Technical Disclosure Commons

Defensive Publications Series

December 03, 2018

Automated insertion and testing of ads

Tuna Toksoz

John Dukellis

Edward Weng

Boubou Guiro

Automated insertion and testing of ads

ABSTRACT

App developers seek to optimize the number, format, placement, and combination of ads to be served a given user. However, they often don't know which placements, numbers, or formats are the most effective. Running tests to determine optimal ad combinations to a given user is cumbersome and time-consuming.

This disclosure presents analytical techniques to display ads in a variety of formats and measure the efficacy of the ad in terms of, e.g., ad-time vs. app-time; numbers of ads shown; time since last ad; attrition of users; etc. The analytical techniques determine which ads to show based on statistics that optimize the lifetime value of users. Statistics generated by the techniques herein can be used by app developers to drive particular app behavior, e.g., the design of ad units that reduce attrition.

KEYWORDS

Online ads; mobile ads; interstitial ads; A/B testing; lifetime value; LTV; user attrition; ad efficacy; ad testing; video ad; survey ad; playable ad; interactive ad; display ad

BACKGROUND

Ads can be placed in a number of slots within an app, and in a number of formats, e.g., long video; short video; display; survey; interactive; playable; etc. App developers seek to optimize the number, format, placement, and combination of ads to be served to a given user. However, they often don't know which placements, numbers, or formats are the most effective. Running tests to determine optimal ad combinations to a given user is cumbersome and time-consuming. Consequently, apps often feature too many ads, or too many ads of a certain type or combination, or improper ad placement, all of which increase user attrition.

An aim of online advertising is to optimize the lifetime value (LTV) of a given user. The LTV of a user comprises the number of ads shown to a user over the lifetime of the app. The number of ads shown to a given user depends on the ads per session times the number of sessions. The number of sessions is determined by attrition rates, which are rarely accounted for in current ad-optimization techniques.

DESCRIPTION

The techniques of this disclosure address the problem of displaying an optimal number, type, placement, and combination of ads to a given user. In doing so, the LTV of the user is optimized.

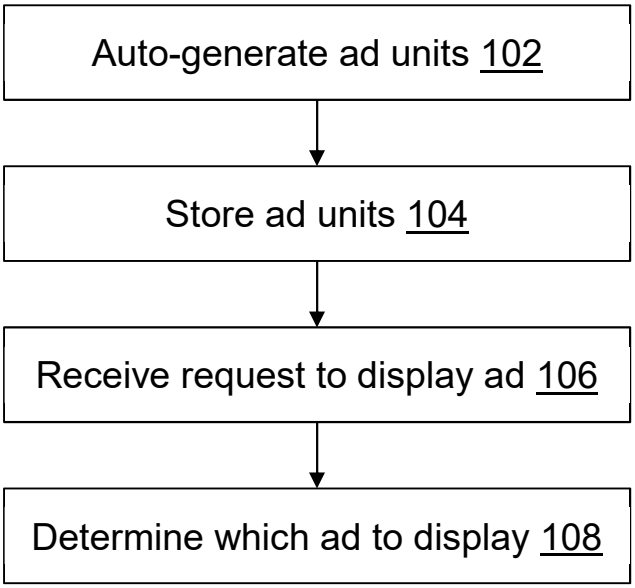

Fig. 1: Ad analytics to optimize LTV of a user

Fig. 1 illustrates an ad analytics tool to optimize the LTV of a user, per techniques of this disclosure. Ad units are auto-generated (102) to be placed interstitially, e.g., between screen breaks. The ad units are stored (104) in the ad analytics tool. A developer typically determines screen breaks in their app by running standard tools provided by the integrated development environment (IDE). Certain rules can be set here, e.g., “do not show an ad more frequently than

once every thirty seconds," or "do not show an ad at this ad slot." These rules are created to reduce user attrition, e.g., showing an ad at a screen break in the middle of game action may upset users. Developers can similarly step through all areas or slots where an ad might appear and check them off. During the process of stepping through, they can mark certain milestones in the progression of the app. For example, in a game app, they can tag an ad slot or area as "beginning of a level"; "end of a level"; "player died"; "player succeeded"; "player is waiting for loading"; "incentivized ad placement" (such as when a player dies and might be allowed to continue if they watch a rewarded ad); etc. These milestone tags or placements add additional context for maximizing value of an ad; e.g., during a wait for loading an app, a branded ad can be shown, whereas at the end of a game level, an app-install ad can be shown.

During the use of an app, an ad unit requests the analytics tool to display an ad to the user. The ad analytics tool receives the request (106) and determines the type of ad to display, if at all. Routines or libraries are available within the app to coordinate ad traffic. Alternately, ad units may be controlled from a server. The ads analytics tool keeps track of the total ad-time vs. app-usage time; the number of ads shown; the time since last ad; etc. It also tracks the rate of user attrition based on these metrics. The ads analytics tool determines which ads to show (108) based on statistics that maximize the LTV of users.

The ads analytics tool runs a variety of tests, e.g., showing thirty seconds of videos per ten minutes; showing six second videos; varying minimum time between ads between twenty seconds to minutes; etc. Statistics of ad efficacy are shared across apps for metrics like maximum ad-time versus app-usage time. Other statistics are used by app developers to drive particular app behavior, e.g., design of ad units that reduce attrition.

CONCLUSION

This disclosure presents analytical techniques to display ads in a variety of formats and measure the efficacy of the ad in terms of, e.g., ad-time vs. app-time; numbers of ads shown; time since last ad; attrition of users; etc. The analytical techniques determine which ads to show based on statistics that optimize the lifetime value of users. Statistics generated by the techniques herein can be used by app developers to drive particular app behavior, e.g., the design of ad units that reduce attrition.