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SYSTEMS AND METHODS FOR CONTROLLING IN-APP PROMOTIONAL CAMPAIGNS IN CONTENT PLATFORMS BASED ON CONTENT CONSUMPTION

ABSTRACT

Third-party content can be provided to users as in-app popups, push notifications, or email. A data processing system can identify a first group of client devices and a second group of client devices. The first and second groups include client devices installing a given application or accessing a given content platform (e.g., YouTube). The data processing system can set (or adjust) one or more settings parameters of an ad campaign such that content items (or a specific content item) of the ad campaign are provided for display to the second group of client devices but not to the first group of client devices. The data processing system can monitor one or more user experience metrics for both the first and second groups of client devices. By comparing user experience metrics associated with both groups, the data processing system can detect any negative effect on user experience due to display of third-party content to users of the second group, and take proper actions to alleviate or eliminate the cause of any degradation on user experience.

DETAILED DESCRIPTION

Many content platforms, such video streaming platforms, content sharing platforms, social media platforms, and other platforms allow display of third-party content with primary content provided on such platforms. For example, video streaming platforms can allow third-party video segments, such as video ads, to be displayed within a streamed video sequence. Furthermore, standalone applications, such as mobile applications, gaming applications, navigation applications, etc., can allow for display of third-party (or promotional) content with

application content. Such applications can receive third-party content items from a content delivery system, and display the received third-party content items in-app (e.g., with content of the application). The display of promotional content can provide a source of income to content platforms or owners of standalone applications. The display of third-party content (or promotional content) can also influence user experience positively or negatively.

Standalone applications can run campaigns for various growth tactics, for example, by employing A/B testing to identify a best or optimal approach among a plurality of promotional approaches to enhance growth among potential users. Such promotional approaches can include onboarding flow (e.g., welcome tour, welcome emails), feature awareness and adoption (feature tooltips, clings, pop ups), free to paid upsell (e.g., timing, language, discount), push (e.g., getting users to opt in to push with the right prompt at the right time), engagement and re-engagement (e.g., making app usage a habit, getting users back after a period of lapse with push and email), social promotional techniques (e.g., encouraging app rating and social sharing among users who are susceptible), win back (e.g., using push and email to re-acquire lost users), or the like. Applying such testing can involve licensing or building growth tools that manage promotional campaigns within an application to allow A/B testing, for example, of different pop-ups, push messages and emails to drive desired behaviors through such tools. Over aggressive promotions for such applications or for content platforms can actually disrupt core metrics like users' application use time or users' watch time on a content platform.

The display of third-party content (or promotional content) in-app or within primary content provided by content platforms can negatively affect user experience. For instance, depending on the amount of third-party content displayed, the display frequency of third-party content, or the way third-party content is displayed, users may scale down their usage (or usage

time) of a given application or scale down their watch time of content on a given content platform. To avoid adverse impact on an application usage time or primary content watch time due to third-party content items, the effect of the displayed third-party content items on user experience, especially with regard to an application usage time or watch time associated with a content platform should be closely monitored. In particular, monitoring user experience with regard to a given application or a given content platform can allow for reducing the amount of third-party content delivered for display, disabling display of a given content item or content items associated with a given ad campaign, or adjusting one or more settings of an ad campaign.

Systems and methods described herein include a data processing system selecting a first group of client devices and a second group of client devices. The first and second groups include client devices installing a given application or accessing a given content platform (e.g., YouTube). The data processing system can set (or adjust) one or more settings parameters of an ad campaign such that content items (or a specific content item) of the ad campaign are provided for display to the second group of client devices but not to the first group of client devices. The data processing system can monitor one or more user experience metrics (e.g., application usage time, watch time associated with an application, a content platform, or the like) for both the first and second groups of client devices. By comparing user experience metrics associated with both groups, the data processing system can detect any negative effect on user experience due to display of third-party content to users of the second group, and take proper actions to alleviate or eliminate the cause of any degradation on user experience.

FIG. 1 show a block diagram of a computer environment 100 for providing third-party content for display in-app or with primary content associated with a content platform. The computer environment can include a third-party content server 102, a data processing system

104, a resource server 106, a client device 108, and a communications network 110. The third-party content server 102, the data processing system 104, the resource server 106, and the client device 108 can be communicatively coupled through the communications network 110. The data processing system 104 can include a user experience monitoring module 112 configured to identify a control group of client devices and an experiment group of client devices, and monitor one or more user experience metrics for client devices in both groups. The data processing system 104 can include a content delivery adjustment module 114 configured to adjust one or more settings parameters of an ad campaign responsive to detection of a degradation in user experience in the experiment group.

FIG. 2 shows a flow chart illustrating a method 200 performed by a data processing system to monitor and manage delivery of third-party content for display in-app or with content provided by a content platform. The method 200 can include the data processing system identifying (or selection) a control group and an experiment group of client devices (BLOCK 210), and setting (or adjusting) one or more parameters of an ad campaign so that a content item of the ad campaign is provided for display to client devices in the experiment group but not in the control group (BLOCK 220). The method 200 can include the data processing system monitoring one or more user experience metrics associated with an application or a content platform, where the content item is displayed, for the control group and the experiment group (BLOCK 230). The method 200 can include the data processing system comparing values of user experience metrics associated with the control group and the experiment group (BLOCK 240), and taking one or more actions responsive to detecting a degradation of user experience within the experiment group based on the comparison (BLOCK 250).

The method 200 can include the data processing system identifying (or selection) a control group and an experiment group of client devices (BLOCK 210). The user experience monitoring module 112 can select the control group and the experiment group to include client devices installing a given application (e.g., a mobile application, gaming application, navigation application, etc.). The control group and the experiment group can include client devices subscribing to, or accessing, a given platform, such as a video streaming platform, an online gaming platform, or the like. The user experience monitoring module 112 can select or identify the client devices in each of the control group and the experiment group randomly. For example, the data processing system can select 2%, 3%, 5%, or some other portion of a plurality of client devices installing the application (or accessing or subscribing to) the content platform as the control group. The user experience monitoring module 112 can select the rest of the plurality of client devices as the experiment group. In selecting client devices in each group, the user experience monitoring module 112 can employ a mod function (or other function) on device IDs of the client devices.

The method 100 can include the data processing system 104 setting (or adjusting) one or more parameters of an ad campaign so that a content item of the ad campaign is provided for display to client devices in the experiment group but not in the control group (BLOCK 220). The user experience monitoring module 112 can, for example, employ some filtering features of the ad campaign to prevent delivering a specific content item, a specific subset of content items, or all content items of the ad campaign to client devices in the control group. The user experience monitoring module 112, however, can deliver the same content item, subset of content items, or all the content items of the ad campaign to client devices of the experiment

group for presenting within the application or within a resource associated with the content platform.

The data processing system can monitor one or more user experience metrics associated with the application or the content platform, where the content item is displayed, for the control group and the experiment group (BLOCK 230). For example, the user experience monitoring module 112 can receive statistics from the client devices in the control group and the experiment group indicative of application usage time on separate client devices. Each application instance can include executable instructions that cause the hosting client device to report usage time of the application on that client devices on a regular basis (e.g., after each usage event, on a daily basis, or according to any other reporting pattern). With regard to the content platform, an SDK running on each client device (e.g., provided by the data processing system) can cause that client device to report watch time data associated with the content platform (e.g., data indicative of the amount of time the client device has been playing, replaying, or interacting with content provided on the content platform).

The data processing system 104 can compare values of user experience metrics associated with the control group and the experiment group (BLOCK 240). The user experience monitoring module 112 can compute an aggregate user experience metric for each of the control group and the experiment groups. For example, the user experience monitoring module 112 can compute a sum or an average of application usage time (or content platform watch time) within a given time period for each group. The user experience monitoring module 112 can then compare the sum or average value associated with the control group with the sum or average value associated with the experiment group. The user experience monitoring module 112 can have access to data indicative of ads of the ad campaign provided for display on the client devices of

the experiment group. The user experience monitoring module 112 can calculate a confidence interval based on the percentage difference between the sum or average value (e.g., for watch time or application usage time) associated with the control group and that associated with the experiment group. If the difference exceeds a specified threshold, the data processing can automatically interpret such difference as indicative of user experience degradation.

Responsive to detecting a degradation of user experience within the experiment group based on the comparison, the data processing system 104 can take one or more actions or trigger one or more events (BLOCK 250). The content delivery adjustment module 114 may disable serving the specific content item, the subset of content items, or all content items (e.g., ads or promotions) within the application or the content platform to the client devices in the experiment group. The content delivery adjustment module 114 may disable serving of one or more content items of the ad campaign that were recently served. The content delivery adjustment module 114 may adjust one or more settings of the ad campaign to reduce the frequency of serving one or more content items. The content delivery adjustment module 114 may send an alert message to the third-party content provider associated with the ad campaign indicating the degradation in user experience.

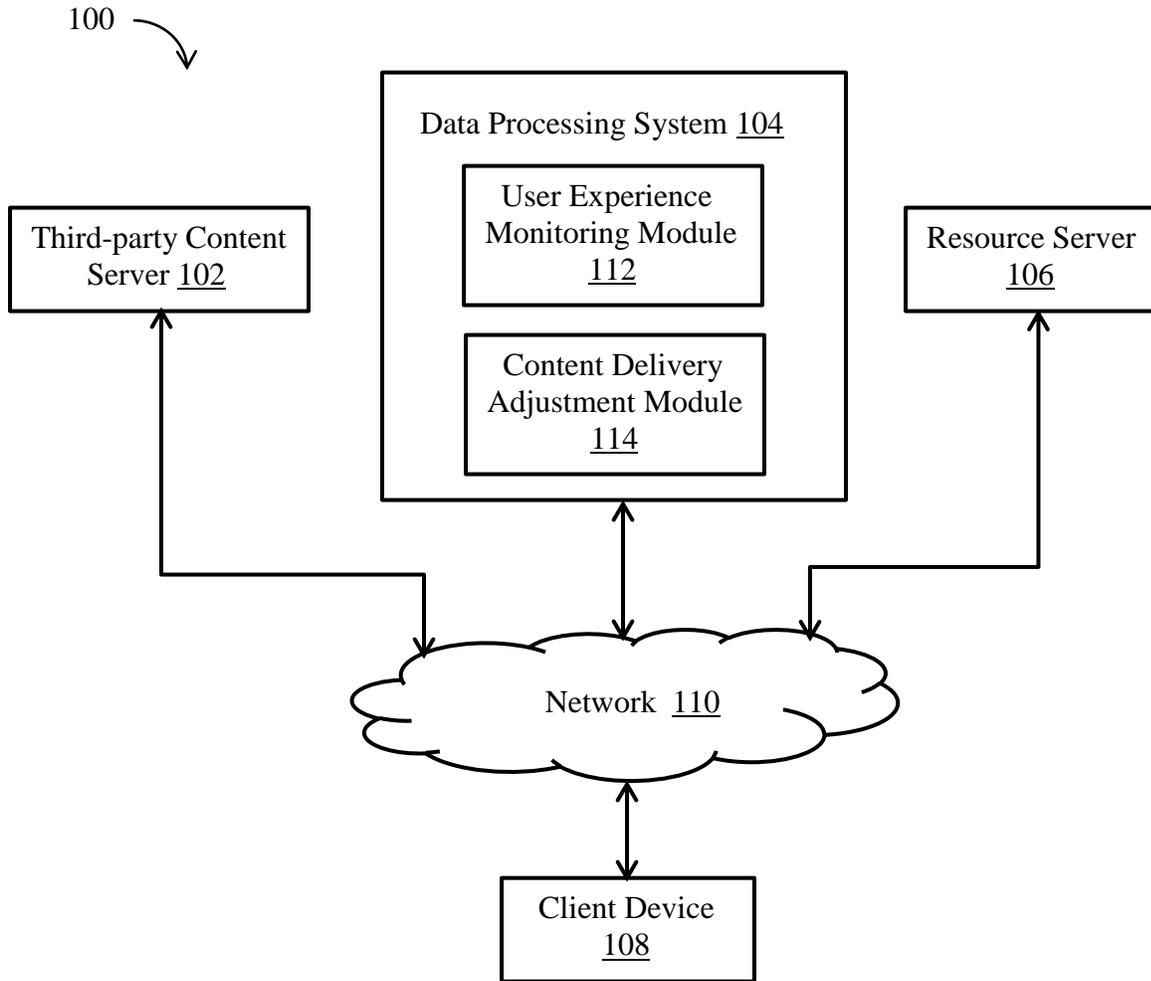


FIG. 1

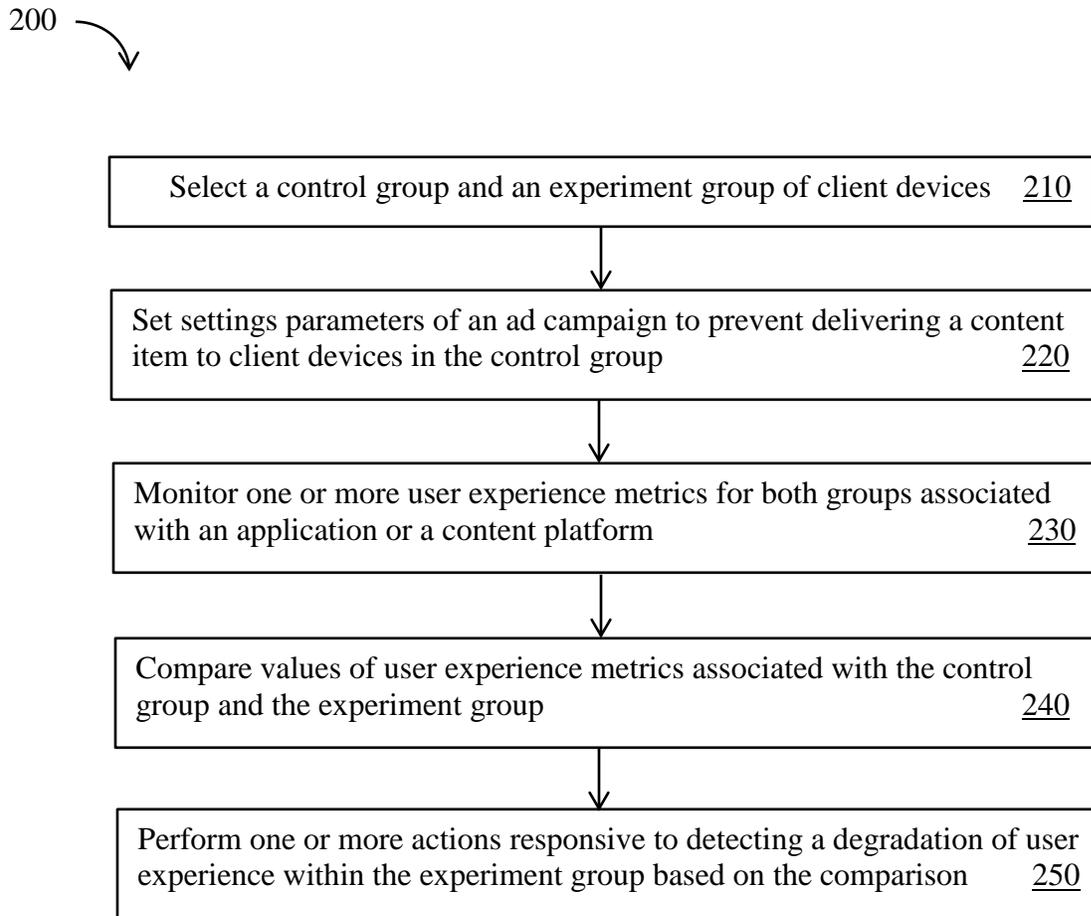


FIG. 2