Ontology Based Personalized Mobile Search Engine (OBPMSE)
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Abstract— we propose an “Ontology Based Personalized Search Engine” (OBPMSE) that captures the user’s preferences in the form of concept by mining their click-through data. Due to the importance of location information in mobile search, OBPMSE classifies these concepts into context concepts & location concepts. In addition, user’s location (optimized by GPS) is used to supplement the location concepts in OBPMSE.

Key words: Ontology; Personalized; Click-through

I. INTRODUCTION

A major problem in mobile search is that the interactions between the users and search engines are limited by the small form factors of the mobile devices. As a result, mobile users tend to submit shorter, hence, more ambiguous queries compared to their web search counterparts. In order to return highly relevant results to the users, mobile search engines must be able to profile the user’s interests and personalize the search results according to the user’s profiles.

A practical approach to capturing a user’s interests for personalization is to analyze the user’s click-through data, we are developing a search engine personalization method based on users’ concept preferences and showed that it is more effective than methods that are based on page preferences. However, most of the previous work assumed that all concepts are of the same type. Observing the need for different types of concepts, we present in this paper a Ontology Based Personalized Mobile Search Engine (OBPMSE) which represents different types of concepts in different ontologies. In particular, recognizing the importance of location information in mobile search, we separate concepts into location concepts and content concepts.

We are implementing a Ontology Based Personalized Mobile Search Engine (OBPMSE) that captures the user’s preferences in the form of concepts by mining their click through data. Search results need to be provided according to user profile and user interest so that highly relevant search data is provided to the user. In order to do this, user profiles need to be maintained.

In our mobile search engine process the user request are handled by the client who is submitted to the personalized mobile search engine server. Server replies with the results and users click-through data for obtaining the user’s unique preferences. The personalized mobile search engine clients keep records of the specific user’s profile and maintain user’s privacy. Location information is important for searching data.

An important requirement for mobile search engine is to be able to understand the user’s needs, and deliver highly relevant information to the users. Our proposed framework is capable of combining a user’s GPS (Global Positioning System) locations and location preferences into the personalization process. Observing the need for different types of concepts, we present in this paper an Ontology Based Personalized Mobile Search Engine (OBPMSE) which represents different types of concepts in different Ontologies.

To incorporate context information revealed by user mobility, we also take into account the visited physical allocations of users in the PMSE. Since this information can be conveniently obtained by GPS devices, it is hence referred to as GPS locations. GPS locations play an important role in mobile web search. To the best of our knowledge, our paper is the first to propose a personalization framework that utilizes a user’s content preferences and location preferences as well as the GPS locations in personalizing search results.

We propose a realistic design for PMSE by adopting the meta search approach which relies on one of the commercial search engines, such as Google, Yahoo, or Bing, to perform an actual search. The client is responsible for receiving the user’s requests, submitting the requests to the PMSE server, displaying the returned results, and collecting his/her click-throughs in order to derive his/her personal preferences. The PMSE server, on the other hand, is responsible for handling heavy tasks such as forwarding there quests to a commercial search engine, as well as training and re-ranking of search results before they are returned to the client. The user profiles for specific users are stored on the PMSE clients, thus preserving privacy to the users. PMSE has been prototyped with PMSE clients on the Google Android platform and the PMSE server on a PC server to validate the proposed ideas.

II. CLASSIFICATION OF CONCEPTS (CONTENT & LOCATION)

For example, a user who is planning to visit Japan may issue the query “hotel,” and click on the search results about hotels in Japan. From the click through of the query “hotel,” OBPMSE can learn the user’s content preference (e.g., “room rate” and “facilities”) and location preferences (“Japan”). Accordingly, OBPMSE will favor results that into location concepts and content concepts. The introduction of location preferences offers OBPMSE an additional dimension for capturing a user’s interest and an opportunity to enhance search quality for users.

For example, a user who wishes to visit Tourists places in India may submit query as Tourists places. From that query keyword “Tourists place”, OBPMSE understand user’s content preference (“India”). That all results will show again if user submit “Tourist”. If user is searching for Shopping mall whose location is Delhi? This gives location of all shopping malls nearby Delhi to the user. The introduction of location preferences offers OBPMSE an additional dimension for capturing a user’s interest and an opportunity to enhance search quality for users. Our proposed framework is capable of combining a user’s GPS locations and location preferences into the personalization process. In this paper, we propose a realistic design for OBPMSE by adopting the Meta search approach which replies on one of the commercial search engines, such as Google, Yahoo, or Bing, to perform an actual search. The
client is responsible for receiving the user’s requests, submitting the requests to the OBPMSE server, displaying the returned results, and collecting his/her click-throughs in order to derive his/her personal preferences. The OBPMSE server, on the other hand, is responsible for handling heavy tasks such as forwarding the requests to a commercial search engine, as well as training and re-ranking of search results before they are returned to the client. The user profiles for specific users are stored on the OBPMSE clients, thus preserving privacy to the users. With the amount of data doubling each year, more data is gathered and data mining is becoming an increasingly important tool to transform this data into information. Long process of research and product development evolved data mining.

III. EXISTING SYSTEM

- User has to manually enter the location preferences.
- Server manually retrieves a set of locations.
- User profile is exposed.
- It mainly concentrates on the human and the document available on the web is also human reliable one. Nowadays the web is not only used by humans but also the software agents.
- This reality case brought the usage of the ontology based search on web.
- Most of the traditional web users are not sure about their query for which they need the search engine to provide the results.
- Hence the normal keyword based search will not be in a position to provide the accurate search results to the user. In this situation we need a proven search engine.

A. Click - Through Data

Click-through data have been used in determining the users’ preferences on their search results. Table 1, showing an example click-through data for the query “hotel” composes of the search results and the ones that the user clicked on (bolded search results in Table 3.1). As shown, cis are the content concepts and lis are the location concepts extracted from the corresponding results.

<table>
<thead>
<tr>
<th>Doc</th>
<th>Search Results</th>
<th>Ci</th>
<th>Li</th>
</tr>
</thead>
<tbody>
<tr>
<td>d1</td>
<td>Hotels.com</td>
<td>room rate</td>
<td>International</td>
</tr>
<tr>
<td>d2</td>
<td>JapanHotel.net</td>
<td>reservation, room rate</td>
<td>Japan</td>
</tr>
<tr>
<td>d3</td>
<td>Hotel Wiki</td>
<td>accommodati on</td>
<td>International</td>
</tr>
<tr>
<td>d4</td>
<td>US Hotel Guides</td>
<td>map, room rate</td>
<td>USA, California</td>
</tr>
<tr>
<td>d5</td>
<td>Booking.com</td>
<td>Online reservation</td>
<td>USA</td>
</tr>
<tr>
<td>d6</td>
<td>JAL Hotels</td>
<td>Meeting room</td>
<td>Japan</td>
</tr>
<tr>
<td>d7</td>
<td>Shinjuku Prince</td>
<td>Facility</td>
<td>Japan, Shinjuku</td>
</tr>
<tr>
<td>d8</td>
<td>Discount Hotels</td>
<td>discount rate</td>
<td>International</td>
</tr>
</tbody>
</table>

Table 3.1: Click-through data for query “hotel”

Showed that incorporating user behaviour data can significantly improve ordering of top results in real web search setting. Examine alternatives for incorporating feedback into the ranking process and explore the contributions of user feedback compared to other common web search features. We report results of a large scale evaluation over 3,000 queries and 12 million user interactions with a popular web search engine. It is shown that incorporating implicit feedback can augment other features, improving the accuracy of a competitive web search ranking algorithms by as much as 31% relative to the original performance. Evaluating user preferences of web search results is crucial for search engine development, deployment, and maintenance. This presents a real world study of modelling the behaviour of web search users to predict web search result preferences. Accurate modelling and interpretation of user behaviour has important applications to ranking, click spam detection, web search personalization, and other tasks. Our key insight to improving robustness of interpreting implicit feedback is to model query-dependent deviations from the expected “noisy” user behaviour. We show that our model of click through interpretation improves prediction accuracy over state-of-the-art click through methods. It generalizes the approach to model user behaviour beyond click through, which results in higher preference prediction accuracy than models based on click through information alone. We report results of a large-scale experimental evaluation that show substantial improvements over published implicit feedback interpretation methods. Geographic web search engines allow users to constrain and order search results in an intuitive manner by focusing a query on a particular geographic region. Geographic search technology, also called local search, has recently received significant interest from major search engine companies. Academic research in this area has focused primarily on techniques for extracting geographic knowledge from the web. In this paper, the problem of efficient query processing is studied in scalable geographic search engines. Query processing is a major bottleneck in standard web search engines, and the main reason for the thousands of machines used by the major engines. Geographic search engine query processing is different in that it requires a combination of text and spatial data processing techniques. This paper propose several algorithms for efficient query processing in geographic search engines, integrate them into an existing web search query processor and evaluate them on large sets of real data and query traces.

Geography is becoming increasingly important in web search. Search engines can often return better results to users by analyzing features such as user location or geographic terms in web pages and user queries. This is also of great commercial value as it enables location specific advertising and improved search for local businesses.

B. Difference between Existing System and Our System

1) Most existing location-based search systems, require users to manually define their location preferences (with latitude-longitude pairs or text form) or to manually prepare a set of location sensitive topics. OBPMSE profiles both of the user’s content and location preferences in the ontology based user profiles, which are automatically learned from the click-through and GPS data without requiring extra efforts from the user.
2) We propose and implement a new and realistic design for OBPMSE. To train the user profiles quickly and efficiently, our design forwards user requests to the PMSE server to handle the training and re-ranking processes.

3) Existing works on personalization do not address the issues of privacy preservation. OBPMSE addresses this issue by controlling the amount of information in the client’s user profile being exposed to the OBPMSE server using two privacy parameters, which can control privacy smoothly, while maintaining good ranking quality.

IV. PROPOSED SYSTEM

- User’s location is set by GPS
- User preferences are set by mining the user’s click-through data
- Personalized search is provided by combining user’s current location and personal preferences
- As the amount of Web information grows rapidly, Search engines must be able to retrieve information according to the user’s preference.
- Search Engine (OBPMSE) that captures user’s interest and preferences in the form of concepts by mining search results and their click through. OBPMSE profile the user’s interest and personalized the search results according to user’s profile.

OBPMSE classifies these concepts into content concepts and location concepts. In addition, users’ locations (positioned by GPS) are used to supplement the location concepts in OBPMSE.

A. System Architecture

B. Modules to implement

1) User Registration and Login:
Every user will be registering themselves in this application and once they are registered they can use their credentials to login into this application. Only registered user can login into this application.

2) Interest Feeds:
In this module, we will be asking the interest of the person which we will be using for the showcasing the suggested data.

3) Admin Module:
Admin will be using his credentials and once he logs in he has the right to creates sales ad and along with location based on different aspect and themes.

4) Search Module:
User has the option to search any personalized information and the search result will be based on LBS

5) Location based Services:
Here user has the facility to search out any fields which are in need for e.g. Nearby ATMs, Restaurants etc. It will be based on location and nearby details only will be shown to the user.

6) Emergency Module
In this some predefined numbers would be saved in the list and these numbers will be text once the user feels that they are in danger situation. So it helps to notify other users in there contact list with just one click.

7) Navigation
It helps to get into any tourist place or any location with help of map integration provided in your project. We will be using Google Maps for this.
V. SYSTEM DESIGN

Fig. 5.1 Use Case Diagram

Fig. 5.2 Class Diagram

Fig. 5.3: Data Flow Diagram

Fig. 5.4: Block Diagram
VI. CONCLUSION

The Ontology Based Personalized Mobile Search Engine is the interface among the users and search engine is restricted to the small form factors of mobile devices. The confidentiality parameters make possible smooth control of privacy experience for maintaining good ranking superiority.

REFERENCES


