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Travel Route Recommendation Using User Mobility and Social Interactions

[1] P Bhanu Prakash, [2]Battu Nandini, [3]P Murali

[1]Assistant Professor, Dept of CSE Vemu Institute of Technology, Chittoor, India.
[2]PG Student, Dept of CSE, Vemu Institute of Technology, Chittoor, India.
[3]Assistant Professor, Dept of CSE, Vemu Institute of Technology, Chittoor, India.

Abstract

The popularity of social media (for example, Face Book and Flicker) makes it easy for users to share their check-in documents and images on their journey. In order to promote the preparation of travel, we want to explore the vast amount of user history records in social media. Users always have certain preferences regarding their trips when planning a trip. We accept arbitrary text explanations as keywords regarding customized queries, rather than limiting users to restricted query choices such as pages, events or time periods. In addition, a range of recommended routes are necessary and representative. Previous work on the mining and classification of existing routes for check-in data has been developed. We claim that more features of Places of Interest should be removed in order to meet the necessity of an automatic tour organization. Therefore we are proposing in this paper an efficient framework that used knowledge extraction from historical user mobility and social interactions, with keyword-aware representative travel route. In order to effectively match query keyword, we specifically have designed the keyword extraction module for classifying the POI tags. We have further developed an algorithm for road reconstruction to build road candidates who satisfy the requirements. We examine Representative Skyline Concepts, i.e. the Skyline roads, to provide appropriate query results, which describes the best compromise between various POI features. In order to test the efficiency and efficacy of the proposed algorithms, we have carried out comprehensive experiments with real-locality social network sets. Experimental findings indicate that our approaches are indeed good when comparing to cutting-edge works.

Keywords- *POI, Travel Route Recommendation,*

I. INTRODUCTION

Location Based social network (LBSN) services enables users to check in and share their check-in data with friends. In particular, the check-in information is a journey route with a few photos and tag information, when a user travels. This creates a massive number of routes that play a major role in many well-established areas of research, like mobility forecasting, urban planning and traffic management. We focus on travel planning and aim to learn about the experience of travel through shared data in social networks based on locations. The prior tasks provide an interface where a user can enter the query area and the total travel time to facilitate travel planning. In contrast, we look at a scenario in which users use keywords for their preferences. For instance, one would have "Opera House" when planning a trip to Sydney. In this way, we improve the feedback of travel planning with the study of future consumer keywords. The results of the query of existing recommended travel route services generally rank the routes simply in terms of popularity or number of route uploads. The existing works derive a score function for such a rating where each route has a score by its characteristics (e.g., the number of Places of Interest, the popularity of places). The results of the query will usually be similar. Recently, the goal was to find a broader variety of routes based on the factors involved.

II. SYSTEM ANALYSIS

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A. Existing System

In general, the query results of current suggested route services rate the routes simply by popularity or number of route uploads. The current works derive a score function for such a rating where each route has a score by its characteristics (e.g., the number of Places of Interest, the popularity of places). The results of the question would typically be identical. The new scheme aimed recently to recover a broader range of routes based on the considered travel factors. Since high scoring routes are often too similar, this work takes into account the different results by using the Skyline question.

Most research took "Where, When, Who" into account in modeling user mobility. In the segment of the suggestion of the venue, it was pointed out that people are usually interested in nearby areas. Finally, the preferred place of checking was combined with user expectations, geographical effect and historical trajectories.

Disadvantages of Existing System

- In the previous process as certain query keywords do not need to be matched in the POI keyword.
- There is still a risk that no current route is in compliance with the question keywords
- Users do not understand the characteristic of these routes from the final single score (e.g., which one has the most fascinating landmarks? Which one is well-connected to the place I want to go?) So it may be hard to select a route from the final results.
- Furthermore, users need to pre-define the weight for each factor, although it is hard to pick a suitable weight in most cases.

B. Proposed System

- We developed a keyword-aware KRTR framework to find a number of recommended paths, where Keyword means the personalized needs of users for the journey.
- The route data can be made from the set of check-in records for low sample data.
- We argue that it is necessary to know semantics, provided that certain keywords for queries do not have to fit in the keyword POI.
- The KSTR system of the recommendation of various paths, based on various score features derived from social media, is built on and substantially improved by this paper.
- KSTR builds routes from various segments of routes.
- We propose a KRTR frame where users can construct a collection of keywords and a query field, and where the results of queries provide a wide range of trips.
- The reconstruction of routes by taking spatial and temporal features to into segments is proposed.
- The Skyline representative search query is used to integrate multi-dimensional route measurements.

Advantages of Proposed System:

- Provide greater feedback with high quality and scalability, including active and passive inspections.
- Passive check-in information is collected in order to optimize input data.
- The system suggested expands the range of findings recommended.
- A greedy approach is often designed to make the online application more effective.
- Experiments show that KRTR is in a position to restore user-friendly routes.
- We are first in the preparation of trips with check-in data to the best of our knowledge. This work is the most detailed model of a generic recommendation framework for routes.

Architecture analysis:

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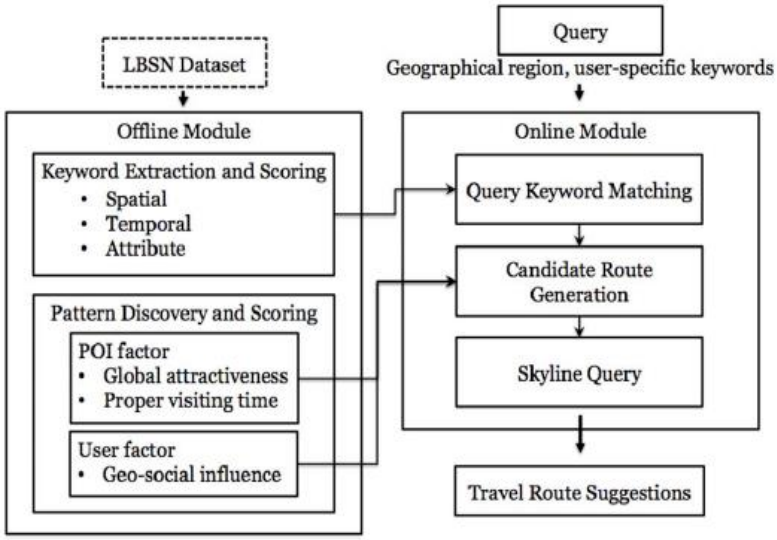
Structured project management strategies (e.g. SDLC) boost project management by separating complex projects into manageable areas. A life-cycle model of software is either the definition of software and/or its prescription. None of the SDLC models, however, address key issues such as evolving personnel, incident management and release management processes in the SDLC process. The definition of user-developer interactions in the traditional SDLC model was transformed into an assumptionary model consisting of a user, owner and developer in the proposed hypothetical model. The definition of user-developer interactions in the traditional SDLC model was transformed into an assumptionary model consisting of a user, owner and developer in the proposed hypothetical model. The single size is no longer sufficient for all SDLC methodologies. By using a new hypothesis model mentioned elsewhere for SDLC, we have attempted to correct those deficiencies. There are no big technical problems relating to the software development phase that resolve these management processes under the overall project management, that is to say certain issues in project management at surface but not at the base stage. Project management

III. SYSTEM DESIGN

A. System architecture



B. System Design and Development

Input Design

The design of the input is the connection between the user and the data system. It covers the creation of data preparation specifications and procedures, and transaction data may be processed by checking the machine for reading of data from the written or printed materials and by keeping data directly into the system. The process is required in order to position the transaction data in a usable form. The input design is designed to track the necessary input number, to monitor errors, avoid delays, avoid additional steps and keep the process simple. The input is structured so that privacy can be maintained for protection and ease of use. The following things were considered by Input Design:

• Which input information should be provided?

• How should the data be collected or coded?

• The dialogue for managing the input of the operating staff.

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• Input validation preparation methods and error follow steps.

Output Design

A quality result meets the end user's criteria and clearly shows the information. In any processing system outcomes, the users and other systems are communicated through outputs. In output design, the way the information is to be displaced and the hard copy output is often calculated. It is the user's key knowledge and the most direct source. Effective and insightful design of performance strengthens user decision-making relationships in the system.

1. Computer output design needs to be structured and thoroughly developed; the correct output needs to be developed when each output feature is configured to make the device easy and reliable to use. In evaluating the performance of the computer, the particular output necessary to satisfy the requirements should be defined.
2. Select methods for presenting information.
3. Create document, report, or other formats that contain information produced by the system.

One or more of the following goals should be accomplished with an information system performance type.

- 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. IMPLEMENTATION

A. Travel Routes Exploration:

We plan to provide users with an interface in this module to define question ranges and keywords relevant to preferences. The online module can retrieve travel routes that overlap the query field and the time span when the device receives a specified time and range. It will then calculate how well the journey is related to the keywords. The online module therefore returns the most representative routes for the users taking into account the above-mentioned functional values. First we describe to the user question the matching function. We also provide the context on why we use an online recommendation framework skyline query, tailored to applications for recommendations on travel routes, and present the algorithm for the distance-based representative skyline search. Moreover the real time skyline query requires an estimated algorithm.

B. Keyword Extraction

In this module we have developed a route reconstruction algorithm to aggregate segments of routes into travel routes according to the range of question and time span, how we can extract the semantic meaning of keywords and propose corresponding scores that define the degree of relation between keywords. For each keyword w in the corpus, the Keyword Extraction Module calculates spatial, time and attributes values first. Every query keyword is matched with the pre-computed match score w.CCE at the query time: a part of our proposed process, Collective Extraction, as candidates for the m check-in method, we present the following two method of extraction of the baseline. The output of the Flicker images check-in extraction. In addition to simply matching the official POI's name, collecting further checks involves a balance between accuracy and recall. Check-in extraction efficiency depends on whether this trade-off is regulated correctly. Our three extraction methods have been suggested.

C. Route Recommendation

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The recommendation route should take several factors into account in order to emphasise the specific travel factors of routes, user's POI, cost, seasonal preference, preference for places visiting such information is combined, and the package results are mined for the users.

- Towards Time Sensitive Roads (TSR). Take just the number of routes you frequent. The time of arrival for POIs according to the recommendation better suits the correct time of visit. Representative Travel Path Keyword-Aware. Our KRTR offers the best representative routes in the Skyline.
- THE LOCANCY Recommendation and Prediction: the role of the location recommendation is to suggest new locations that the user has not previously visited while the task of location prediction is to predict the next location the user would likely visit.
- Check Similarity: The search for similarity routes under unique attributes is another important field. This research focused on finding routes by location, operation or keyword queries. A similarity function has been defined to measure how well a trajectory links the query places, taking into account space distance and order limitation alike. Searching for semblances in an operation trajectory database was studied.

V. TESTING

The purpose of the test is to find mistakes. Testing involves attempting to find all potential weaknesses or faults in a work product. It offers a means of testing the functionality of parts, sub-assemblies, assemblies or finished goods. It works with software to ensure that the device fulfils its specifications and the user's expectations and does not fail in an inappropriate manner. Various test styles are available. A particular test criterion is discussed in each test form.

Unit testing

Unit tests include developing test cases that verify the proper working of internal programme logic and the validity of programme inputs. All branches of decision and internal flow of code should be verified. It is the evaluation of individual application software units after a single unit has been completed before integration. This is a structural evaluation, focused on construction expertise and intrusive. Component-level unit testing conducts simple tests and tests a particular business process, programmed and/or device setup. The unit tests ensure that every single path of a business process is correct in accordance with the documented requirements.

Integration testing

Integrated software components are designed to test if they run as a single programme. The process of assessing must be conducted by scenarios, the fundamental data of the tickets or images are more concerned. The integration tests have proven to be correct and consistent, even if the components are satisfied individually, as demonstrated by the effective control unit testing. The integration tests are primarily intended to recognize problems caused by component combinations.

Functional test

Functional checks routinely show, according to the business and technological specifications, device documentation and user manual the available functions tested.

The following items are centered on functional testing:
Valid Input: valid input classes should be accepted.
Invalid Input: Invalid input classes must be dismissed.
Functions: functions that have been identified must be exercised.
Output: the application output classes identified should be exercised.
Systems/Procedures: Systems or procedures for interfacing have to be invoked.

Functional assessments are structured and planned for specifications, main roles or special cases. Additionally, systematic coverage of business process flows must be considered; for the testing of

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data areas, predefined processes and subsequent processes. Further tests are defined and the successful value of current tests calculated before functional testing is complete.

System Testing

Device testing ensures the full system fulfils the specifications. It measures a set-up to ensure well-known and predictable outcomes. The configuration-oriented system integration test is an example of system testing. Method descriptions and flows are the foundation of system testing, emphasizing previously guided process relations and integration points.

White Box Testing

White Box Testing is a test in which the tester has knowledge of or at least its intent, the internal functioning, structure and language of the programmer. That's a target. It is used to test areas from black boxes that cannot be reached.

Black Box Testing

Black Box Testing checks the programme without knowledge of the module's internal functioning, configuration or language. Black box tests like most other types of tests, like specifications or criteria documents, should be made from a definite source document. It is a test in which the test software is processed, so you can't "see it as a black box. The test provides feedback and answers to the result without considering how the programme works.

Unit Testing

Unit testing is typically done as part of the software life cycle integrated programming and testing phases, while coding and unit testing are usually carried out as two separate phases.

Test strategy and approach

Field tests are carried out manually and practical tests are written in depth.

Test objectives

- All field entries must be functional.
- Pages from the identified link must be activated.
- You should not delay entry screen, messages and answers.

Features to be tested

- Check the correct format for the entries.
- There should be no duplication of entries.
- The user is to be taken to the right page with all links.

Integration Testing

Software integration testing requires an improvement in integration testing on a common device with two or more integrated software modules for interface failures.

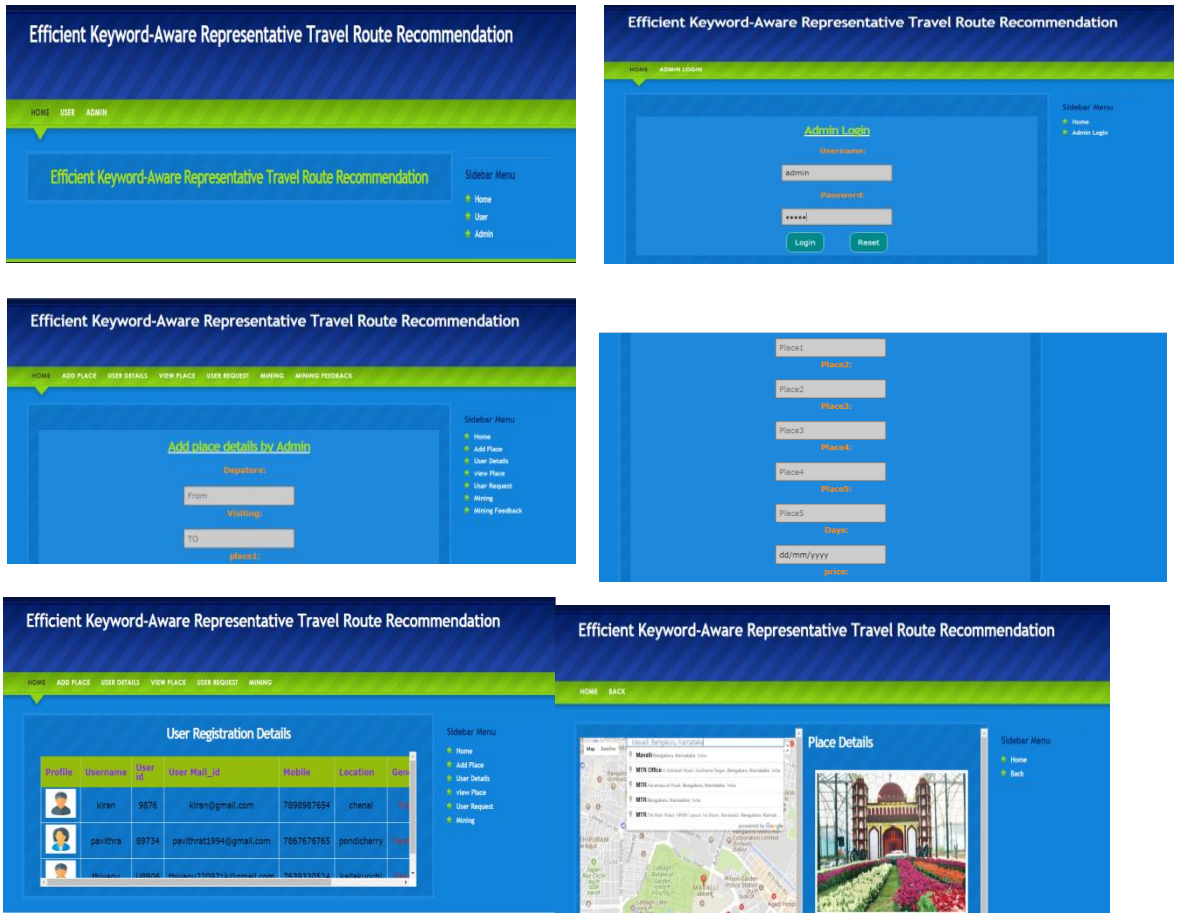
The integration test is to decide whether components and software applications, for example software systems components, or – one-stop – corporate software applications communicate error-free.

Acceptance Testing

Testing for user acceptance is critical in every project and calls for the end user to be significantly involved. The framework also ensures that the functional specifications are met.

ISSN: 2005-4262 IJGDC

VI. OUTPUT SCREENS



VI. CONCLUSION

In this paper, we study the travel route recommendation problem. We have developed a KRTR framework to suggest travel routes with a specific range and a set of user preference keywords. These travel routes are related to all or partial user preference keywords, and are recommended based on (i) the attractiveness of the POIs it passes, (ii) visiting the POIs at their corresponding proper arrival times, and (iii) the routes generated by influential users. We propose a novel keyword extraction module to identify the semantic meaning and match the measurement of routes, and have designed a route reconstruction algorithm to aggregate route segments into travel routes in accordance with query range and time period. We leverage score functions for the three aforementioned features and adapt the representative Skyline search instead of the traditional top-k recommendation system. The experiment results demonstrate that KRTR is able to retrieve travel routes that are interesting for users, and outperforms the baseline algorithms in terms of effectiveness and efficiency. Due to the real-time requirements for online systems, we aim to reduce the computation cost by recording repeated queries and to learn the approximate parameters automatically in the future.

REFERENCES

[1] Y. Arase, X. Xie, T. Hara, and S. Nishio. Mining people's trips from large scale geo-tagged photos. In Proceedings of the 18th ACM international conference on Multimedia, pages 133–142. ACM, 2010.

ISSN: 2005-4262 IJGDC

[2] X. Cao, L. Chen, G. Cong, and X. Xiao. Keyword-aware optimal route search. Proceedings of the VLDB Endowment, 5(11):1136–1147, 2012.

[3] X. Cao, G. Cong, and C. S. Jensen. Mining significant semantic locations from GPS data. Proceedings of the VLDB Endowment, 3(1-2):1009–1020, 2010.

[4] D. Chen, C. S. Ong, and L. Xie. Learning points and routes to recommend trajectories. In Proceedings of the 25th ACM International on Conference on Information and Knowledge Management, pages 2227–2232, 2016.

[5] Z. Chen, H. T. Shen, X. Zhou, Y. Zheng, and X. Xie. Searching trajectories by locations: an efficiency study. In Proceedings of the 2010 ACM SIGMOD International Conference on Management of data, pages 255–266, 2010.

[6] T. Cheng, H. W. Lauw, and S. Paparizos. Entity synonyms for structured web search. IEEE transactions on knowledge and data engineering, 24(10):1862–1875, 2012.

[7] M.-F. Chiang, Y.-H. Lin,W.-C. Peng, and P. S. Yu. Inferring distant time location in low-sampling-rate trajectories. In Proceedings of the 19th ACM SIGKDD international conference on Knowledge discovery and data mining, pages 1454–1457. ACM, 2013.

[8] H. Gao, J. Tang, and H. Liu. Exploring social-historical ties on location-based social networks. In ICWSM, 2012.

[9] Y. Ge, H. Xiong, A. Tuzhilin, K. Xiao, M. Gruteser, and M. Pazzani. An energy-efficient mobile recommender system. In Proceedings of the 16th ACM SIGKDD international conference on Knowledge discovery and data mining, pages 899–908, 2010.

[10] F. Giannotti, M. Nanni, F. Pinelli, and D. Pedreschi. Trajectory pattern mining. In Proceedings of the 13th ACM SIGKDD international conference on Knowledge discovery and data mining, pages 330–339, 2007.

[11] H.-P. Hsieh and C.-T. Li. Mining and planning time-aware routes from check-in data. In Proceedings of the 23rd ACM International Conference on Conference on Information and Knowledge Management, pages 481–490, 2014.

[12] H.-P. Hsieh, C.-T. Li, and S.-D. Lin. Exploiting large-scale checkin data to recommend time-sensitive routes. In Proceedings of the ACM SIGKDD International Workshop on Urban Computing, pages 55–62, 2012.

[13] W. T. Hsu, Y. T. Wen, L. Y. Wei, and W. C. Peng. Skyline travel routes: Exploring skyline for trip planning. In Mobile Data Management (MDM), 2014 IEEE 15th International Conference on, volume 2, pages 31–36, 2014.

[14] T. Kurashima, T. Iwata, G. Irie, and K. Fujimura. Travel route recommendation using geotags in photo sharing sites. In Proceedings of the 19th ACM international conference on Information and knowledge management, pages 579–588, 2010.

[15] T. Lee, Z. Wang, H. Wang, and S.-w. Hwang. Attribute extraction and scoring: A probabilistic approach. In Data Engineering (ICDE), 2013 IEEE 29th International Conference on, pages 194–205, 2013.

[16] X. Lin, Y. Yuan, Q. Zhang, and Y. Zhang. Selecting stars: The k most representative skyline operator. In Data Engineering. IEEE 23rd International Conference on, pages 86–95. IEEE, 2007.

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