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December 06, 2016

## BROAD MATCH CPC ADJUSTMENT

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### Recommended Citation

Lewis, Justin and James, Gavin, "BROAD MATCH CPC ADJUSTMENT", Technical Disclosure Commons, (December 06, 2016)  
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## **BROAD MATCH CPC ADJUSTMENT**

### ABSTRACT

A broad match cost per click (CPC) adjustment system can be used to calculate an overall impression bid based on impression bids from a keyword and its broad matched keywords. The system determines broad match keywords corresponding to an original keyword specified by an advertiser. The system further displays the broad match keywords to the advertiser. The system then identifies and differentiates between the impression bids for the original keyword and each of the broad matched keywords determined from the original keyword. The system further generates an overall impression bid based on impression bids from the broad matched keywords and from the original keyword.

### PROBLEM STATEMENT

Large advertisers do not use broad match in search keyword auctions as they instead prefer to use exact or narrow match terms for their most important keywords. One of the big problems with broad match is that there is no way to know which search terms will actually match. There are two distinct models to apply broad match to keywords. In one model, broad match terms are not distinguished and their click through rate (CTR) is predicted based purely on past performance of the advertisement on the broad matched keyword. Many times, this model leads advertiser to overpay and causes a large disruption in the keyword market resulting in ads with lower CTRs. A second model accounts for broad match as a component of the CTR prediction which is factored into an effective cost per thousand impressions (ECPM). With

increasing usage of displaying the broad match terms to advertisers, the CTR delta will gradually drift to zero because advertisers will be cognizant of the broad match terms and so they will become intentional. The adjusted CTR (second) model not only suffers from an overbidding component, but it also suffers because the adjusted CTR does not reflect a user's actual CTR. Hence, both of the auction models for broad match result in systematic overbidding, thereby increasing costs for advertisers. In doing so, these models reduce the click through rate for the advertisements because overbidding will cause the ads to be shown for less relevant search terms. Also, the advertisers who want to bid specifically on that term will be competing with overbid broad match keywords. An advanced method and system for increasing the efficiency and visibility of the broad match auctions is described.

### DETAILED DESCRIPTION

The systems and techniques described in this disclosure relate to a broad match CPC adjustment system that calculates an overall impression bid based on impression bids from a keyword and its broad matched keywords. The system can be implemented for use in an Internet, an intranet, or another client and server environment. The system can be implemented locally on a client device or implemented across a client device and server environment. The client device can be any electronic device such as a computer (e.g., desktop, laptop, tablet), an Internet of things device (e.g., smart home hub, set-top box, smart object, connected car), an entertainment device (e.g., game console, remote control), a personal mobile device (e.g., mobile phone, tablet computer, handheld electronic device), etc.

Fig. 1 illustrates an example method 100 to for targeting and artificially adjusting broad match keywords or search terms to account for proportional differences between original search terms and added broad matched terms. The method 100 can be performed by the broad match CPC adjustment system.

The system determines (110) broad match keywords corresponding to an original keyword specified by an advertiser. The system applies a broad match or similar keyword matching mechanism to a set of constraints specified by the advertiser. Broad match is used to automatically run advertisements on relevant variations of keywords, even if these terms are not in the original keyword lists. Broad match keywords include synonyms, singular and plural forms, possible misspellings, stemmings (e.g., floor and flooring), related searches, and other relevant variations.

The system further displays (120) the broad match keywords to the advertiser. The broad match keywords can be displayed to the advertiser on a display screen of a client device associated with the advertiser. The system displays the broad match keywords to the advertiser during the auction process or during the initial contract between the advertiser and the advertising company. The system can display the broad match keywords in any format as specified by the advertiser. Below is an example of a display of the original keyword along with the broad match keywords to the advertiser.

| Original Keyword   | Broad Match Keywords   |
|--------------------|--|
| low-carb diet plan | carb-free foods<br>low-carb diets<br>low calorie recipes<br>Mediterranean diet plans<br>low-carbohydrate dietary program |

The system identifies and differentiates (130) between the impression bids for each of the broad matched keywords from the original keyword. The system then generates (140) an overall impression bid based on impression bids from each of the the broad matched keywords and impression bids from the original keyword. After the broad match impressions are calculated, the system generates a corresponding overall bid to match the original bid with bids for broad match keywords. The system analyzes the broad match keywords' recent impression history for calculating the median winning impression bid value. This is compared to the median winning impression bid value of the original keyword and the original bid value of the original keyword. The system then uses a simple formula to compute a new bid value for this broad matched keywords. For example:

$$\langle \text{median winning bid ratio} \rangle = (\langle \text{broadmatch median winning bid} \rangle / \langle \text{original median winning bid} \rangle)$$

$$\langle \text{new bid} \rangle = \min(\langle \text{original bid} \rangle * \langle \text{median winning bid ratio} \rangle, \langle \text{original bid} \rangle)$$

This above formula results in the broad match keywords with lower median winning bids having similar chances of winning the bid as the original bid on the original search term. The system can use a number of different formulas to change the bids between broad match and original search keywords. This simple formula can be expanded to take into account a variety of other factors as well. For example, the formula can take into account other parameters, e.g., advertisements "quality score" which is a combination of a variety of factors including an estimated click through rate based on the ad's past performance and the user's past behaviors. By considering the quality score, an advertisement's bid might be adjusted to take into account a lower quality

score (due to the broad match term being less precise) while still being competitive. This model also ensures that the advertiser never bids more than his/her original bid. Further, because advertisers can see which broad match terms are targeted, this will enable the largest highest-bidding advertisers to bid accurately with broad match terms.

FIG. 2 is a block diagram of an exemplary environment that shows components of a system for implementing the techniques described in this disclosure. The environment includes client devices 210, servers 230, and a network 240. The network 240 connects client devices 210 to servers 230. Client device 210 is previously described. Client device 210 may be capable of requesting and receiving data/communications over network 240. Example client devices 210 are computers (e.g., desktop, laptop, tablet), mobile communication devices, (e.g. smartphone, tablet computing device), set-top boxes, game-consoles, embedded systems, and other devices 210' that can send and receive data/communications over network 240. Client device 210 may execute an application, such as a web browser 212 or 214 or a native application 216. Web applications 213 and 215 may be displayed via a web browser 212 or 214. Server 230 may be a web server capable of sending, receiving and storing web pages 232. Web page(s) 232 may be stored on or accessible via server 230. Web page(s) 232 may be associated with web application 213 or 215 and accessed using a web browser, e.g., 212. When accessed, webpage(s) 232 may be transmitted and displayed on a client device, e.g., 210 or 210'. Resources 218 and 218' are resources available to the client device 210 and/or applications thereon, or server(s) 230 and/or web page(s) accessible therefrom, respectively. Resources 218' may be, for example, memory or storage resources; a text, image, video, audio, JavaScript, CSS, or other file or object; or other

relevant resources. Network 240 may be any network or combination of networks that can carry data communication.

The subject matter described in this disclosure can be implemented in software and/or hardware (for example, computers, circuits, or processors). The subject matter can be implemented on a single device or across multiple devices (for example, a client device and a server device). Devices implementing the subject matter can be connected through a wired and/or wireless network. Such devices can receive inputs from a user (for example, from a mouse, keyboard, or touchscreen) and produce an output to a user (for example, through a display). Specific examples disclosed are provided for illustrative purposes and do not limit the scope of the disclosure.

DRAWINGS

100

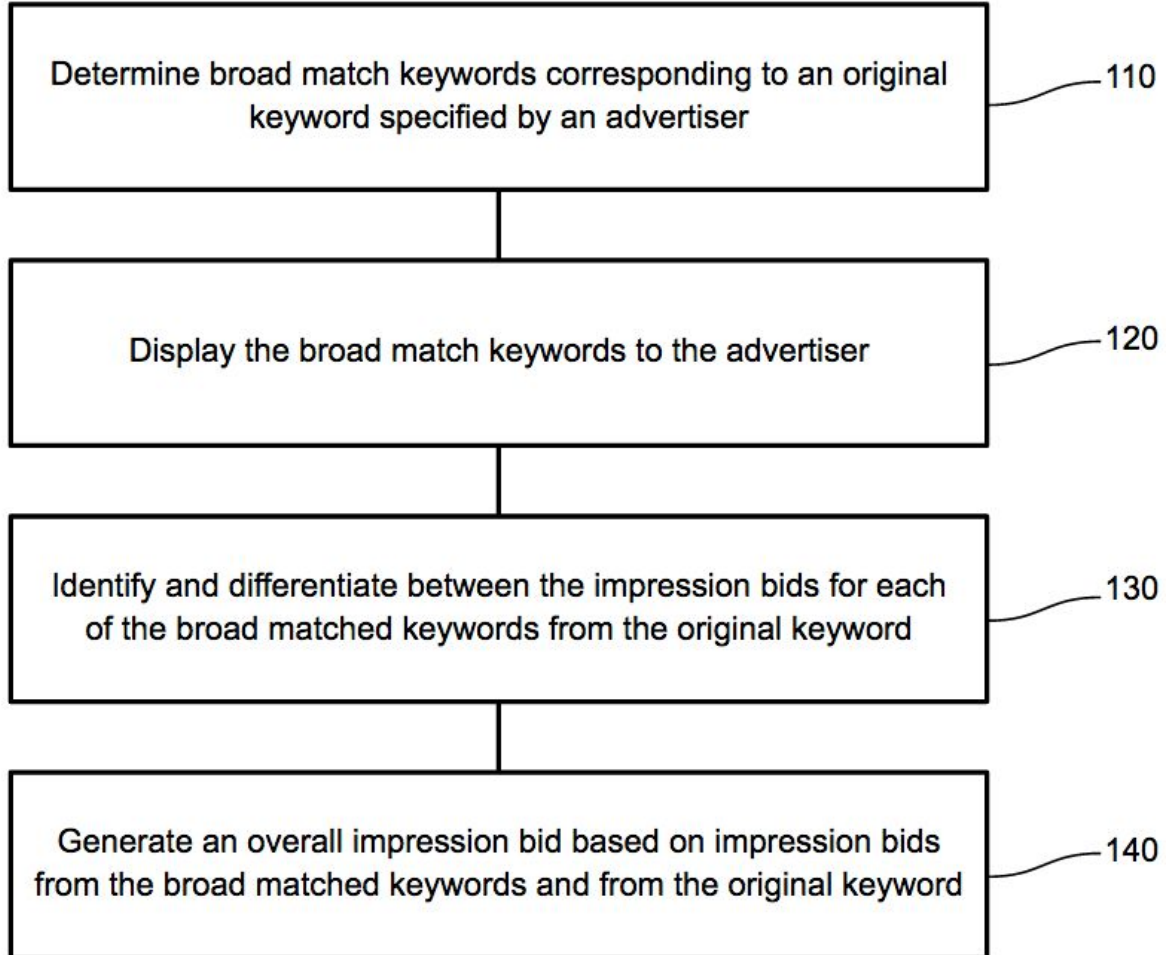


Fig. 1



200

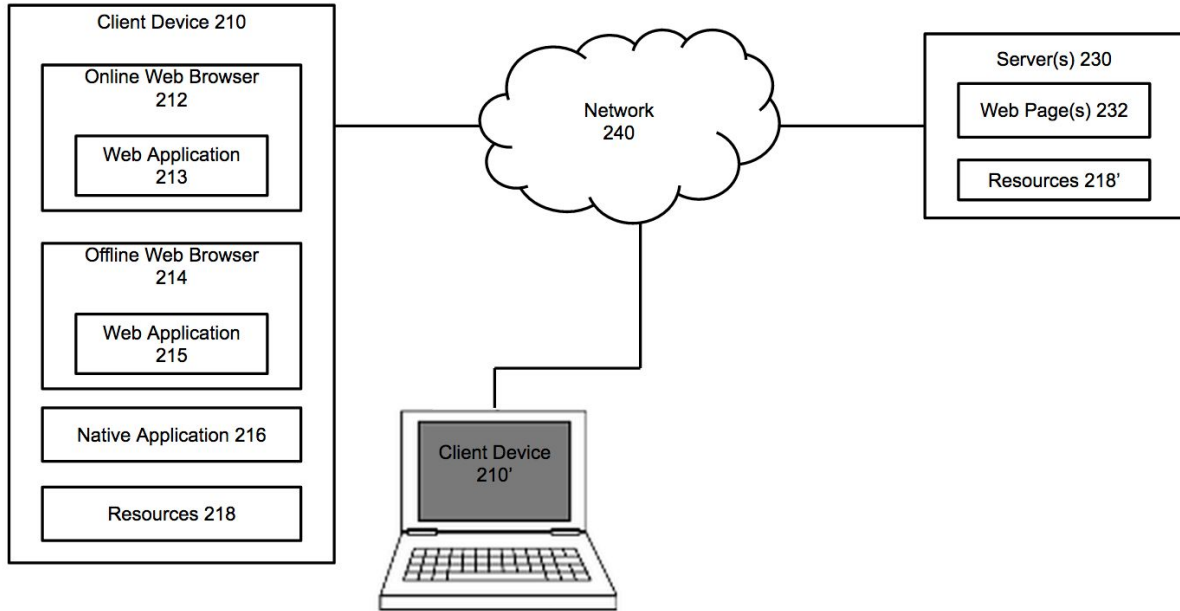


Fig. 2