) as well as travel grouptypes (e.g., family, friends, couple).Instead of mining photo logs only, we exploit the automatically detected people attributes and travel group types in the photo contents. By information-theoretic measures, we demonstrate that such detected user profiles are informative and effective for travel recommendation—especially providing a promising aspect for personalization. We effectively
mine the demographics of individual and group travelers for different locations (or landmarks) and their travel paths. A probabilistic Bayesian learning framework which further mobile recommendation on the spot is introduced as well[1].
2.Present and compare 16 real life LBSNs, bringing into surface their advantages/ disadvantages, their special functionalities, and their impact in the mobile social Web. Moreover, we describe and compare extensively 43 state-of-the-art recommendation algorithms for LBSNs. We categorize these algorithms according to: personalization type, recommendation type, data factors/features, problem modeling methodology, and data representation. In addition to the above categorizations which cannot cover all algorithms in an integrated way, we also propose a hybrid k-partite graph taxonomy to categorize them based on the number of the involved k-partite graphs[2].
3.This paper presents a project called KnowIng camera prototype SyStem(KISS) for real-time places-of-interest(POI)recognition and annotation for smartphone photos, with the availability of online geotagged images for POIs as our knowledge base. We propose a "Spatial+ Visual" (S+V) framework which consists of a probabilistic field-of-view(pFOV) model in the spatial phase and sparse coding similarity metric in the visual phase to recognize phone-captured POIs. Moreover, we put forward an offline Collaborative Salient Area (COSTAR) mining algorithm to detect common visual features (called Costars) among the noisy photos geotagged on each POI, thus to clean the geotagged image database. The mining result can be utilized to annotate the region-of-interest on the query image during the online query processing. Besides, this mining procedure also improves the efficiency and accuracy of the S+V framework[3].
4. presents a personalized travel sequence recommendation from both travelogues and community-contributed photos and the heterogeneous metadata (e.g., tags, geo-location, and date taken) associated with these photos. Unlike most existing travel recommendation approaches, our approach is not only personalized to user's travel interest but also able to recommend a travel sequence rather than individual Points of Interest (POIs). Topical package space including representative tags, the distributions of cost, visiting time and visiting season of each topic, is mined to bridge the vocabulary gap between user travel preference and travel routes. We take advantage of the complementary of two kinds of social media: travelogue and community-contributed photos. We map both user's and routes' textual descriptions to the topical package space to get user topical package model and route topical package model (i.e., topical interest, cost, time and season). To recommend personalized POI sequence, first, famous routes are ranked according to the similarity between user package and route package. Then top ranked routes are further optimized by social similar users' travel records[4].
5. In this paper, we aim to study the semantics of point-of-interest (POI) by exploiting the abundant heterogeneous user generated content (UGC) from different social networks . Our idea is to explore the text descriptions, photos, user

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 5, Issue 12, December 2017

check-in patterns, and venue context for location semantic similarity measurement. We argue that the venue semantics play an important role in user check-in behavior. Based on this argument, a unified POI recommendation algorithm is proposed by incorporating venue semantics as a regularizer. In addition to deriving user preference based on user-venue check-in information, we place special emphasis on location semantic similarity[5].

6. In this paper, an author topic model-based collaborative filtering (ATCF) method is proposed to facilitate comprehensive points of interest (POIs) recommendations for social users. In our approach, user preference topics, such as cultural, cityscape, or landmark, are extracted from the geo-tag constrained textual description of photos via the author topic model instead of only from the geo-tags (GPS locations)[6].

7. In this paper we propose a location overview generation approach, which first mines location representative tags from travelogues and then uses such tags to retrieve web images. Thelearnt tags and retrieved images are finally presented via a novel user interface which provides an informative overview for a given location[7].

IV. SYSTEM ARCHITECTURE

PROPOSED SYSTEM ARCHITECTURE-

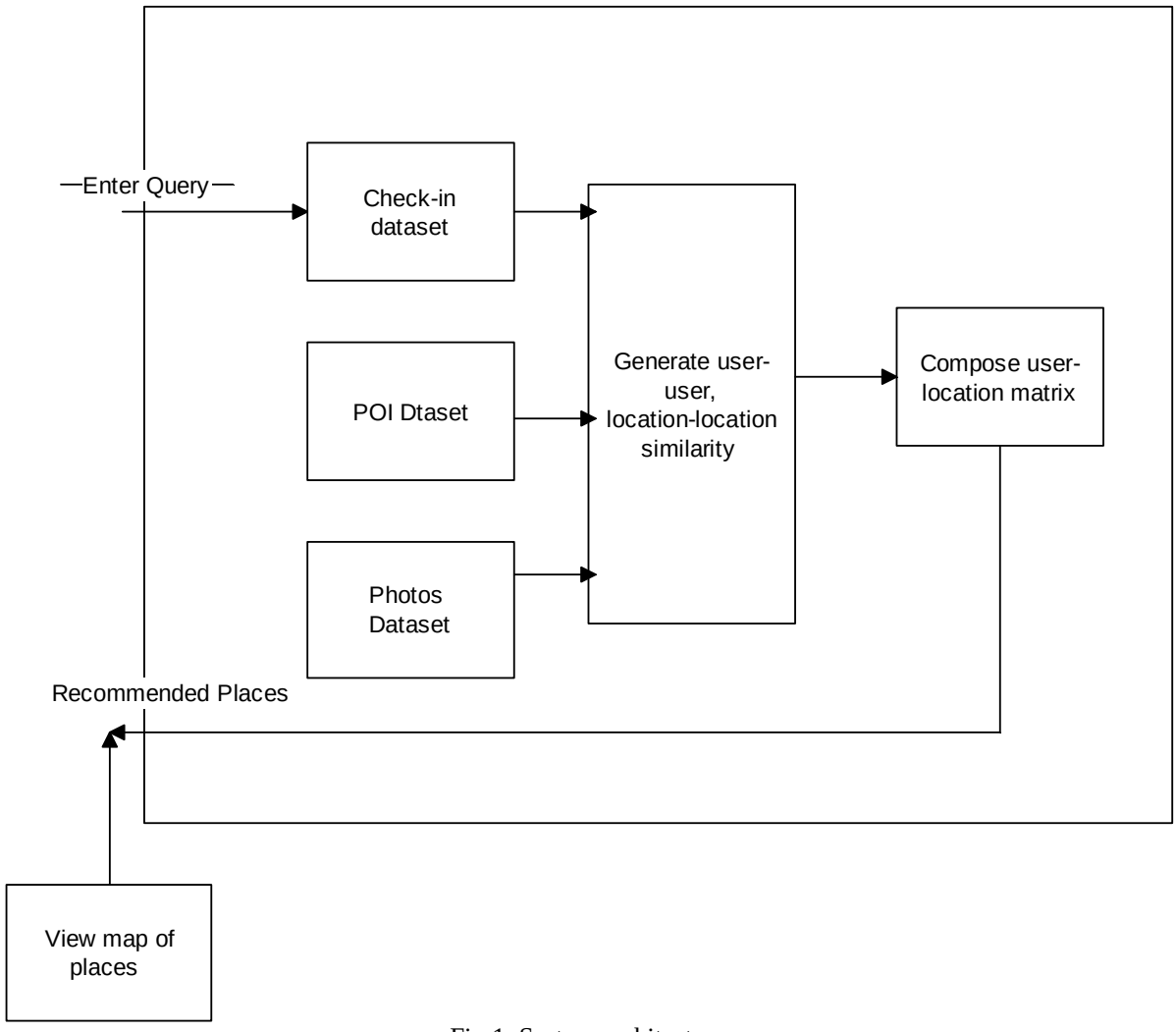


Fig.1: System architecture

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

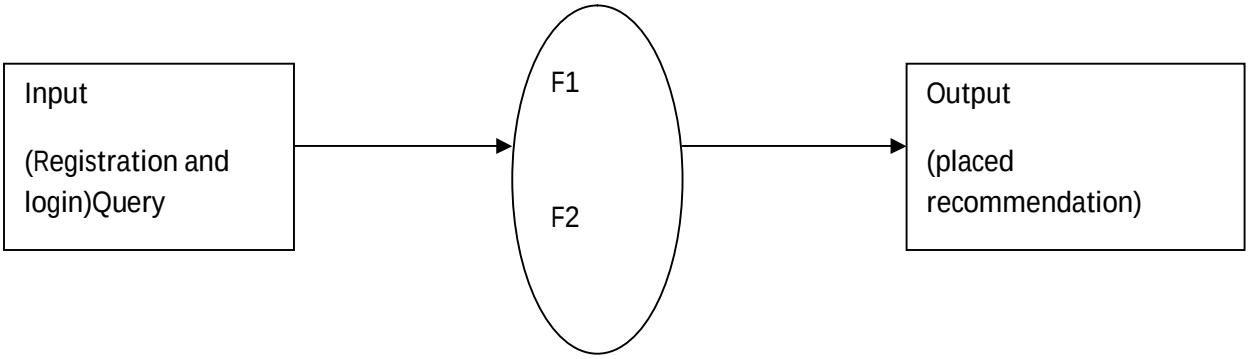
Website: www.ijircce.com

Vol. 5, Issue 12, December 2017

SYSTEM OVERVIEW-

Propose system, in this paper, a dynamic topic model (DTM) and MF based method is proposed to recommend travel locations using ubiquitous data. In particular, a DTM is used to obtain the temporally fine-grained topic distributions (i.e., implicit topic information) of users and locations. A large amount of explicit information of users and locations are mined from the metadata and visual contents of CCGPs, Check-ins, and Point of Interest (POI) categories datasets. To address the sparsity of user-location interactions, the information is used to obtain user-user and location-location similarity information, which is imposed as two regularization terms to constraint the factorization of user-location matrix. After that, the completed user-location matrix is obtained and each entry is used as a particular user's preference indicator of visiting a particular travel location. The main contributions of this paper are: (1) Present a DTM based way to obtain the temporally fine-grained topic distributions of users and locations. A large amount of explicit information is extracted from CCGPs, Check-ins, and POI categories datasets. (2) Present a MF based framework to address the sparsity of user-location interactions, by integrating the explicit and implicit information of users and locations as associated regularizations.Finally user get recommended places for travelling.User can view recommended places route on map.

V. MATHEMATICAL MODEL



Let us consider S as a system for automatically recommend places.

S= {……

INPUT:

- Identify the inputs

F= {f_1, f_2, f_3 ……, f_n| 'F' as set of functions to execute commands.}

I= {i_1, i_2, i_3…|'I' sets of inputs to the function set }

O= {o_1, o_2, o_3….|'O' Set of outputs from the function sets,}

S= {I, F, O}

I = {Query submitted by the user, i.e. query }

O = {Output of desired query, i.e. Places recommendation}

F = {Functions implemented to get the output, i.e. Lavenstine Distance Algorithm, POI Mining}

VI. CONCLUSION

In proposed system we recommend the places to user according to his interest. for that we present a DTM and MF based method to recommend travel locations using ubiquitous data. The temporally fine-grained implicit features of users and locations are obtained by using DTM. A large number of explicit features of users and locations are extracted from the metadata and visual contents of CCGPs, Check-ins, and POI categories datasets. To address the sparsity of user-location interactions, these explicit and implicit features are used to obtain user-user and location-location similarity information, which is imposed as associated regularization terms to constraint the factorization of user-location matrix. Here user can view places on map like route.

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 5, Issue 12, December 2017

REFERENCES

1. Y. Y, Chen, A. J, Cheng, and W. H. Hsu, "Travel recommendation by mining people attributes and travel group types fromcommunity-contributed photos," *IEEE Transactions on Multimedia*, vol. 15, no. 6, pp. 1283-1295, Oct. 2013.
2.P. Kefalas, P. Symeonidis, and Y. Manolopoulos, "A graph-based taxonomy of recommendation algorithms and systems in LBSNs," *IEEE Transactions on Knowledge and Data Engineering*, vol. 28, no 3, pp.604-622, Mar. 2016.
3. P. Peng, L. Shou, K. Chen, G. Chen, and S. Wu, "KISS: knowing camera prototype system for recognizing and annotating places-of-interest," *IEEE Transactions on Knowledge and Data Engineering*, vol. 28, no 4, pp.994-1006, Apr. 2016.
4. Personalized Travel Sequence Recommendation on Multi-Source Big Social Media
Shuhui Jiang, Xueming Qian *, Member, IEEE, Tao Mei, Senior Member, IEEE and Yun Fu, Senior Member, IEEE
5. X. Wang, Y. L. Zhao, L. Nie, Y. Gao, W. Nie, Z. J. Zha, and T. S. Chua, "Semantic-based location recommendation with multimodal venue semantics," *IEEE Transactions on Multimedia*, vol. 17, no. 3, pp. 409-419, Mar. 2015.
6. S. Jiang, X. Qian, J. Shen, Y. Fu, and T. Mei, "Author topic model based collaborative filtering for personalized poi recommendation," IEEE Transactions on Multimedia, vol. 17, no. 6, pp. 907–918, 2015.
7. Q. Hao, R. Cai, X. Wang, J. Yang, Y. Pang, and L. Zhang, "Generating location overviews with images and tags by mining usergenerated travelogues," in Proceedings of the 17th ACM international conference on Multimedia. ACM, 2009, pp. 801–804.
8. Q. Yuan, G. Cong, Z. Ma, A. Sun, and N. M. Thalmann, "Time-aware point-of-interest recommendation," in *Proc. SIGIR*, 2013, pp. 363-372.
9.J. D. Zhang and C. Y. Chow, "Spatiotemporal sequential influence modeling for location recommendations: a gravity-based approach," *ACM Transactions on Intelligent Systems and Technology*, vol. 7, no. 1, pp. 11, Jan. 2015.
10. J. D. Zhang and C. Y. Chow, "Point-of-interest recommendations in location-based social networks," in *Proc. SIGSPATIAL*, 2016, pp. 26-33.