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AUTOMATED ADVERTISEMENT CREATION SYSTEM

ABSTRACT

An advertisement creation system generates sizeless creatives and renders the creatives as display advertisements of any arbitrary dimension. The system extracts text assets and image assets from creatives provided by an advertiser. In particular, the system selects assets to display based on scores for the respective text assets and image assets. The system then combines selected text assets and image assets to generate a final creative. Finally, the system optimizes the final creative and renders the final creative for display.

PROBLEM STATEMENT

There is a huge diversity in advertising formats for ad slots in websites and/or software applications. For instance, there are different ad file format and file size requirements for different applications, different ad display sizes required for different publisher layouts and different types of user devices, and different guidelines for color palettes and fonts for various publisher site designs, etc. Currently, in order to address this problem, advertisers design very specific and diverse suites of creatives to satisfy the potential publishing avenues available to them. However, standard display ads once created and uploaded are static, of a fixed size, and hard to manipulate. Advertisers often lack the time, money, or capacity to design beautiful creatives for all available publisher formats and thus fail to reach potential audiences. Publishers have a desire to render ads in a very customized way optimized to fit their web site. For instance, publishers want finer grained control to render elements of ads in a particular dimension, with

specific font/colors/formatting, and at times customized layout, to optimize the performance unique for their site placements. An advanced system and method for automatically constructing display advertisements from the combination of a text asset and image asset provided by an advertiser addresses these issues for both advertisers and publishers.

DETAILED DESCRIPTION

The systems and techniques described in this disclosure relate to an advertisement creation system that generates sizeless creatives and renders the creatives as display ads of any arbitrary dimension. 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 with a display such as a mobile device, a smartphone, a tablet, a handheld electronic device, a wearable device, TV, game console, etc.

Fig. 1 illustrates an example method 100 to automatically construct display ads from the combination of a text asset and image asset provided by advertiser or dynamically identified from sources related to the ads. The method 100 can be performed by an advertisement creation system.

The system extracts (110) text assets and image assets from creatives provided by an advertiser. The text assets can include a written description of content that the advertiser wants to publish in their display advertisement. The image assets can include a visual representation of the display advertisement. The asset extraction of text and image can be performed from existing creatives, landing pages, or external sources, etc. In a situation when the advertiser has no image

asset that can be supplied from their display creatives, the system may use other sources for providing the image asset, e.g., stock photos or social networking pages. The extraction of the assets from the creatives provided by the advertiser can include:

- image segmentation

    -- saliency detection

- landing / metadata parsing (title, snippets, logo, etc.)

- image retrieval

- image matching

The system selects (120) text assets and image assets to display from the extracted assets based on scores for the respective text assets and image assets. The system composes all the extracted text assets and images assets together based on relevance scoring. The relevance scoring is based on one or more creative-side or request-side constraints. These constraints may include ads file format and file size requirements, ad element requirements (e.g., at least one image and at least text containing the product name), ad display sizes required for different publisher layouts and different types of user devices, and different guidelines for color palettes and fonts for various publisher site designs or advertiser brand constraints.

The system combines (130) the selected text assets and image assets to generate a final creative. The system pairs the selected text assets and image assets together to generate the final creative to serve into a publisher web site. The system can generate the final creatives for multiple types of ads, e.g., native ads, interstitial ads, app install ads, or any ads that require the customization of dimension/look and feel. The asset matching and the creative construction can be performed based on:

- semantic abstraction, expansion, and matching

- image quality measurement

- image enhancement

    -- cropping, seam-carving

    -- color detection

- image-to-text matching

The system then optimizes (140) the final creative and render the final creative for display. The system performs rendering optimization, i.e., construction and optimization of all assets of the composed final creative to render advertisements in an optimal way. For instance to fit any arbitrary dimension (e.g. size, cropping, asset source, positioning of containing assets), to pair best with publisher site design (e.g. color palette, font, layout), or to achieve advertiser goals, etc. Additionally, the system has full control over the user interface design and can optimize the appearance to drive ideal performance offline or at serve time. Hence, new creatives can be formed entirely from existing assets, and afford the flexibility desired for the rendering objective. Creatives can be rendered in a manner that best optimizes for performance goals on a per query basis. As the system performs asset extraction, creative creation, and rendering optimization in a fully automated manner, therefore, the system requires less effort on behalf of advertiser or publishers to achieve their performance and design goals.

Figs. 2(a) - 2(c) illustrate an example advertisement creation system that generates sizeless creatives and renders the creatives as display ads of various arbitrary dimensions. The system extracts text assets and image assets from creatives provided by an advertiser and combines the text assets and image assets to generate final creatives. The final creatives are

sizeless and can render as display ads of any arbitrary dimension as shown in Figs. 2(a) - 2(c). Further, the final creatives can dynamically render display ads for events that trigger size change or reflow, e.g., changing the phone orientation from portrait to landscape. The layout of these sizeless ads are fungible, and can be selected by a model optimizing for performance, by the advertiser or by the publisher, or through any known selection criteria.

Fig. 3 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 310, servers 330, and network 340. Network 340 connects client devices 310 to servers 330. Client device 310 or 310' is an electronic device with a display that can render ads created by the advertisement creation system. The advertisement creation system may be centralized at one or more servers 330, centralized at a client device 310 or 310', or distributed across at least one server 330 and at least one client 310. Client device 310 may be capable of requesting and receiving data/communications over network 340. Example client devices 310 are personal computers (e.g., laptops), mobile communication devices (e.g. smartphones, tablet computing devices), televisions, set-top boxes, game-consoles, embedded systems. Client device 310 may execute an application, such as a web browser 312 or 314 or a native application 316. Web applications 313 and 315 may be displayed via a web browser 312 or 314. Server 330 may be a web server capable of sending, receiving and storing web pages 332 and incorporating display ads. Web page(s) 332 may be stored on or accessible via server 330. Web page(s) 332 may be associated with web application 313 or 315 and accessed using a web browser, e.g., 312. When accessed, webpage(s) 332 may be transmitted and displayed on a client device, e.g., 310, along with display ads created by an advertisement creation system. Resources 318 and 318' are

resources available to the client device 310 and/or applications thereon, or server(s) 330 and/or web pages(s) accessible therefrom, respectively. Resources 318' 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 340 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, remote, 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

| Extract text assets and image assets to display from creatives provided by an advertiser | — 110 |

| Select text assets and image assets from the extracted assets based on scores for the respective text assets and image assets | — 120 |

| Combine the selected text assets and image assets to generate a final creative | — 130 |

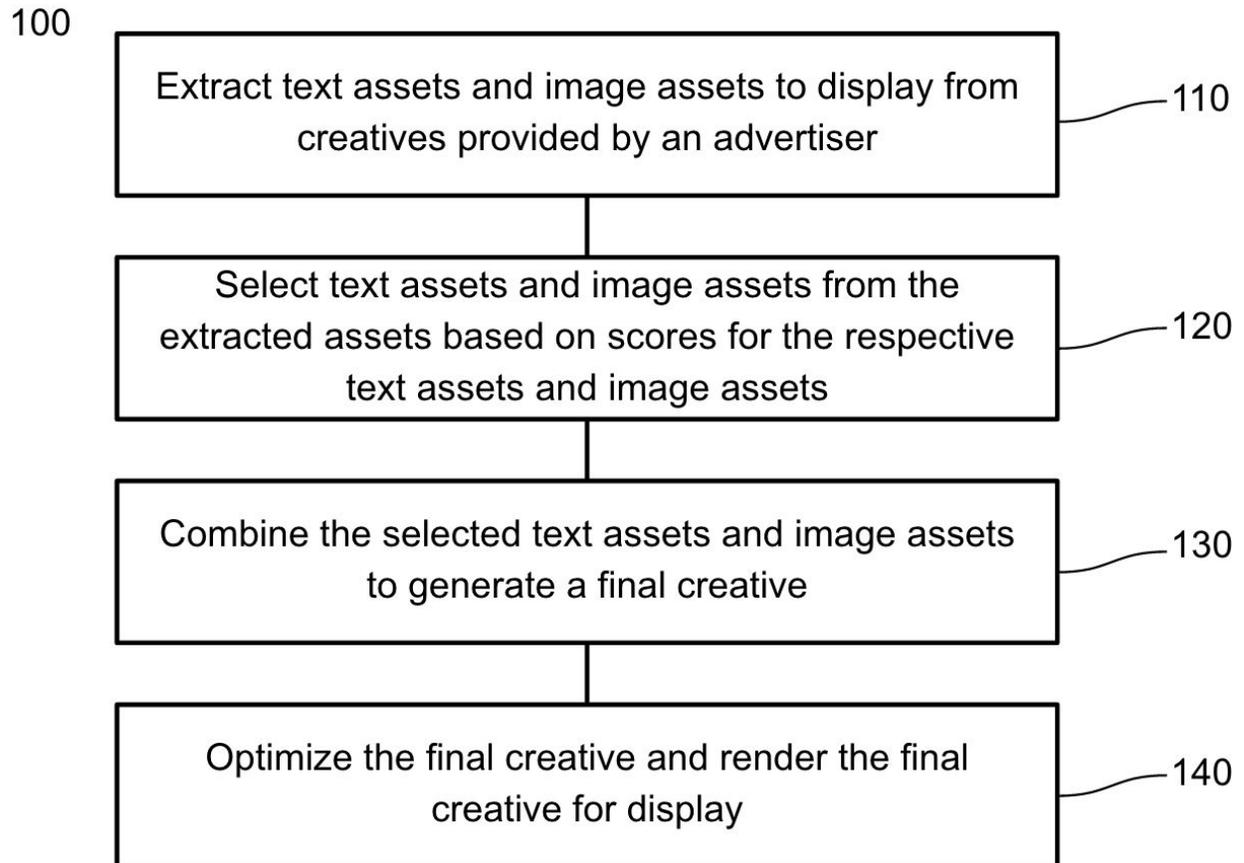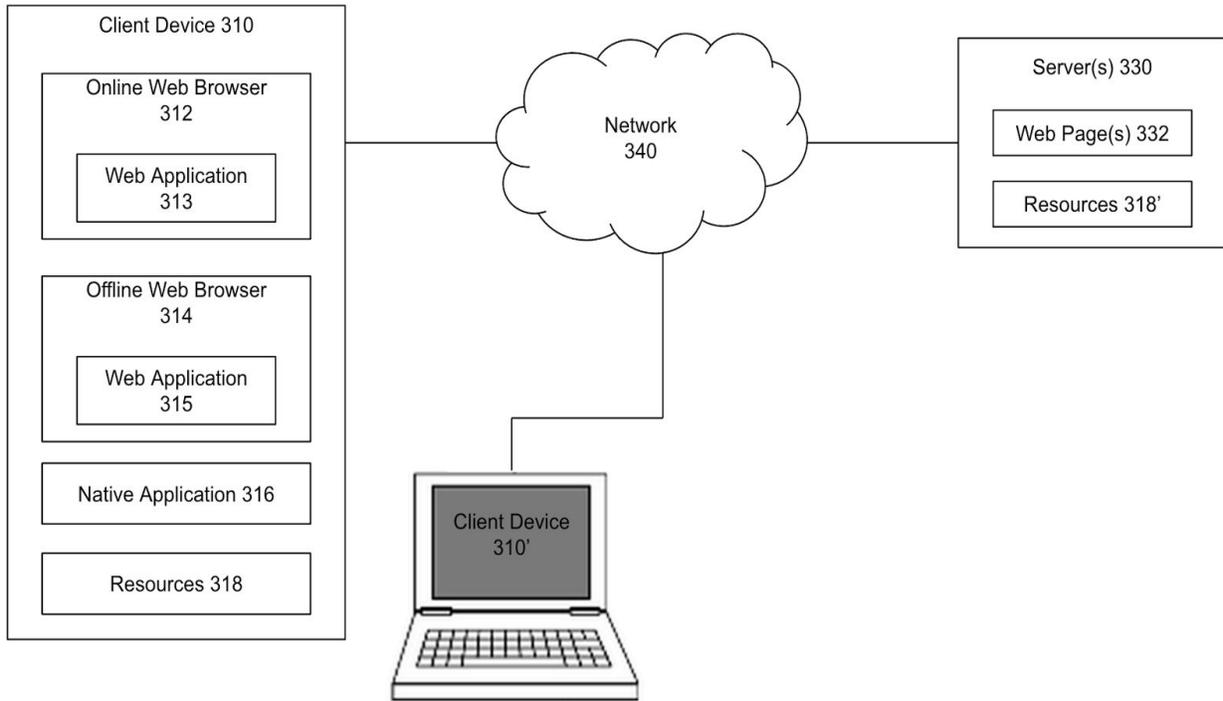| Optimize the final creative and render the final creative for display | — 140 |

Fig. 1

Fig. 2(a)

Fig. 2(b)

Fig. 2(c)

Fig. 3