Relevant Web Searching using Optimized User Profiling
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Abstract — General search engines are integral for retrieving information from web. However the typical search engines provide results according to the demands of the masses instead of individual interests. Optimized web search can be used for tuning the traditional IR system for specific information retrieval. This is an attempt to improve personalized web search. User profiling is mapping out those users who have searched a specific content of information and that information is retrieved for further searching inputs of that user. We aim to propose a system for constructing an Enhanced User Profile by aggregating users browsing history and enhancing it using domain knowledge. This Enhanced User Profile can be used for increasing the accuracy of personalized web search making it more specific. We have used the Enhanced User Profile for suggesting related, relevant web pages to the user. This system is expected to show that the suggested web pages provided to the user using Enhanced User Profile are much more specific than those obtained by using a general User Profile.

Keywords- User Profiling, Web Personalization, Web Navigation, search engine, Domain Knowledge

I. INTRODUCTION

Web search engines have made a lot of contribution in searching information from the web. They help in searching and fetching information on the web quick. But it can be improved a lot. Current web search engines do not consider individual needs of user and serve each user with same results. It is difficult for a user to let search engine know what that user’s interest is. Generic search engines are follows the "same results different user" model which is not adaptable to individual users. When users give some query, same results will be returned by a typical search engine to every user, no matter what user’s interest is. This might not be correct information for some users purely based on their interests.

This paper proposes architecture for the construction and enhancement of a user profile and use of background knowledge to enhance it. This optimized User Profile will help the user to retrieve focused information. It can be used for suggesting relevant web pages to the user based on his interest and background knowledge.

II. PROPOSED SYSTEM

We propose a framework for personalized web search which considers individual's interest into mind and enhances the traditional web search by suggesting the relevant pages of his/her interest. We have proposed a simple and efficient model which ensures good suggestions as well as promises for effective and relevant information retrieval. In addition to this, we have implemented the proposed framework for suggesting relevant web pages to the user. Framework for Personalized search engine consists of user modeling based on user past browsing history or application he/she is using etc. And then use this context to make the web search more personalized. This section presents different approaches and the related work done in the field of Personalized Web search.

The main advantage is that different search results can be provided depending upon the choice and information needs of users. It exploits user information and search context to learning in which sense a query refer.

Modules in our system are as given below:

- Optimized Web Search Module- Basically all other modules come under this main module which aims at transferring information
- User Modeling Module- Information crawling is carried out by this module
- Domain Knowledge Modeling Module- Interests of the users.
- Enhanced User Profile Module- Storing the information related to the interests of the users in a database which is used to access for future search purposes.

III. SYSTEM METHODOLOGY

Following steps explain the process of preparing the Enhanced User Profile. Perform the following steps for each document (URL) in user profile:

- Select the URL from the User Profile.
IV. SYSTEM ARCHITECTURE

Flow of our system is diagrammatically shown below:

![Diagram of System Architecture](image)

Figure 1. Architecture

V. MATHEMATICAL MODEL

5.1 Set Theory

System Description:
Let S be the System where,
System S = {Input, Output, Success, Failure}

- Input: - Query is given by user as input to the system.
- Output: - Accurate URLs are returned to the user in the sense query refers.
- Success Conditions: - Successfully returns accurate URLs to the user by using enhanced user profile.
- Failure Conditions: - Fails to return URLs according to the user’s interest.
5.2 Constraints

- Input query is converted into a structured format at the system side.
- Blank characters are not accepted.
- Only standard alphanumeric characters are accepted

5.3 Space Complexity

The space complexity depends upon the storage space used in the database. In our system database is required to store user’s browsing history and user profiles, so if the queries are lengthy enough to make the system take its time to process it, the space complexity increases, which in turn makes it difficult for the system to provide specific search topics. So the space complexity is \( O(n^2) \).

5.4 Time Complexity

The time complexity depends upon the time required for specific set of inputs to work in the procedure given in the system to produce the output. In our system the best case time complexity can be given as \( O(n) \) when the expected URLs are returned by system to user in the first search. For average case time complexity: \( O(n^2) \) when the user query is not in structured format and it is converted to structural format.

VI. CONCLUSION

This system deals with optimized user profiling to provide individual interest related search results. Depending upon the stored browsing history database, the system dynamically updates the user profile based on the previous searches made by the user and thus builds an optimized user profile. This optimized user profile is then used for suggesting relevant web pages to the user. This system is expected to show that the performance using optimized user profile is better than those which are obtained through the general user profile. We aim at improving the efficiency of web searching, coping to the personal interest of the users by applying re-ranking of the web pages retrieved by search engines on the basis of user priorities. Furthermore we intend to apply collaborative filtering for personalized web search in our system.

REFERENCES