Chapter 9  
User Query Enhancement for Behavioral Targeting  

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ABSTRACT  

Ad targeting has been receiving more and more attention in the online publishing world, where advertisers want their ads to be seen by potential consumers at the right time. This chapter aims to address the major challenges with user queries in the context of behavioral targeting advertising by proposing a user intent representation strategy and a query enhancement mechanism. The authors focus on investigating the intent based user classification performance and the effectiveness of user segmentation under a topic model that helps explore semantic relation between user queries in behavioral targeting. In addition, the authors propose an alternative to define user’s search intent for the evaluation purpose, in the case that the dataset is sanitized.  

INTRODUCTION  

Online advertising started out as online banner ads back in 1994 and has turned into a multi-billion dollar market that continues growing. It has been the fastest growing advertising medium in history. There have been studies on ad targeting technologies which try to understand characteristics of online users and deliver them ads based on their interests. For example, the most basic targeting approach is to show ads based on the geographic information of the users, such as the physical location of the user. This approach is effective for advertisers who want to target a specific location, such as countries, cities or a radius around a location. One of the main reasons one may use geographic targeting is simply because one only offers products or services within specific areas. Geographic targeting also offers advertisers the ability to target their ads to users based on other parameters such as user connection speed, Internet Service Provider (ISP), domain name, and so on. For example, advertisers can deliver a competitive ad based on a user’s domain name.  

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Similarly, demographic targeting approach targets ads to people based on the demographic information of the users, such as gender, income, age and more. For example, if you are a skateboard advertiser and know that skateboard users tend to be young males, you can set your campaign to show mostly to that audience. One of the advantages of demographic targeting is that advertisers can select a small amount of users based on demographics rather than displaying ads to all the users. However, this approach could also miss out potential buyers who do not fall into a specific demographic category. For example, a grandmother can also be a skateboard buyer if she wants to give a skateboard to her grandson as a gift.

Another three commonly used targeting methods are contextual targeting, keywords targeting, and retargeting. Contextual targeting is an advertising model where advertisements are targeted to the content of a webpage. In this model, the advertisement in a webpage is usually relevant to the content of that webpage. For instance, if a user is viewing a webpage pertaining to travel and that webpage uses contextual advertising, the user may see banner or pop-up ads for travel-related companies, such as flights dealers, hotels, and so on. Google AdSense was a major contextual advertising network and a large part of Google’s profit is from its share of the contextual advertisements displayed on the websites running the AdSense program that searches for the relevant ads using Google’s search algorithm. Contextual ads will be displayed based on the keywords after a contextual advertising system scans the text of a webpage.

On the other hand, keywords-targeted advertisements are displayed on the search results pages based on the keywords in the queries issued in search engines. Google AdWords is one of the most well-known forms of keywords targeting, where Google displays search ads based on the word(s) typed into its search box. One of the most widely used strategies is to bid on keywords by geography, allowing advertisers to maximize click-through-rate (CTR). For instance, one could adjust bids by geographic areas to get more exposure in areas that perform well. Furthermore, the keyword targeted campaigns are usually charged on a cost-per-click (CPC) basis, where advertisers are only charged when a user clicks on their ad and is taken to their landing page. The final CPC rate is calculated based on the advertiser’s maximum CPC bid as well as the search engine’s internal system of scoring keyword ads. Therefore, it is crucial to select accurate and appropriate keywords relevant to the product or service in the ad and set the maximum CPC bid (the most the advertiser is willing to pay per click).

Retargeting works by keeping track of users who visit a company’s website and displaying ads from that company encouraging them to buy its products while they are visiting other sites online. The idea behind retargeting is that, only a small amount of users will convert on the first visit to a website. Retargeting was introduced in an effort to help advertisers allocate their advertising budget efficiently to their targeted audience and hence increase the effectiveness of online advertising. Yahoo! Retargeting, for example, is an online advertising platform that tracks users who have browsed a publisher’s website before and tries to bring them back by displaying the ads the next time the user is on a Yahoo network. As a powerful and effective targeting strategy, retargeting focuses the advertising spending on users who are already familiar with the product or have recently shown interest. By displaying ads to the users multiple times after they leave the website, retargeting increases the chances that they will come back again.

Unlike contextual targeting and keywords targeting, behavioral targeting does not primarily rely on the contextual information. Instead, behavioral targeting helps advertisers reach the most relevant users by learning from user’s online behavior, such as user’s search queries and web browsing history. With the rapidly expanding breadth of Internet usage data collected by marketers, accurately predicting user’s online intent underlying their search queries has played an important role in satisfying user’s online experience. It helps advertisement campaign to target more relevant users, content publishers to recommend web content, search engines to return personalized results, and many other service providers to

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