Enhanced Ad Personalization Using Search Engine Optimization

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Abstract: *Personalization playing a key role in social media and recommender systems worldwide provides significant improvements in user experience by adapting it to inferred user preferences. This paper aims on displaying shopping results based on Search Engine Optimization, Personalization and developing several concept-based user profiling methods where most existing user profiling strategies are based on objects that users are interested in both positive and negative preferences. Experimental results show that profiles which capture and utilize both of the user's positive and negative preferences perform the best. An important result from the experiments is that, the profiles with negative preferences can increase the separation between similar and dissimilar queries. The purpose of the study is to provide insights of how different customers perceive online personalized advertising in terms of products or interest in viewing similar products in the recent market trends for targeting their end users.*

Keywords: Search Engine Optimization, Ad Personalization , Personalized Advertising, Personalized Query Suggestion

1. Introduction

Personalized advertising (formerly known as interest-based advertising) enables advertisers to reach users based on their interests and demographics (e.g., "tech enthusiasts"). Personalized advertising should help monetize your website more efficiently, increase value for advertisers, and provide a better experience for users. Most commercial search engines return roughly the same results for the same query, regardless of the user's real interest. Since queries submitted to search engines tend to be short and ambiguous, they are not likely to be able to express the user's precise needs.

2. Literature Review

The first paper is titled as "Deriving Concept Based User Profiles From Search Engine Logs" by Kenneth Wai-Ting Leung, Dik Lun Lee. This paper is aimed at developing an accurate user profile that can greatly improve a search engine's performance by identifying the information needs for individual users. The user profiling strategies were evaluated and compared with the personalized query clustering method.

The second paper is titled as "Personalized Online Advertising Effectiveness: The Interplay Of What, When, And Where" by Alexander Bleier, Maik Eisenbeiss. This paper focuses on the fact that Firms track consumers' shopping behaviors in their online stores, to provide individually personalized banners through a method called retargeting. We use data from two large-scale field experiments and two lab experiments to show that personalization can substantially enhance banner effectiveness, yet its impact hinges on its interplay with timing and placement factors. First, personalization increases click-through especially at an early information state of the purchase decision process.

The third paper is titled as "A Personalized Group-based Recommendation Approach For Web Search In E-learning" by Mohammad Mustaneer Rahman And Nor Aniza Abdullah. This paper's primary objective is to focus on students' point of view of the unprecedented growth of the Internet, its pervasive accessibility, and ease of use have increased students' dependencies on the Web for quick search and retrieval of learning resources. However, current search engines tend to rely on the correct keywords. This excludes other characteristics, such as the individual's learning capability and readiness for specific learning materials. As a result, the same set of search-keywords delivers the same search results.

3. Proposed System

The key aspects of the proposed system includes: Displaying personalized ads based on the results obtained through querying user search results, Ads based on the products related to the keywords in search query are displayed in another webpage with the exact query match of the keyword entered. The other similar products associated with the keywords entered by the user are displayed in a separate section within the same page. Thereby ensuring this addition promotes personalized ad targeting and also gives the user to choose products that are displayed based on his/her preferences respectively. The entire user profiling strategy is query-oriented, meaning that a profile is created for each of the user's queries. The user profiling strategies are evaluated and compared with our previously proposed personalized query clustering method.
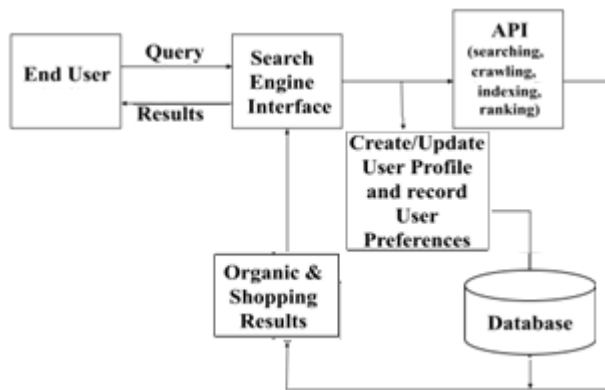
Here is how the implementation works:

1) The end user clicks on his/her preferred product to be searched in the input search bar.
2) An AJAX request is placed behind the scenes to create a user profile and simultaneously it also starts gathering information for similar related products in the database.
3) The querying on the database happens using the Java services. Services are implemented using Java Servlets. Requests from the browser are intercepted using the servlet filter and accordingly the request is being transferred to the associated URL mapping.
4) The SERP API is used to fetch the actual real-time results and mine them to create individual user profiles. All the product related information like image, hyperlink are rendered as responses through this API.
5) Query results are returned to the UI request in the form of an array and the same is being rendered in the UI page.
6) The end user now sees the actual item that he/she intended to search for and also gets a list of ads that match the search query.

4. Future Scope

Notifying a product whenever it's available in the market again can be implemented to the current system.

Based on Iris recognition, the search preferences can be streamlined. Based on the pupil movement, we can identify if the provided search results are within the user's preference.

We can also provide the users with the list of 'frequently bought together products' as an attractive combo ad.

5. Conclusion

This paper aims at enhancing the user experience in the event of searching by providing personalized search results and thereby showing advertisements based on the keywords used and displaying relevant ads with products that are frequently bought together which saves the user's time with just a click on ad banner.

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