Automatic Itinerary Voyage Suggestion Using SoNet in Big Data

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ABSTRACT-*Big Data benefit research in the provinces of medical care and voyage suggestions. This paper presents a personalized and an automatic itinerary voyage plan from both SoNet sites and society bestowed photos. Author topic model approach is used for finding homogeneity between assorted users. The spots of interest (SOI) are found from the shared photo's Geo-tag and text descriptions. Based on user's personalized SOI, a dynamic travel plan is recommended. Our evaluation is done on Flickr images and SoNet sites.*

Index Terms— SoNet, Author Topic model, SOI, Spots of Interest (SOI), Itinerary plan

1. INTRODUCTION

The automatic voyage suggestions is a province which needs more research . Communal media (eg., Flickr, Facebook etc.) provides a strong hand for this research. Furthermore, society bestowed photos with metadata record user's diurnal life and voyage encounters.

There are dual vital challenges for automatic voyage suggestions. Initially, spots of interest (SOI) should be dynamic. Some people may prefer mysterious and enthralling places, while others may prefer historical and general places.

Second, it is vital to suggest itinerary plan. Because, the locations and timings are new to the people when they visit the spot for the headmost time. For example the user is visiting San Francisco for the headmost time he may neither know the places of his interest nor their timings.

Existing studies on personalized voyage suggestion recommends the SOI by mining [1].The most famous method is Location based Collaborative Filtering (LCF) [2]. LCF it generally suffers from paucity problem. Voyage related data from the real domain is very "less", if the user has visited very less SOIs. However the existing studies haven't solved the two challenges. It still remains challenge for existing works to provide dynamic and scheduled voyage package suggestion.

To address the above challenges, we use Author Topic Collaborative Filtering (ATCF) [3].This method utilizes the user's topic preferences and overcomes the paucity problem.

The category and the topic preferences could be elicited simultaneously. The Spots Of Interest (SOI) are found from the shared photo's geo-tag and text descriptions.
The main contributions of this paper are concluded as

- Our work is personalized itinerary voyage plan rather than different route suggestions. We provide the user a unique and single itinerary plan with regard to his current location and Spots of Interest (SOI).
- We recommend dynamic, new, unique, interesting places to the users. We mine the various spots from the photo collections in SoNets and society bestowed photos.
- Our voyage recommendation will be available to all the passionate travellers. We provide an interactive way of satisfying each user with what they expect.

The carryover of this paper is methodized as follows. Related work is reviewed in Part 2. Part 3 brings up the layout of our system. Working is explained in Part 4. Then SoNet site construction is portrayed in elaborated form in Part 5. Data collection and processing is visualized in   Part 6. Voyage Suggestion site creation is seen in   Part 7. An automatic itinerary voyage plan construction is portrayed in elaborated in Part 8. Experiments and discussions are shown in Part 8. In Part 9 the conclusions are drawn.

2. RELATED WORK

Here we bring up aspects like (1) voyage recommendation on various communal media (2) Automatic itinerary voyage suggestion. We also pinpoint out variances between our creation and previous works.

GPS [2], [4], [5], [6], [15] Geo-tags, [7], [8], [9], [10], [11] and travelogues [12], [13] are the vital communal media utilized in suggestion. User-written travelogues provide genuine information. Geo-tagged photos based voyage planning works have fascinated a lot of attention [16].

Location based filtering [14] is a vital approach of personalized suggestion. However the location based CF face paucity problem.

The system enabled user to input personal performance in a user friendly manner [1]. However, the mining was not automated.

In latest years, the various attributes of a photo (e.g. time, cost, season) were mined but not used effectively enough.

To unravel these challenges, Author Topic based Filtering [3] is used. Second, we consider Spots Of Interest from user in an interactive manner.

In the former model, they utilized two models. Among them one is offline model which consists of travelogues and community contributed photos. Here the travelogues contains written descriptions of many places whereas community contributed photos consists of photos of places in different angles.

The other module is an online module which consists of photos posted in it. These photos are the of places of interest of the Flickr users. The user enters the input in user package. The user gives the user ID and the name of the place they wishes to visit as input. There is a package space called as Topical Package Space (TPS).

Here the first step is in an offline module, the TPS is mined from social media combining travelogues and community contributed photos. The sample representative tags, cost, time are represented in it. And the next step is mapping descriptions from travelogues related to the places of interest's route to the TPS for the route package mining.

The user package is mined from mapping tags of user's photo to TPS. Then the preferred routes are provided to route recommendation system. Then in route recommendation system, the preferred routes are provided to route ranking system.

In the route ranking system, the similar user's travel history is obtained and routes are ranked from most popular to least popular .

Then the ranked routes are given to route optimization system and the user is provided with many routes that can be followed for reaching the places that the user is interested to visit.

The major disadvantages of the former model are

- The data set used here is static and hence dynamic information is not obtained.
- Many routes are provided for the user and may lead to confusion for users.
- Meta data about the place is not provided.
- The static travel plans are provided.
- This was developed only for Flickr users and cannot be used by general users.
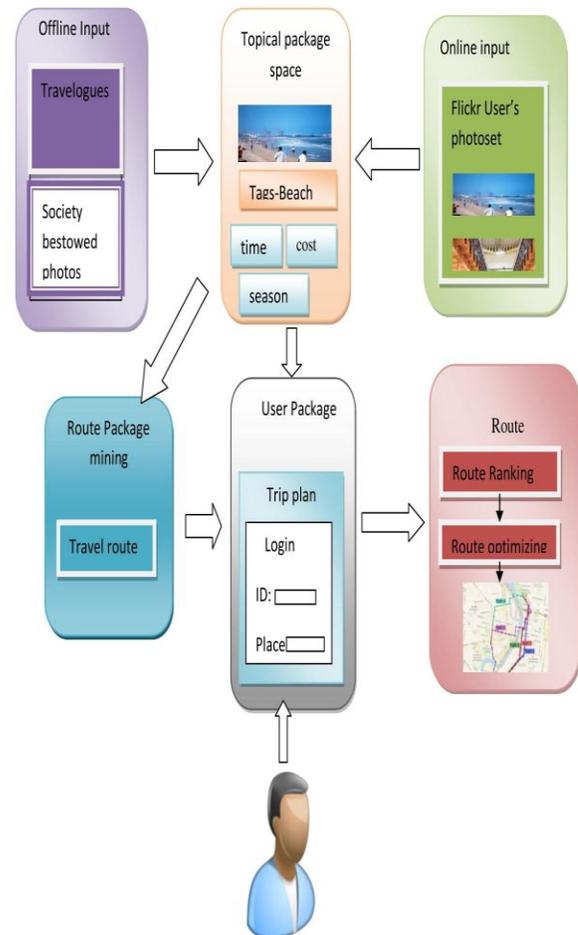
Fig 1: The former model consists of 2 modules-online and offline,Topical Package Space(TPS), Route package mining, User package, and Route recommendation system. The user enters the input in user package and obtains the output .

3. SYSTEM OVERVIEW

The system we proposed is a personalized itinerary voyage plan suggestion system which could automatically provide an itinerary plan based on user's interest and his current location.

The author topic space is used to take the topics from tags associated with the photos. They learn the category of topics and user travel topic preference simultaneously.

The system framework contains two online modules. The online module is a SoNet site which is created by us. In this module it focuses attention on the user picture. The user is registered and photos are uploaded along with geo-tag.

In second module, the photos from Flickr site are collected by admin and it is downloaded and then geo-tagging is applied to all these photos.

The basic inputs of framework are user's current location, Spots of Interest (SOI), duration, budget cost and type.
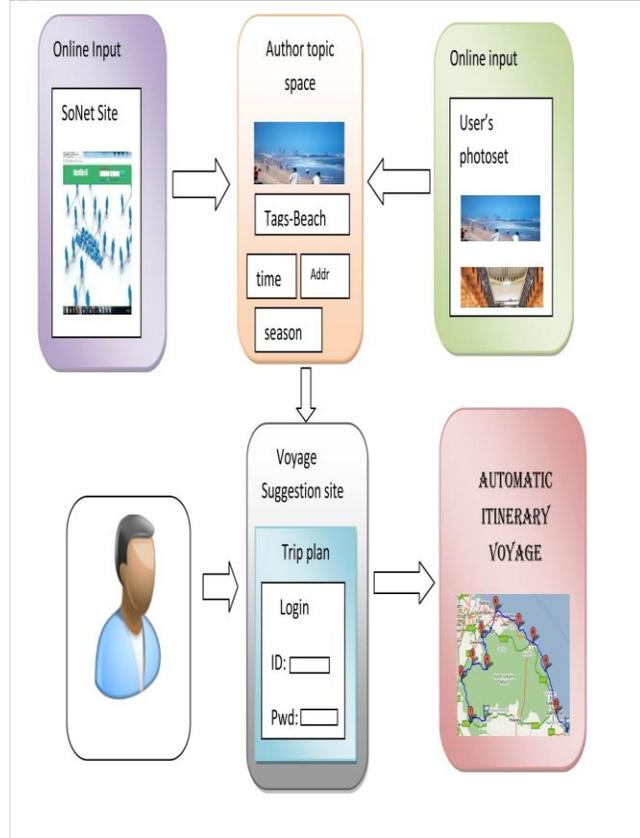
Fig 2: System framework above consists of two online modules and author topic space and voyage suggestion site and automatic Itinerary plan. The user enters his input in site and gets the Itinerary plan as output.

4. WORKING

The admin obtains the uploaded photo and apply Geo-Tag for the photo and downloads the Flickr images also. When the user logs into the travel recommendation site, they provide their location and Spots Of Interest (SOI).

The public photos are obtained and the web service identifies the metadata information like location (latitude, longitude) information and stores the information in the database.

Then the voyage plan based on user's Spots Of Interest (SOI) is developed. And along with that voyage plan with the route is provided as the output to the user.

The web service plays a critical role as it helps in collecting the various images from different social media. Access control is stage where the locations of the images are checked.
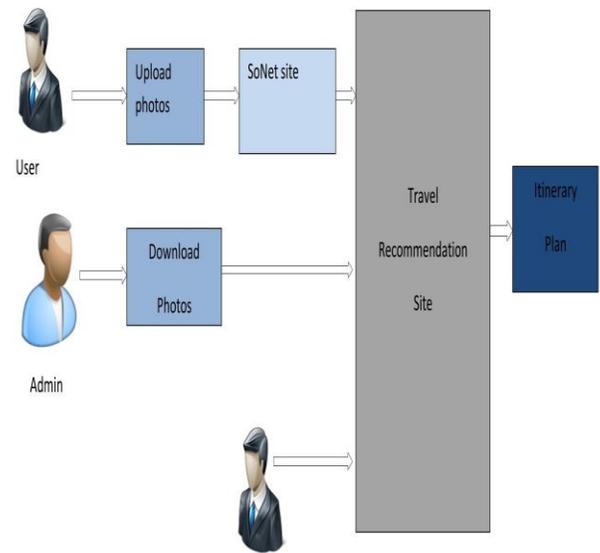
Fig 3: The above figure describes the flow of data and various steps involved in the itinerary recommendation.

5. SONET SITE

A SoNet site is created by the admin. It mostly concentrates on user's pictures. Users share photos in SoNet site.

The uploaded photos and their details are stored in the database. The other details like name, latitude, longitude, date and time of the uploaded photo are also stored in the database.

5.1 Sonet site construction:

JSP and Servlet are used for the origination of SoNet. A server is created with a specific IP address and a port number.

It acts as the main server for connecting with the SoNet site created by the admin.

The users are provided with a login id and a password to enter the particular server. The SoNet site created by the admin.

It will be one of the applications of the server and this can be entered by the users.
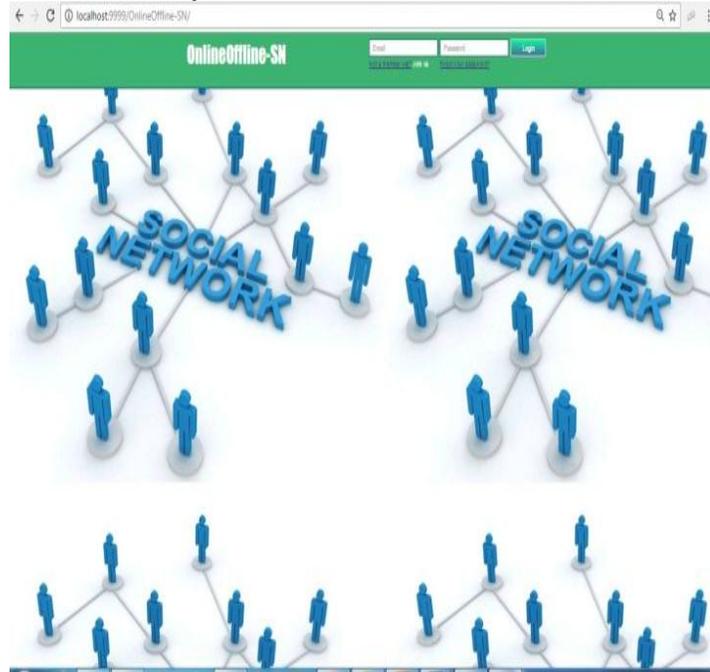

Fig 4: This figure shows the SoNet site.

5.2 Working of sonet site:

When the user opens the SoNet site, if he is a new user, he needs to register. For the registration purposes the private information are obtained and validated using JSP coding where <script> tag is used for on the spot validation which overcomes the problem of server called many times.

5.3 Database creation for sonet site:

A new database is created using MySQL and it is linked to the project using JDBC in servlet code. As the server is linked to the database a prompt of every action in the database is obtained.

5.4 Features of sonet site:

Every user has their own profile and they can update their profile, cover pictures. In addition the user can give requests and can also chat, post videos, images private or public. Relevant top trends are also presented to the user as specified by the Argo system [17].

5.5 User's image mining:

Once, the user posts an image the latitude, longitude are found out using Geo-tag extraction. The image URL and the tags are used to find the type of place. The date and instant of the photo taken are also updated in the database.

6. DATABASE COLLECTION AND PROCESSING

6.1 Data collection:

The admin creates another server for obtaining and downloading the photos from Flickr. The admin can use his login id and password to access the server. A separate data -base is created for the downloaded photos from Flickr and also for mapping the images from the SoNet site.

The admin downloads the photos from Flickr by specifying the city name. There can be restrictions also added by the admin like image size and specific topics by using code. As the server is connected to the database a prompt of every action in the database is obtained.

6.2 Data processing:

The images downloaded by the admin are stored in the database along with their city, tag and image uploaded date. The admin preprocesses the images from the SoNet site and it is mapped with Flickr images and updated in the database.

A table in the database shows the mapped content which is later used for extraction purposes. A main table in the database maintains all the images from both the online modules along with all attributes of the images with the SOI and their tag. The exact address of the place is added to the database using Google embedded in the coding.

The preprocessing section consists of 4 options. They are mapping, location, time and season. The mapping option is pressed the photos from both the SoNet and Flickr are stored in the main table in the database. When the location option is pressed the latitude and longitude of the Spot is obtained. When the time option is pressed the time of the photo uploaded is obtained. When the season option is pressed the perfect season when the spot can be visited is presented to the user.
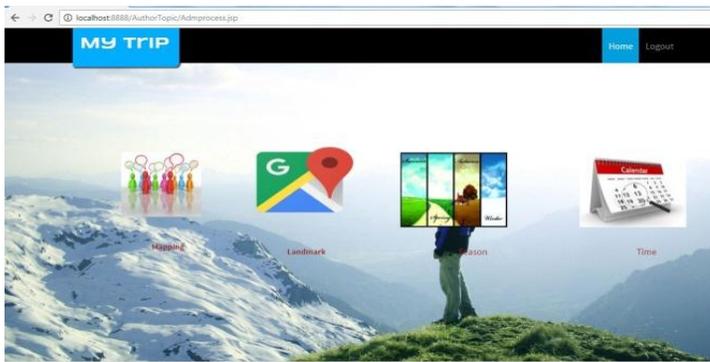
Fig 5: The options present in preprocessing.

7. VOYAGE SUGGESTION SITE

The new users must register themselves in the voyage suggestion site by providing their personal details which are validated. A new database is created for maintaining the information of the users. The server and the database are connected and it is used for accessing the site by the users.

7.1 working:

Once the users are logged in they provide their current location, Spots Of Interest (SOI), budget cost, duration. The latitude and the longitude of the location provided by the user is found out and his SOI are matched with the data - base. The various SOIs are obtained and using logic the nearby SOI is extracted which is used for providing the itinerary plan to the user.

8. AUTOMATIC ITINERARY VOYAGE PLAN

Based on the user's personalized SOI which has been extracted and according to the user's duration, budget cost the sequence of SOI are generated as a route.

The itinerary plan is generated by the server along with the route, specific time to be spent by the user in the various SOIs recommended to them.

9. RECOMMENDATION   EVALUATION VISUALIZATION

In this system when the user logs in and enters his location and SOI in the website, the system mine SOI from the author topic space and provide the itinerary plan along with details.
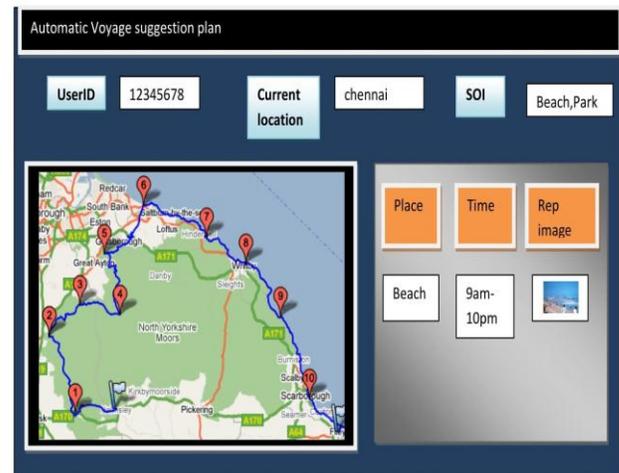

Fig 6: The above figure shows the evaluated output of our paper and in the top left the user name or id is specified, in middle the current location is shown and in the right the SOI is specified and in the left bottom the plan is shown and in the right the itinerary plan is shown with all the details.

10. CONCLUSION

In our paper, we recommend an automatic itinerary voyage recommendation system by learning author topic model from huge communal media - SoNet. The advantage of our paper is 1) the method describes provision of itinerary voyage plan for all users based on their Spots Of Interest (SOI). 2) We suggest SOI along with voyage sequence allowing for user's preferences all at once. The optimized sequential route is given for all users. However this paper has some limitations. It was very hard to give precise details about hotel information and transportation is not included, which provides added convenience for users. We plan to utilize many communal media (eg. weather forecast, transportation etc) also for more distributions of SOI and context aware suggestion.

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