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# Method For Media Content Selection Based On Historical Presence Duration

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# METHOD FOR MEDIA CONTENT SELECTION BASED ON HISTORICAL PRESENCE DURATION


## ABSTRACT

A method is disclosed for media content selection based on historical presence duration. The method includes running a MapReduce model over ad visibility logs and building a key for each ad impression opportunity. For each key, a model is built that describes the visibility distribution over time. The MapReduce calculates the percentage of impressions that pass the visibility time threshold and stores it in a data store. At ad serving time the advertising service determines the minimum view-through rate time threshold for each candidate advertisement. The method then involves calculating the likelihood that the user will view the advertisement long enough. This factor is then included into the view-through rate prediction, which is factored into the auction bid, and the media content with the best likelihood of being viewed on an application or web page wins the auction.


## BACKGROUND

Video advertisements are a growing market for advertising technology companies. Videos provide much higher effective cost per mille (eCPM) than traditional display advertisements, although they require much higher bandwidth and computational power. In particular, video advertisements are also much more effective and lucrative in situations where users actually watch them. For instance, there are video advertising formats, which present the user with a skip button and only charge the advertiser if the user watches the entire advertisement without skipping or if the user watches a certain time into the video without skipping. These types of advertisements provide much higher eCPM than regular video advertisements.

While video advertisements provide revenue, they are not always an optimal choice because a user may only be present on a webpage for a short period of time. Some pages may frequently be used as navigation pages, for example, the user may enter the page and then within a short period of time navigates away to another area of the site or they may immediately go to find content elsewhere on the page and scroll the advertisement off-screen. Such pages may be prime candidates for display advertisements, but not for video advertisements, which perform better when a user watches them for a longer period.

Further, displaying a video advertisement in a less appropriate page has a number of drawbacks. Firstly, it provides a poorer user experience because the page will load slowly and the user will be presented with a second or two of audio and/or video that they do not care about. Secondly, video advertisements are far more data intensive and use additional data unnecessarily. Both of these issues are even bigger factors when it comes to mobile devices that are often limited by lower bandwidth connections and data caps. Users would be subject to a page that loads slower, and would also use up a portion of their data cap unnecessarily. Unnecessary loading also has a negative effect on battery life. These issues are even worse in emerging markets, where older devices and slower cell networks are more prevalent.

Thirdly, there is a negative effect on the advertiser and the advertising technology company, in that the metrics for the videos are reduced. Unnecessary serving of video advertisements in situations where very few impressions are recorded lowers the overall rate for impressions being recorded, therefore lowering eCPM. There is also no revenue from the advertisement in such cases. Additionally, there is a negative effect on the publisher, who does not receive any revenue from the advertisement, and may also lose users due to the poorer user experience.

## DESCRIPTION

A method of predicting the likely duration a user is present on a webpage and views a particular advertisement impression, and to identify or exclude particular advertisement candidates for that advertisement impression is disclosed. The method for media content selection is based on historic user presence duration on the web page, as illustrated in FIG. 1. The method includes running a MapReduce model over ad visibility logs, at block 102. The ad logs, which may include historic rates of visibility for a particular advertisement impression on a particular web page, may be determined using ad visibility technology. The ad visibility technology can determine if a user is present on a webpage and what part of the web page the user is looking at and may also be used to identify how much of the advertisement the user sees.

The MapReduce model builds a key for each ad impression opportunity based on the web page the impression appears on as well as the size and shape of the advertisement for each ad impression opportunity, at block 104. Further, the MapReduce builds a model for each key, at block 106. The model describes the visibility distribution over time using a simple quadratic regression, for instance. In another aspect, a distribution table may be generated for the number of impressions with a user presence longer than the predetermined times, which represent advertisement visibility thresholds. For example, a specific ad impression might have a table that shows 1500 impressions over 5 seconds, 1200 impressions over 10 seconds, 800 impressions over 30 seconds, of a total 1600 impressions.

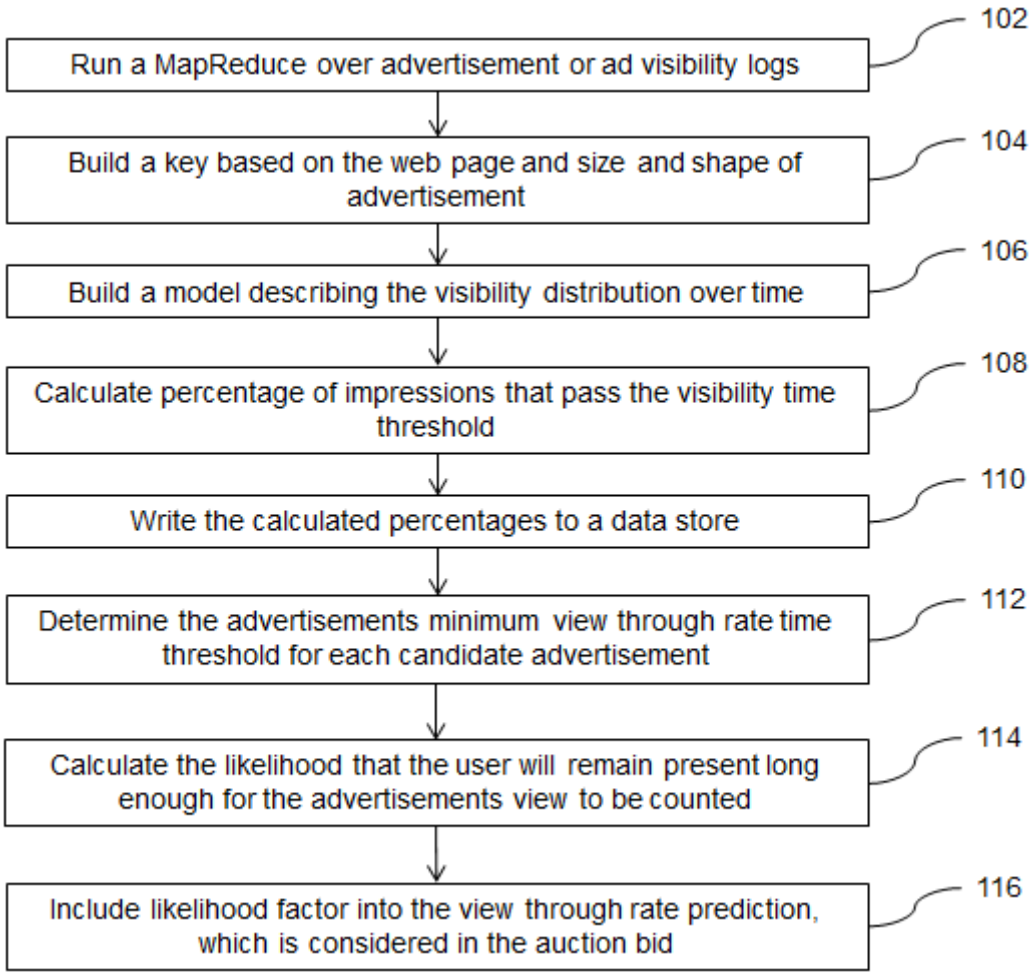


FIG. 1: Method for media content selection based on historical presence duration

Using the visibility distributions, the MapReduce can calculate the percentage of impressions that pass the visibility time threshold, at block 108. The calculated percentages are then written to a data store for later recall, at block 110.

At ad serving time, the advertising service determines the minimum view-through rate time threshold for each candidate advertisement, at block 112. This threshold may be provided as input to the model previously generated for the specific impression opportunity to calculate the likelihood that the user will remain present long enough for the advertisements view to be counted, at block 114. This likelihood factor is then included into the view-through rate

prediction, which is considered in the auction bid, at block 116. The media content whose duration nearly matches the amount of time a user might spend on an application or web page wins the auction.

For example, a particular advertisement on a webpage may only have a 30 second user presence rate of 50% because within the first 30 seconds of navigating to the webpage, the user either scrolls down, or navigates to more content. In this example, advertisements which require 30 seconds of visibility to count as a view will have their view-through rates adjusted by 50%. This means that these ads will be significantly less likely to win an auction than a shorter video ad or a display ad.

In a further application of this technology, this same method can be used to weight-specific webpage and impression opportunity contributions to a view-through rate calculation. This can be done by scoring each impression as the reciprocal of the ad impressions presences rate instead of 1. The advantage of this is that the view-through rate can then be calculated independently of the webpage in which the advertisement is shown.

The method described herein is specifically applicable to GVN out-stream videos, which are video ads embedded in 3rd party webpages. This method is also useful for media streaming application in-stream video ads, which are pre-rolls in front of videos when the video player is embedded in a 3rd party site. For example, users are more likely to scroll past an embedded video player on a social networking website, where the video player is only one item in the feed, rather than on the website, where the video is the core content of the webpage.

In one aspect, the method may be used for ranking a plurality of media candidates for advertisements. Further, the method may be used to compare two different web pages and determine and analyze whether a video ad may be shown and how long it could optimally be.

Therefore, certain web pages, such as navigational pages would have shorter or no video ads, while pages users spend lots of time on would have longer ones.