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Using Content Provider Signals to Select Individual Content Items for a Content Item Campaign

In a networked environment, such as the Internet, first-party content providers can provide information to user devices for presentation on resources, such as webpages, mobile applications, documents, other applications, and/or other resources. Additional third-party content can also be provided by third-party content providers for presentation on the user devices, together with the information from the first-party content providers. A publisher may provide first-party content and third-party content on his or her resource. One challenge for a third-party content provider is the selection of third-party content for presentation on the resources.

A third-party content provider may create a content item campaign which includes content items for display on resources. The content item campaign may further include any bid-related parameters (e.g., parameters that indicate a minimum or target bid amount for a content item slot, a total budget for the third-party content provider, etc.) and selection parameters (e.g., which type of resource on which a content item should be presented, which type of platform on which the content item should be presented, etc.). A content management system may manage the content item campaign by selecting a specific content item or a subset of content items for display on the resources. The selection may be made based on the bid parameters and selection parameters, and on the resource and platform on which the content item will be displayed.

The content management system can determine or receive metrics that indicate the performance of a content item when a content item is presented on a resource (e.g., the number of impressions, a number of conversion events related to the presentation of the content item, etc.). The metrics may generally indicate how often a user interacts with the

content item (e.g., clicking on the content item, viewing images or videos, etc.), how often a user completes a desired action after viewing the content item (e.g., completing a purchase), and/or how many users view a content item over a given time.

The third-party content provider can add, delete, modify, or pause individual content items within the content item campaign over time. As changes are made, a content management system may choose between providing a first content item that is either new or modified, with an unknown performance value, and a second content item with known metrics and value, to a resource. Optimizing the selection of content items in the campaign may be difficult, as the content management system balances its decisions between content items with unknown value (new/modified content items) and known value (content items previously selected by the content management system). In one example system, the content management system may bias its choices towards new or modified content items, to discover how well they perform, but this comes with an opportunity cost, as the content items may not perform as well as other content items would have.

This document discusses a system and method in which signals from the third-party content provider are used to help select content items in the content item campaign to present to a resource. By taking into account signals from the third-party content provider, the content management system may more optimally select between content items for which there are known metrics and content items for which there are no metrics. The signals may indicate trends or preferences that indicate that one content item or type of content item is a better choice compared to other content items.

Third-party content provider signals may generally indicate recent changes to the content items or content item parameters in the content item campaign, a recent check or calculation of performance of all content items in a campaign or a portion thereof, or budget

changes, among others. This document discusses various actions that may be used as signals by the content management system for content item selection.

The content management system is generally configured to select specific content items from content item campaigns for display on resources, as described above. The content management system may change which content items are selected based on the performance of the content items in previous instances. For example, the performance may be measured in terms of a click-through rate (e.g., how often a user clicks on or otherwise interacts with a content item), an auction win rate in an auction between multiple content providers, a viewability or impression rate, a conversion rate (e.g., how often a user takes a desired action after interaction with the content item, such as purchasing an associated product or service), or a predictive rate (e.g., how successful the content item might be). The content management system, as described in this document, may further use the signals in addition to or instead of the above metrics in order to determine which content items to select.

In one implementation, the signal may indicate of a recent change to the content items that are part of the content item campaign. Changes may include an edit to an existing content item, a removal or deletion of a content item from the campaign, the pausing of a content item in the campaign, an addition of a content item to the campaign, or a change to a bid weight for a content item. As one example, the content provider may pause a content item, causing the content item to temporarily be unavailable for selection by the content management system. The pausing may include specifying one or more dates or times at which the content item should or should not be made available for selection. As another example, by changing one or bid weights, the content provider may cause a content item to be selected more often or less often in an auction process.

These signals may be used by the content management system to change which content items are selected from the content item campaign. For example, the content management system may choose a new or modified content item more frequently than normal (or less frequently) in response to the new or modified content item being made available for selection. As another example, the content management system may change the frequency at which a particular content item is selected based on if similar content items have been removed or paused from the content item campaign.

In one implementation, the signal may indicate the performance of one or more (or all) of the content items in the content item campaign. The performance of the content items may be measured based on any type of metric and any time period. For example, the performance of a content item may regress or improve over time (e.g., the performance of a specific content item may regress over time as less and less users view the content item for the first time, the performance of a specific content item may improve based on the time of year, etc.). The signal may identify one or more trends with the metrics of the content item (e.g., an improvement in a conversion rate, a decline in a click-through rate) which can be used by the content management system to more precisely select content items which will perform well in the future.

In one implementation, the signal may include an indication that a content provider has changed a budget of the content item campaign. Based on an increase or decrease in spending by the content provider, the content management system may change the selection of content items. For example, based on the budget, the content management system may be more “conservative” (e.g., if the content provider wants to ensure at least a minimum return on investment) or more “risky” (e.g., if the content provider can afford to present more new or modified content items with an unknown value).

In one implementation, the signal may include an indication that a content provider has changed a campaign-level parameter that identifies a general strategy of the campaign. For example, such a parameter may include a contextual-based parameter that identifies a type of user or group of users for which the content provider wants to reach. If the signal identifies a change in the parameter, the content management system may determine that a particular content item is more appropriate or less appropriate for selection for a given resource (e.g., if the content provider changes the parameter of a content item to prioritize displaying the content item to sports fans, the content management system may select the content item for display more often than typical if the resource is related to sports). As another example, such a parameter may identify a general change in strategy of the content provider. The content management system may then select content items differently based on the objectives of the content provider (e.g., if the content provider wants to provide more content items on mobile devices, if the content provider wants to provide more content items on search result pages, etc.).

In one implementation, the signal may include external cues (e.g., information from sources other than the content provider). As one example of an external cue, a time of year can be used as a signal by the content management system. For example, content items relating to winter clothing may perform better in the winter. The content management system may be more likely to select new or modified content items (or other content items) from the content provider during the winter if the content items relate to winter clothing. Similarly, such content items may be deemphasized during the summer.

As another example of an external cue, activity from other content providers may be used. For example, activity of the content providers that have similar content to the third-party content provider (e.g., content items with the same general topic) may be reviewed by

the content management system. If the behavior of the other content providers vary greatly (e.g., other content providers are making changes to their content item campaigns), the content management system may determine if the other content providers are more or less successful with the changes, and determine whether to make a change to the content item campaign of the third-party content provider. The content management system may further determine a correlation between the third-party content provider and the other content providers to determine how likely a change from the other content providers is relevant to the third-party content provider. The correlation may be based on a topic of the content items in the other content campaigns, and may be based on any time interval.

Referring now to FIG. 1, a flow chart of a process for using a content provider signal to select a content item for display on a resource is shown. The process includes receiving a signal from a content provider relating to a content item campaign of the content provider. The signal may indicate, for example, a change to the content item campaign such as the addition of a new content item to the campaign, the removal of a content item from the campaign, an edit to a content item of the campaign, or the pausing of a content item in the campaign. As a further example, the signal may indicate an overall change to the content item campaign parameters (e.g., a total budget, a general strategy, etc.).

The process further includes weighting each content item in the content item campaign. The weighting of each content item generally includes accounting for information from the signal. For example, new or modified content items may be given a higher weight if the content management system implements a preference to present new content items more often than typical (in order to more easily and quickly determine one or more performance metrics of the new or modified content items).

The process further includes making a selection of a content item (or more than one content item, if applicable) and presenting the content item for display on a resource. The content management system may select the content item based on any fixed or variable selection method, based on the weights given to each content item in the content item campaign.

Referring to FIG. 2, a block diagram of the system described herein is shown. The system generally includes the content management system configured to select content items from a content item campaign for display on a resource. The content management system receives one or more signals. The signals may be provided by the content provider of the content item campaign. The signals may be provided directly by the content provider (e.g., shared by the content provider directly to the content management system), or the signals may be inferred by the content management system (e.g., the content provider may make changes to the content item campaign, which are automatically provided to the content management system). In such an embodiment, this may allow the content provider to make changes to a content item campaign without actively having to worry about an adjustment to the actual selection of content items by the content management system. The content management system may further receive signals from other sources (e.g., other content item campaigns of similar content providers, as described above). Further, the content management system may infer its own signals (e.g., based on a time of the year, as described above).

The systems and methods described may provide a better performance for the content provider. For example, such systems and methods may allow for a more optimal selection of new and modified content items compared to existing content items. The systems and methods may allow for a more automatic adjustment of the content item campaign without

requiring a specific command or instruction from the content provider to improve a return on investment on the campaign (of course, in some implementations, the content management system may also receive manual input to further optimize performance). Further, the systems and methods may allow for better detection of various trends relating to the content item campaign, allowing the content management system to adjust the content item campaign more optimally.

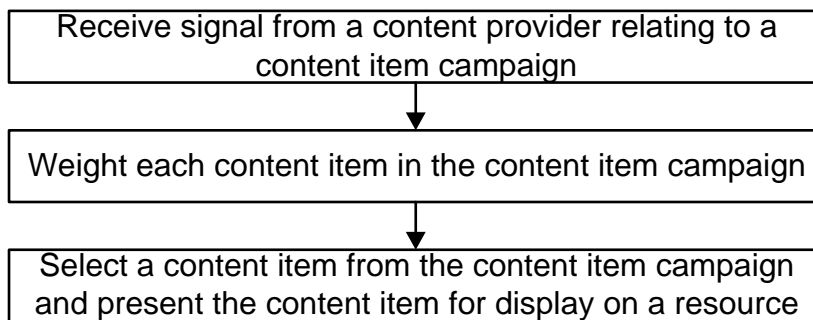


Figure 1.

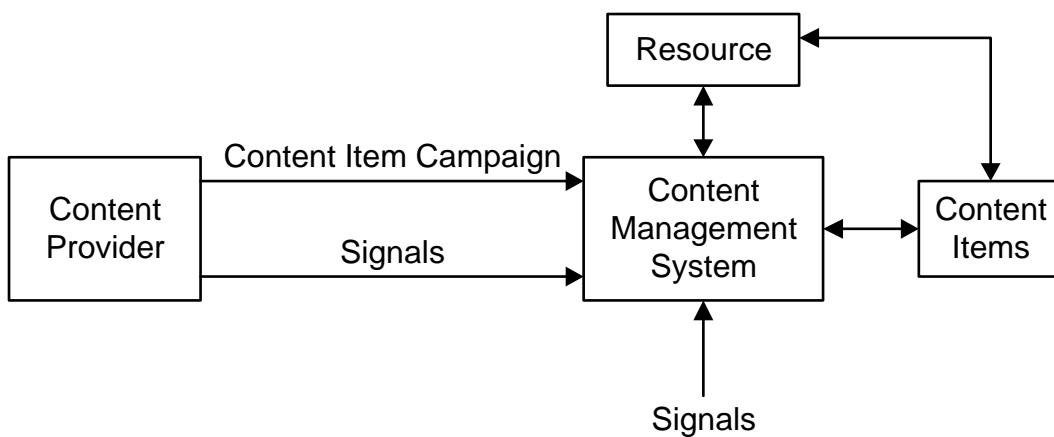


Figure 2.

Abstract

This document describes a system and method in which signals from a third-party content provider are used to help select content items in the content item campaign of the third-party content provider. The selected content items are then presented to a resource. The signals may be used to help select between content items for which there are known metrics and content items for which there are no metrics. The signals indicate trends or preferences that may indicate that one content item or type of content item is a better choice compared to other content items.