



# Personalized web search to promote web navigation usability

<sup>1</sup>Ramya. S <sup>2</sup>Pavithra. G <sup>3</sup>Jaya Mabel Rani. A

<sup>1,2</sup>UG Scholars, <sup>3</sup>Assistant professor, Department of Computer Science and Engineering  
Jeppiaar Maamallan Institute of Technology, Sriperumpudur, Tamil Nadu, India

<sup>1</sup>ramyasubramaniyan95@gmail.com <sup>2</sup>pavithragnanam@gmail.com <sup>3</sup>jayamabelrani@yahoo.com

**Abstract :** Today search engines play an important role in extracting information from the world wide web (WWW). As the informations available in the web growing rapidly, it became difficult for the users to access information that are relevant to their need. User wants to access the information based upon his/her particular needs. User retrieve relevant information using search engine. But sometimes search engine return results containing many pages which are useless for the user. This paper propose a new type of search engine for personalized web search in order to provide better search results. To enhance the relevance of search results, personalized search engine form user profiles which capture the user preferences by click through and using these preferences find out the actual goal of the input query. Based on both input query and user profile, search results are ranked. This paper propose effective personalized web page recommendation system which makes use of web usage mining, click through and semantic reasoning.

**Keywords:** personalized search engine, clickthrough, semantic reasoning, web usage mining.

## 1. INTRODUCTION

Due to explosive growth of information over the internet, World Wide Web has huge repository of information. The information served to the internet users through web is enormous. Some information provided to end users are useful while some others are of no use to them. Most of the search engine provide same results for all the users. However different users needs different informations for the same query. Thus it become difficult for the user to access relevant information to their particular needs. User submit queries to search engine to represent their information needs. But, sometimes queries may not exactly represent what user is expecting. Different users may want to get information on different aspects when they submit the same query. For example, when the query "apple" is given to a search engine, some users want to search for a laptop or iphone or any product from Apple,

while some others want to search for apple recipies or about apple fruit. Therefore, it is necessary to identify different user search goals. We capture user search goals to disambiguate the user query according to user interest. Information need is a user's particular desire to obtain information to satisfy his/her need. User search goals can be considered as the clusters of information needs for the given query. This is to enhance the relevance of search results. Web page recommendation recommends user with relevant web page based on the user's web navigation behaviour and helps web users by providing relevant web pages. Web usage mining plays an important role in web personalization. Before getting deep into the main concept, lets understand some supportive concepts. These are the concepts which will be used in the whole paper:

**Web mining:** It is an application of data mining technique to find patterns from the web. There are three techniques of web mining.

**Web usage mining:** It is the process to discover what user really wants and what the user is searching for on the internet. It is completely based on user interest whether the user is looking for images or text or video or audio.

**Web structure mining:** It is used for extracting document structure and patterns from hyperlinks in the web.

**Web content mining:** It is the process of extracting useful information from the contents of web documents such as html documents.

**Web page recommendation:** Web page ecommendation system automatically recommends web pages to user based on the user's previous navigation behaviour. It is



the process of recommending or suggesting the web page to the user based on their interest.

**Click through:** Click through data is important for tracking user action on a search engine. When the user clicks on a search result, the associated content together with the clicked links are stored in the user's click through data.

## 2. LITERATURE SURVEY

B.Mobasher [1] in 2007 proposed the web personalization as an application of data mining. This paper proposed recommendation algorithm for combining the discovered knowledge with user's activity in a website to provide personalized recommendation to a user. User interests and need changes over time. So identifying these changes is the key challenge for web personalization. The solution to this challenge is the creation of next generation of more effective and useful web personalization system. S. T. T. Nguyen [3] in 2009 proposed a new web usage mining process to find sequential patterns in web usage data. This is for predicting the navigation behavior for web personalization. Thi Thanh Nguyen [4] proposed personalized web page recommendation based on domain knowledge, ontology and semantic. There will be semantic web usage knowledge which an integration of both domain knowledge and web usage knowledge. This model produces significantly higher performances than the previous web usage mining and web page recommendation techniques. Nazneen [5] proposed semantic enhanced web page recommendation system which enable the system to automatically discover web usage knowledge and domain knowledge. This system generate effective web page recommendation. Semantic enhanced approaches are effective for the cold start problem [1]. Arundhati patil [9] in 2015 proposed a personalized recommendation system which provides semantic applications with personalized services. This system predicts the next web page request of user by querying the knowledge. Anoj kumar [7] proposed a system to improve the efficiency of generic search engine.

## 3. PROBLEM STATEMENT

The problem in the existing system is that, there was no personalization in web search. Now-a-day search engines always return top search results to the user for the given input query (Fig.2). So this system uses user profile to enhance the personalization.

## 4. PROPOSED MODEL

### ➤ Creating user profile

User profile is a collection of information about the user of the system. It contain information related to the user search goals and interests. In Existing, profile is provided and maintained by the user. In proposed system, the system constructs and updates the profile automatically.

### ➤ Search query

After a successful login, user is directed to search engine interface. When the user submit a query to the search engine, it compare the query with user profile. If the query is not searched before by the user, then it perform normal search and return search results.

### ➤ Click through process

When the user clicks on a search result, the clicked result together with its associated content are stored in the user's profile. Click through data is important for tracking user actions on a search engine. When the user enter a query to the search engine, it compare the query with user profile. If the query is already searched by the user, then it cluster the relevant web pages by k-mean clustering algorithm which match the user search goal.

### ➤ Updating user profile

When the user submit a query, the search results are obtained from the back end of the search engine. The search results are clustered and re-ranked according to the user's profile updated by the user's previous search activities. Personalized ranking is an attempt to provide exactly what user wants at the top and most relevant web pages are suggested below for user convenience.

## 5. SYSTEM DESIGN

This paper proposes a model for better personalized web page recommendation based on click through, semantic reasoning and web usage mining. It is a frame work for integrating semantic reasoning with personalization process based on user profile.

The first step of the proposed system is to create a profile for web user. After a successful login, it directed the user to the search engine interface. User search the world wide web using query and the relevant web pages are returned from the World Wide Web. User have to explore those web-links or web pages and click the link which the user wants. Using click through technique, the user can submit the click through data to their profile. Click through data contains the query and the user interested web link. When next time user search by the same query, it will directly



search the user profile and the user interested web page is recommended to the user along with web page related to the user search goal using semantic reasoning. Stemmer algorithm is used to remove the stopping words so that it can be matched with other stemmed word. Then the most

similar pair of content nodes are clustered using k-mean algorithm. The resulting clustered pages are then re-ranked based on user profile. The Proposed architecture is illustrated in (Fig.1).

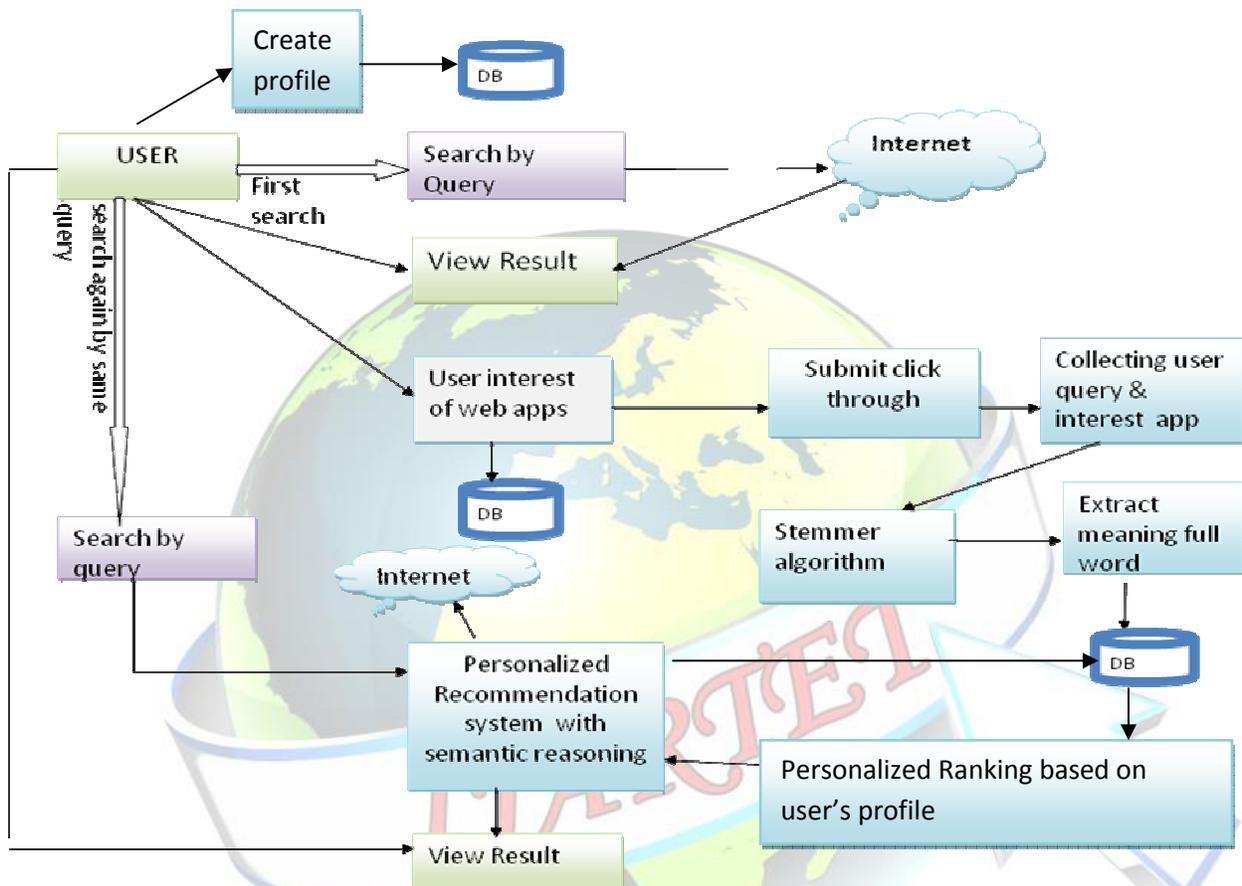


Fig.1 Proposed Architecture

## 6. IMPLEMENTATION



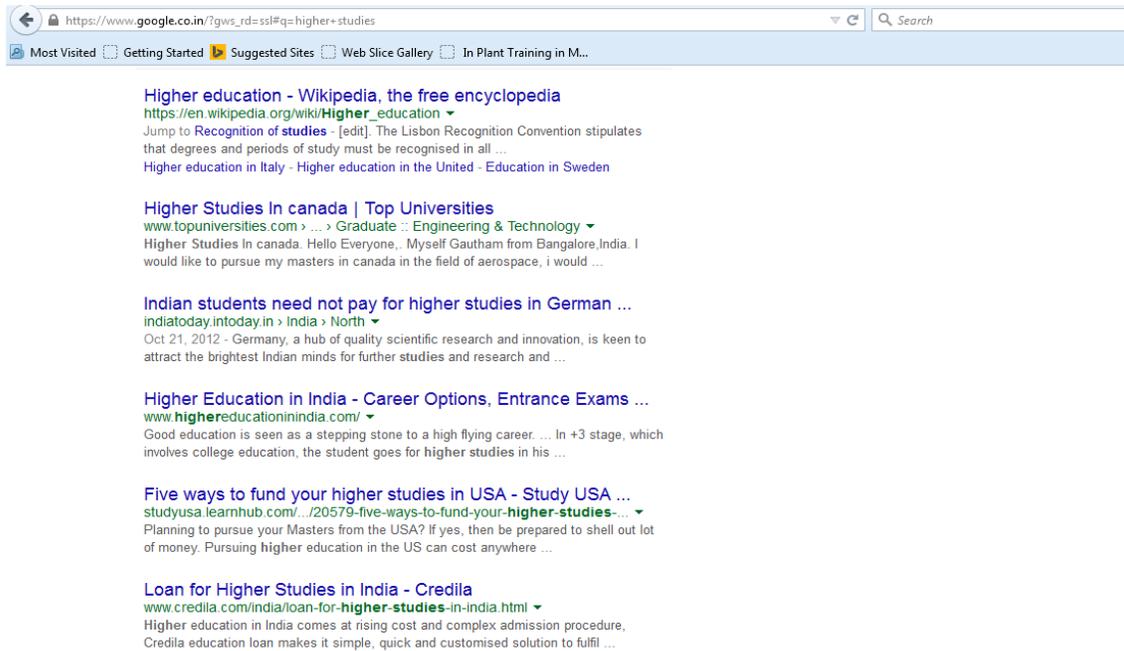
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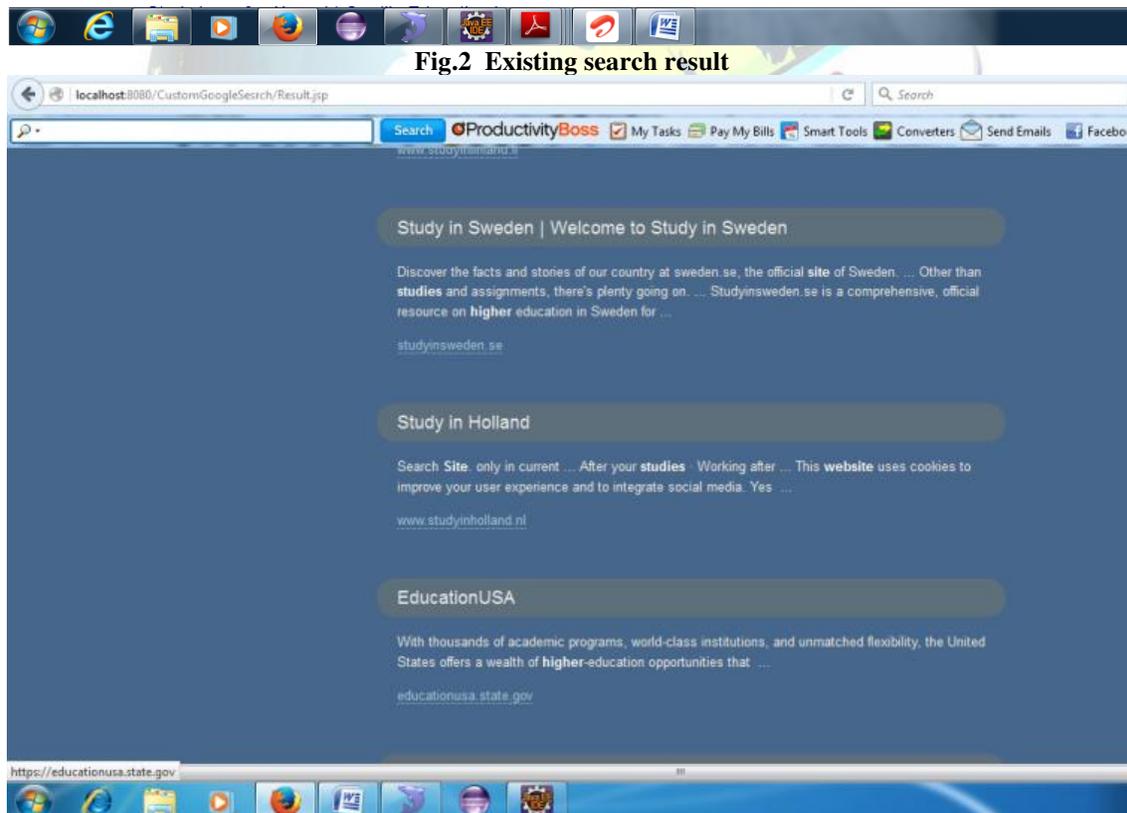
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**Fig.2 Existing search result**



**Fig.3 Before click of EducationUSA**

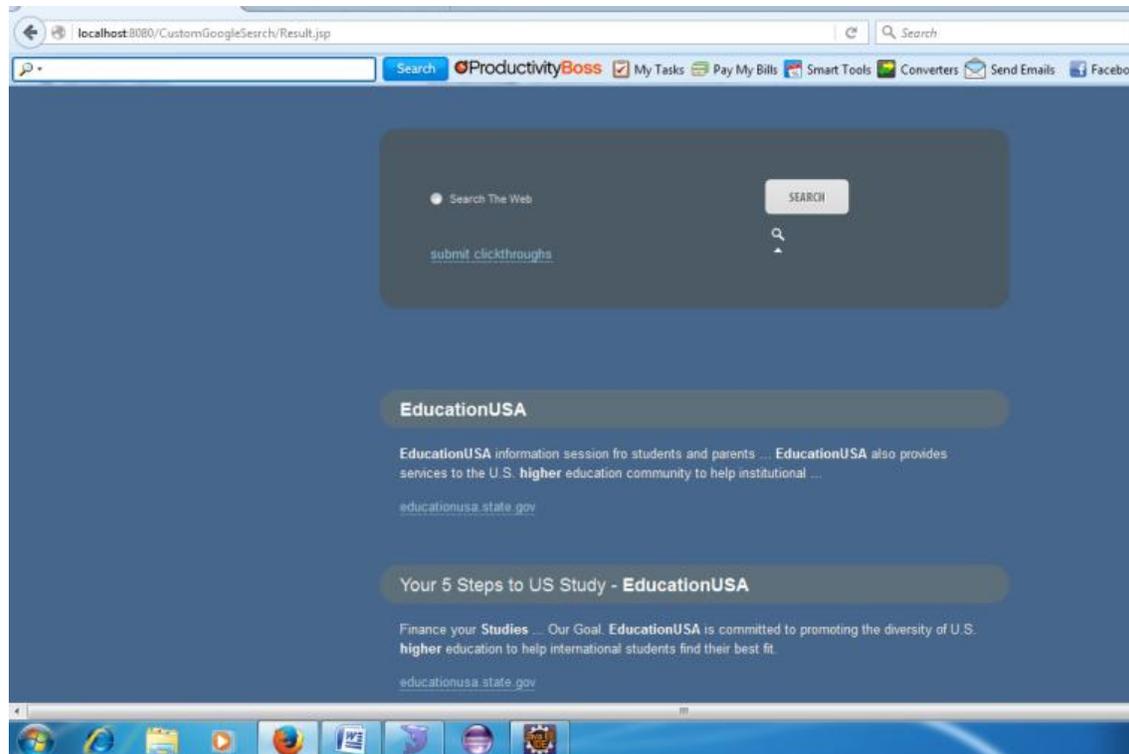


Fig.4 Search by same query

For example, if a user submit a query “higher studies” to search engine with the intention to search about higher education in USA, it will return huge number of web links (Fig. 2). Among them many of the links are useless for the user. Every time user have to explore and extract the link which he/she needs. It always return same results for all users. But in our proposed system, when the user search by the same query, it is compared with the user profile and web link which the user wants is returned at the top and

## 7. CONCLUSION

This paper proposes a new method to infer user search goals for a given query by using an accurate user profile. For the given small query to search engine, it searches the world wide web to provide exactly relevant information to user based on user’s search history. Our model proposes a framework that will help to enhance the performance of search engine and worked well and return the information

which is exactly needed by the user. It has been implemented and result is analyzed in certain parameters and we found that the personalized web search is far better than the normal search and is implemented in search engine to provide better search results to user.

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