Using information from user-video game interactions to target advertisements, such as advertisements to be served in video games for example.

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Abstract
Information about a person's interests and gaming behavior may be determined by monitoring their online gaming activities (and perhaps making inferences from such activities). Such information may be used to improve ad targeting. For example, such information may be used to target ads to be rendered in a video game being played by the person.
FIGURE 2
AD SPOT FILLING

REQUESTED AD(S) RECEIVED

EVENT

PLACE AD(S) IN AD SPOT(S)

ADS DESIRED

OBTAIN AD SPOT INFORMATION

OBTAIN ONE OR MORE OF (A) GAME STATE-BASED INFORMATION, (B) USER INFORMATION, (C) USER INPUT INFORMATION, AND (D) OTHER INFORMATION

REQUEST AD(S) (REQUEST INCLUDES AD SPOT INFORMATION AND ONE OR MORE OF (A) GAME STATE-BASED INFORMATION, (B) USER INFORMATION, (C) USER INPUT INFORMATION, AND (D) OTHER INFORMATION)

FIGURE 3
AD SERVING 400

ACCEPT REQUEST 420

DETERMINE AD(S) USING AD INFORMATION AND AT LEAST ONE OF (A) (e.g., LOCAL AND/OR REMOTE) USER INFORMATION, (B) GAME STATE INFORMATION, (C) USER INPUT INFORMATION, (D) OTHER INFORMATION, AND (E) AD SPOT INFORMATION 440

FORWARD DETERMINED AD(S) BACK TO GAME FOR PLACEMENT 460

RETURN 480

FIGURE 4
FIGURE 6
US 2007/0072676 A1

USING INFORMATION FROM USER-VIDEO GAME INTERACTIONS TO TARGET ADVERTISEMENTS, SUCH AS ADVERTISEMENTS TO BE SERVED IN VIDEO GAMES FOR EXAMPLE

§ 1. BACKGROUND OF THE INVENTION

[0001] § 1.1 Field of the Invention

[0002] The present invention concerns targeting the serving of advertisements, such as advertisements to be rendered in virtual environments like video games for example. In particular, the present invention concerns determining user information for use in targeting ads, and determining and serving relevant ads in virtual environments such as video games.

[0003] § 1.2 Background Information

[0004] In-game advertising is becoming extremely popular. This trend is expected to continue since the 18 to 34 year old male demographic in the U.S. is watching less TV and spending more time playing video games than ever before. The video game industry is becoming a media force on par with the television and motion picture industries. Consequently, ad agencies and game producers are collaborating to introduce more ads into video games. Presently, in-game ads are used to advertise real products and services in a manner analogous to product placement in movies and television shows. For example, a decal on a virtual race car may advertise a product or service. As another example, a banner in a stadium or on a race track may advertise a product or service.

[0005] Unfortunately, ads placed in various video games are typically determined while the game is developed and are therefore relatively static. Further, the ads are typically targeted to a broad demographic group. Consequently, in-game ads are often not as relevant and useful as they could be.

[0006] Another trend is that game producers are spending more money than before to develop video games. In the last generation of video game consoles (Sony Playstation, Sega Saturn, Nintendo 64, etc) game developers hardly reached the million dollar mark in development costs of a single video game. Presently, low end games often cost a few millions of dollars to develop, with high end games often costing even more. Game development costs are increasing while game prices have hit a ceiling. Although in-game ads help game publishers offset such development costs, revenue from such advertising has not increased fast enough to keep pace with development costs.

[0007] In view of the foregoing, it would be useful to improve in-game advertising. One possible improvement would be to provide more useful and relevant ads. Another possible improvement would be to increase advertising revenues.

§ 2. SUMMARY OF THE INVENTION

[0008] Embodiments consistent with the present invention allow information about a person's interests and gaming behavior to be determined by monitoring their online gaming activities (and perhaps making inferences from such activities). Such information may be used to improve ad targeting. For example, such information may be used to target ads to be rendered in a video game being played by the person.

§ 3. BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a bubble diagram of exemplary operations that may be performed in a manner consistent with the present invention, as well as information that may be used and/or generated by such operations.

[0010] FIG. 2 is a flow diagram of an exemplary method for performing video game selection and play (e.g., user-video game interaction) tracking operations in a manner consistent with the present invention.

[0011] FIG. 3 is a flow diagram of an exemplary method for performing ad spot filling operations in a manner consistent with the present invention.

[0012] FIG. 4 is a flow diagram of an exemplary system for performing ad serve operations in a manner consistent with the present invention.

[0013] FIG. 5 is a block diagram of an exemplary apparatus that may perform various operations in a manner consistent with the present invention.

[0014] FIG. 6 is a messaging diagram illustrating operations of an exemplary system consistent with the present invention.

§ 4. DETAILED DESCRIPTION

[0015] The present invention may involve novel methods, apparatus, message formats, and/or data structures for improving ads, such as ads served in video games for example, using information about a video game player determined from their interactions with a video game. The following description is presented to enable one skilled in the art to make and use the invention, and is provided in the context of particular applications and their requirements. Thus, the following description of embodiments consistent with the present invention provides illustration and description, but is not intended to be exhaustive or to limit the present invention to the precise form disclosed. Various modifications to the disclosed embodiments will be apparent to those skilled in the art, and the general principles set forth below may be applied to other embodiments and applications. For example, although a series of acts may be described with reference to a flow diagram, the order of acts may differ in other implementations when the performance of one act is not dependent on the completion of another act. Further, non-dependent acts may be performed in parallel. No element, act or instruction used in the description should be construed as critical or essential to the present invention unless explicitly described as such. Also, as used herein, the article "a" is intended to include one or more items. Where only one item is intended, the term "one" or similar language is used. In the following, "information" may refer to the actual information, or a pointer to, identifier of, or location of such information. Thus, the present invention is not intended to be limited to the embodiments shown and the inventors regard their invention to include any patentable subject matter described.

[0016] In the following definitions of terms that may be used in the specification are provided in § 4.1. Then,
environments in which, or with which, the present invention may operate are described in § 4.2. Exemplary embodiments of the present invention are described in § 4.3. Thereafter, specific examples illustrating the utility of one exemplary embodiment of the present invention are provided in § 4.4. Finally, some conclusions regarding the present invention are set forth in § 4.5.

§ 4.1 Definitions

[0017] Online ads may have various intrinsic features. Such features may be specified by an application and/or an advertiser. These features are referred to as “ad features” below. For example, in the case of a text ad, ad features may include a title line, ad text, and an embedded link. In the case of an image ad, ad features may include images, executable code, and an embedded link. Depending on the type of online ad, ad features may include one or more of the following: text, a link, an audio file, a video file, an image file, executable code, embedded information, etc. An image ad may be scaled, rotated, skewed, etc., as needed, to fit within an ad spot.

[0018] When an online ad is served, one or more parameters may be used to describe how, when, and/or where the ad was served. These parameters are referred to as “serving parameters” below. Serving parameters may include, for example, one or more of the following: features of (including information on) a video game or video game console (or more generally, “video game apparatus”) on which, or with which, the ad was served, or of a document on which, or with which, the ad was served, information in an ad request associated with the serving of the ad, a user characteristic (e.g., their geographic location, the language used by the user, the type of browser used, previous page views, previous behavior, user account, Web cookies, user device characteristics, etc.), a host or affiliate site (e.g., America Online, Google, Yahoo) that initiated the request, an absolute position of the ad on a screen or page on which it was served, position of the ad within a video game in which the ad was served, a position (spatial or temporal) of the ad relative to other ads served, an absolute size of the ad, a size of the ad relative to other ads, a color of the ad, a number of other ads served, types of other ads served, time of day served, time of week served, time of year served, etc. Naturally, there are other serving parameters that may be used in the context of the invention.

[0019] Although serving parameters may be extrinsic to ad features, they may be associated with an ad as serving conditions or constraints. When used as serving conditions or constraints, such serving parameters are referred to simply as “serving constraints” (or “targeting criteria”). For example, in some systems, an advertiser may be able to target the serving of its ad by specifying that it is only to be served on weekdays, no lower than a certain position, only to users in a certain location, etc. As another example, in some systems, an advertiser might specify that its ad is to be served in certain video games, or on certain video game apparatus. As yet another example, in some systems, an advertiser might specify that its ad is to be served only to a certain type of user, or a user having certain attributes. As another example, in some systems, an advertiser may specify that its ad is to be served only if a page or search query includes certain keywords or phrases. As still yet another example, in some systems, an advertiser may specify that its ad is to be served only if a document, on which, or with which, the ad is to be served, includes certain topics or concepts, or falls under a particular cluster or clusters, or some other classification or classifications (e.g., verticals). In some systems, an advertiser may specify that its ad is to be served only to (or is not to be served to) user devices having certain characteristics. Finally, in some systems an ad might be targeted so that it is served in response to a request sourced from a particular location, or in response to a request concerning a particular location.

[0020] “Ad information” may include any combination of ad features, ad serving constraints, information derivable from ad features or ad serving constraints (referred to as “ad derived information”), and/or information related to the ad (referred to as “ad related information”), as well as an extension of such information (e.g., information derived from ad related information).

[0021] The ratio of the number of selections (e.g., click-throughs) of an ad to the number of impressions of the ad (i.e., the number of times an ad is rendered) is defined as the “selection rate” (or “clickthrough rate” or “CTR”) of the ad.

[0022] A “conversion” is said to occur when a user consummates a transaction related to a previously served ad. What constitutes a conversion may vary from case to case and can be determined in a variety of ways. For example, it may be the case that a conversion occurs when a user clicks on an ad, is referred to the advertiser’s Web page, and consummates a purchase there before leaving that Web page. Alternatively, a conversion may be defined as a user being shown an ad, and making a purchase on the advertiser’s Web page within a predetermined time (e.g., seven days). In yet another alternative, a conversion may be defined by an advertiser to be any measurable/observable user action such as, for example, downloading a white paper, navigating to at least a given depth of a Website, viewing at least a certain number of Web pages, spending at least a predetermined amount of time on a Website or Web page, registering on a Website, etc. Often, if user actions don’t indicate a consummated purchase, they may indicate a sales lead, although user actions constituting a conversion are not limited to this. Indeed, many other definitions of what constitutes a conversion are possible.

[0023] The ratio of the number of conversions to the number of impressions of the ad (i.e., the number of times an ad is rendered) and the ratio of the number of conversions to the number of selections (or the number of some other earlier event) are both referred to as the “conversion rate” or “CR.” The type of conversion rate will be apparent from the context in which it is used. If a conversion is defined to be able to occur within a predetermined time since the serving of an ad, one possible definition of the conversion rate might only consider ads that have been served more than the predetermined time in the past.

[0024] A “property” is something on which ads can be presented. A property may include online content (e.g., a Website, an MP3 audio program, online (e.g., video) games, etc.), offline content (e.g., a video game played in a video game apparatus that is not online, a newspaper, a magazine, a theatrical production, a concert, a sports event, etc.), and/or offline objects (e.g., a billboard, a stadium score board, and outfield wall, the side of truck trailer, etc.). Properties with content (e.g., magazines, newspapers, Websites, email mes-
A “document” may be referred to as “media properties.” Although properties may themselves be offline, pertinent information about a property (e.g., attributes, topic(s), concept(s), category(ies), keyword(s), relevancy information, type(s) of ads supported, etc.) may be available online. For example, an outdoor jazz music festival may have entered the topics “music” and “jazz,” the location of the concerts, the time of the concerts, artists scheduled to appear at the festival, and types of available ad spots (e.g., spots in a printed program, spots on a stage, spots on seat backs, audio announcements of sponsors, etc.).

A “document” is to be broadly interpreted to include any machine-readable and machine-storable work product. A document may be a file, a combination of files, one or more files with embedded links to other files, a display screen or a video sequence (e.g., of a video game), etc. The files may be of any type, such as text, audio, image, video, etc. Parts of a document to be rendered to an end user can be thought of as “content” of the document. A document may include “structured data” containing both content (words, pictures, etc.) and some indication of the meaning of that content (for example, e-mail fields and associated data, HTML tags and associated data, etc.). Ad spots in the document may be defined by embedded information or instructions. In the context of the Internet, a common document is a Web page. Web pages often include content and may include embedded information (such as meta information, hyperlinks, etc.) and/or embedded instructions (such as JavaScript, etc.). In many cases, a document has an addressable storage location and can therefore be uniquely identified by this addressable location. A universal resource locator (URL) is an address used to access information on the Internet.

A “Web document” includes any document published on the Web. Examples of Web documents include, for example, a Website or a Web page.

“Document information” may include any information included in the document, information derivable from information included in the document (referred to as “document derived information”), and/or information related to the document (referred to as “document related information”), as well as extensions of such information (e.g., information derived from related information). An example of document derived information is a classification based on textual content of a document. Examples of document related information include document information from other documents with links to the instant document, as well as document information from other documents to which the instant document links.

Content from a document may be rendered on a “content rendering application or device.” Examples of content rendering applications include an Internet browser (e.g., Explorer, Netscape, Opera, Firefox, etc.), a media player (e.g., an MP3 player, a Real Networks streaming audio file player, etc.), a viewer (e.g., an Adobe Acrobat pdf reader), a video game apparatus (e.g., a video game console such as PlayStation2 from Sony, XBox from Microsoft, GameCube from Nintendo, etc., a personal computer, a mobile telephone, a personal digital assistant, etc.) etc.

A “content owner” is a person or entity that has some property right in the content of a media property (e.g., document). A content owner may be an author of the content. In addition, or alternatively, a content owner may have rights to reproduce the content, rights to prepare derivative works of the content, rights to display or perform the content publicly, and/or other proscribed rights in the content. Although a content server might be a content owner in the content of the documents it serves, this is not necessary. A “Web publisher” is an example of a content owner.

“User information” may include user behavior information and/or user profile information.

§ 4.2 Exemplary Advertising Environments in which, or with which, the Present Invention may Operate

FIG. 1 is a bubble diagram of exemplary operations that may be performed in a manner consistent with the present invention, as well as information that may be used and/or generated by such operations. The environment 100 depicted in FIG. 1 may be used to determine relevant ads and/or select relevant ad creatives to be shown in or with video games. Alternatively, or in addition, the environment 100 depicted in FIG. 1 may be used to track user-video game interaction information, where such user information may be used to help select relevant ads shown to a user, but not in a video game. The environment 100 may include game play tracking operations 114, ad spot filling operations 138 and ad serving operations 170.

The game play tracking operations 114 may collect user input information 118 and provide it to the ad spot filling operations 138. Furthermore, game state-based information 130 may also be provided to the ad spot filling operations 138. Moreover, user information inference operations 122 may be used to generate additional user information 126. Such inferences may be made using user input information 118 and/or game state-based information 130. Finally, the video game apparatus 110 may store other game information 134 such as console name or brand, a console identifier, a console location, (currently loaded) game identifier, etc. Using the game state-based information 130, the user input information 118, the user information 126, and/or other game information 134, the ad spot filling operations 138 may (i) generate a request for relevant ads, (ii) forward the request to ad serving operations 172 (through one or more networks 140) when an advertisement is to be displayed in the game, and (iii) render the ad(s) in one or more ad spots within the video game.

Advertisers 150 may interact with an ad server 160 via ad information entry and management operations 164 and networks 140 in order to submit their advertisements and ad information. This information is stored as ad information 168 and may include ad creatives, serving constraints, offer information, etc. The ad information entry and management operations 164 may inform the advertisers 150 of various game attributes to which their ads can be targeted.

The ad serving operations 172 may accept requests for ads from the ad spot filling operations 138. Such requests may include game state-based information 130, user input information 118, user information (local) 126, and/or other game information 134, as well as other pertinent information (e.g., ad size, ad type, when the ad will be needed, etc.) necessary for proper ad selection and rendering (e.g., display, text dialog, audio segment, etc.). Using the request information from the gaming system, the ad serving operations 172 may select relevant ads and/or ad creatives from
the ad information 168. If there are more than one relevant ad(s) competing for a given ad spot (or too many relevant ads competing for a limited number of ad spots), the ad serving operations 172 may run an arbitration to select the best ad or ads. Subsequently, the ad serving operations 172 may provide the ad spot filling operations 138 with the selected ad(s) so that these ad(s) may be rendered in the appropriate ad spots within the video game.

[0036] The ad server may include accounting and/or billing operations 176 in addition to the ad serving operations 172 and the ad information entry and management operations 164.

[0037] A user information server 180 may be provided to accept, perhaps generate, and store user information (remote) 188. User game registration operations 192 may accept and store user information provided in a game or game console product registration, or provided in an online gaming subscription registration. User information inference and storage operations 196 may infer certain attributes or characteristics of a user from user input information 118. The user information serving operations 184 may be used to provide user information 188 to a requesting entity. For example, the ad server 160 might have a user identifier, but no information (or incomplete information) about a user. It may forward a request to the user information server 180, where the request includes a user identifier. The user information server 180 may use the user identifier to look up pertinent user information (remote) 188 and return it to the ad server 160.

[0038] The game play tracking operations 114 may track game player (also referred to as a “user”) input (e.g., play, selection, etc.) information 118. For instance, in most simulations as in a Formula One racing game, a user may select a real world make/team of a car (e.g., Ferrari, Williams-BMW, McLaren-Mercedes, Renault, etc.), a particular driver (e.g., Michael Schumacher, Fernando Alonso, Robens Barrichello, etc.) as well as the racing track desired to compete in (e.g., Monte Carlo/Monaco, Nurbugring/Europe, Indianapolis/USA, etc.), car color, type of tires, etc. In other games, as in first person shooters, users may select their character’s role such as a medic, a mercenary, an engineer, a warrior, a thief, a wizard, an alien, etc. In sports games, the user may select a team, a stadium, or even a player from real team player rosters. Moreover, in many games, users may select the sex of their character, pre-defined personalities of their characters, attire for their player(s), physical attributes of their players (fat, thin, muscular, tall, short, hair color and style, ethnicity, eye color, etc.), sound track and other sound/visual properties, and many other customizable features. Such selection inputs may be tracked by the game play tracking operations 114 and stored as user input information 118, which are then available to the ad spot filling operations 138.

[0039] Such user input information 118 may be used to help select relevant ads. As example one example, if a user selected a racing car from Dodge, the system may show a Dodge ad or something related. As another example, if the user selected a sports team from Miami, the system may show ads for tickets for events in Miami. As another example, if a user selected a soundtrack of “Beastie Boys” in a video game, the system may suggest ads for rap/hip hop and other related music, not Britney Spears. As yet another example, if a user selected a black car to drive in a racing game, the system may show ads with black cars, instead of car in other colors. As still yet another example, if the user selected a male character, the system may show ads tailored to males. If the user has been playing for over two hours continuously, the system may display ads for pizza-hut, coke, coffee and other related goods.

[0040] Game state-based information 120 may include information about the user’s game-play. For example it may include, how fast the players are going through the levels, how familiar the players are with the game, what level are the players in (i.e., in many games players attain levels of skill as they play along and become more experienced; for example a 99th level wizard in a role playing game), how long have the players been playing the game, how frequently the user plays various games, play-pause habits, game information stored to non-volatile memory, etc. The game state-based information 130 may include session information (start time, play duration, etc.). This game state-based information 130 is then available to the ad spot filling operations 138. For example, if the user has been playing for over two hours continuously, the system may display ads for pizza-hut, coke, coffee and other related goods.

[0041] The user information inference operations (local and/or remote) 122 and/or 184 may use user input information 118 to infer attributes of the user 126 and/or 188. Such inferred user information 126 and/or 188 may then be used when selecting eligible ad(s) in accordance with targeting attributes of the ads. The play characteristics of users, particularly in online RPG games (e.g., time spent chatting with other virtual players versus fighting, time spent bartering versus stealing, time spent exploring versus building, time spent trying new items versus completing levels, decisions made by players leading to certain situations (good versus bad, strategic versus short term), avoiding conflict (risk adverse) versus being aggressive, cooperating and collaborating versus doing things alone, friendly versus hostile, etc.) may be particularly useful. User input information may be useful to help infer information about a user. Some other examples user information that may be inferred includes familiarity with a game(s), time spent playing a game(s), how fast is the user advancing and/or skill level, etc. Inferences drawn from such user input information may be made using known classification means such as neural networks, Bayesian networks, support vector machines, etc. Such inferred user information may be useful to help target ads. For instance, users that spend a long time bartering instead of stealing in a game may suggest that they are interested in the best deals rather than the flashiest items so the system may show ads reflecting value. As another example, users that spend a lot of time exploring suggest that they may be interested in vacations, so the system may show ads for vacations. As another example, users that spend a lot of time chatting instead of fighting or performing other activities in online games suggest that they like to chat, so the system may show ads for cell phones, ads for long distance plans, chat messengers, etc.

[0042] To summarize, the ad spot filling operations 138 are responsible for requesting ads by the ad server and subsequently providing the ad for rendering on the ad spot. In particular whenever an ad is to be displayed in the game, the ad spot filling operations 138 may submit a request an ad serving operations 172. The request may include user infor-
mation (Recall, e.g., 118 and 126.), game information (Recall, e.g., 130 and 134.), characteristics (e.g., type, size, etc.) of the ad that is to be delivered, an identifier for the game console 110, etc. Instances where ads may be displayed or otherwise rendered in video games is numerous. For instance, in a first person shooter, ads could be displayed at vending machines, billboards, posters on walls, a TV screen that the character walks by, etc. In racing games, advertisements could be placed on the car or on signage or billboards along the streets and racetracks, or maybe even announced on the virtual radio of the car that the player is driving. In many sports games, advertisements may be displayed on score boards and along the sidelines of the court/field. Ads may be inserted as textual or spoke dialog, as an audio clip in a virtual radio, etc. In online action-adventure and role playing games (RPGs), it is common to simulate real world-like environments where gamers may roam vast environments thereby providing numerous locations where ads might be displayed. For instance, gamers may roam and interact through large city markets (e.g., stop for food at a McDonalds, get a haircut, go to a night club for drinks, buy a car, buy property, move through the city using a cab/bus/subway, buy goods from various stores, play a video game in an arcade, etc.), thus providing many potential spots where ads might be displayed just as in real city markets.

[0043] Thus, the ad serving operations 172 may be used to select appropriate, relevant, ads and may use attributes and pertinent information gathered during game play. Such ad serving operation 172 may also use offer information (e.g., bids) submitted by the advertisers 160 along with their ads to select winning ads when multiple eligible ads compete for an ad spot (or too few ad spots). Once the winning ad(s) has been selected, the ad serving operations 172 may return the ads back to the ad spot filling operations 138 for rendering in the video game.

§ 4.3 Exemplary Embodiments

[0044] § 4.3.1 Exemplary Methods

[0045] FIG. 2 is a flow diagram of an exemplary method 200 for performing selection and play tracking operations in a manner consistent with the present invention. Specifically, the method 200 may be used to monitor and store information about how a user plays and interacts with a video game(s). (Recall FIG. 1, 130.) Various actions may be performed by the method 200 depending on various events that may occur. (Block 210) When a gaming system (e.g., Sony PlayStation, Nintendo GameCube, Microsoft Xbox, a PC, etc.) is powered on, the method 200 may start session tracking. (Block 220) Conversely, when a gaming system is powered off or shut down, the method 200 may end the session tracking (Block 230) and store and/or transmit the session information (Block 240). During the powered on state, user inputs occur. In response, the method 200 may track such user input. (Block 250) The method may use the user input to infer user information. (Block 260) Subsequently, the method 200 may store and/or transmit the information about the user input and/or inferred user information for further use. (Block 270)

[0046] Referring back to blocks 220, 230 and 250, the method 200 may monitor the user’s selections and game play every time a gaming system is in operation. Specifically, the method 200 may start a session tracking (begin monitoring and collecting user information) every time a gaming system is powered on. When a player turns off the gaming system, the method 200 may end the session tracking and store/transmit the session information collected during the operation of the gaming system. Session information may include, for example, a game identifier, a start time, a pause time(s), etc.

[0047] Referring back to blocks 250, 260 and 270, the method 200 may simply track user inputs, but may also use the inputs of the user to infer user information/characteristics. User input may include user selections, user dialog, user play, etc. User selections may include, for example, one or more of characters, vehicles (e.g., a specific make of an automobile, car color, engine modifications, car modifications, etc.), tracks, courses or fields (e.g., a specific race-track, a specific stadium, etc.), teams, players, attire, physical attributes, etc. There are many customizations a user may select from depending on the genre of the game. These selections may reflect the user’s fondness, preferences, and/or interests. User dialog (e.g., from role playing games, simulation games, etc.) may be used to characterize the user (e.g., literate or illiterate, profane, blunt, or polite, quiet or chatty, etc.). Also, user play may be used to characterize the user (e.g., cautious, strategic, risk-taker, aggressive, non-confrontational, stealthy, honest, dishonest, cooperative, uncooperative, etc.).

[0048] As will be described in more detail below, the user input and/or inferred user information may be used to select ads more relevant to the user.

[0049] FIG. 3 is a flow diagram of an exemplary method 300 for performing ad spot filling operations in a manner consistent with the present invention. The ad spot filling operations are responsible for requesting in-game ad(s) as well as receiving the requested ad(s) and rendering them in the appropriate spots within the video game. Different branches of the method 300 are performed in response to different events. (Block 310) Specifically, if an ad (or ads) is desired (to be rendered in the game), the method 300 may obtain the ad spot information (Block 320) and at least one of (A) game state-based information, (B) user input information, (C) user information, and (D) other game information. (Block 330) Finally, the method 300 may generate a request for one or more ads. The request may include the ad spot information, and at least one of (A) game state-based information, (B) user input information, (C) user information, and (D) other game information. (Block 340)Referring back to block 310, the method 300 may also receive one or more requested ad(s) (e.g., from the ad server). If so, the method 300 may proceed to place the ad(s) in the appropriate ad spot(s) for rendering.

[0050] Referring back to the right branch of FIG. 3, ads may be delivered at various times. For example, ads may be desired at one or more of (a) at power up, (b) at game load, (c) during play, (d) as need, (e) prior to predicted need, etc.

[0051] Referring back to block 320, the ad spot information may include an ad spot identifier, ad size, ad type, ad duration, etc. Referring back to block 330, the game state-based information may include information such as that described above with reference to 130 of FIG. 1, the user input information may include information such as that described above with reference to 110 of FIG. 1, the user
information may include information such as that described above with reference to 126 of FIG. 1, and the other game information may include information such as that described above with reference to 134 of FIG. 1.

[0052] Referring back to block 340, once the method 300 has obtained the pertinent information mentioned above, it may proceed to request ads from an ad server. The ad server uses the information included in the request to determine eligible, relevant ads. If there are too many eligible, relevant ads for a given ad spot(s), the ad server may arbitrate among the competing ads (e.g., using an auction). The determined ad(s) is returned back to method 300 wherein it is subsequently rendered in the appropriate ad spot.

[0053] FIG. 4 is a flow diagram of an exemplary method 400 for performing ad serving operations in a manner consistent with the present invention. The method 400 is responsible for providing requested ads to gaming systems. Specifically, the method 400 may accept an ad request from a gaming system. (Block 420) Upon receiving such a request, the method 400 may determine one or more ads using at least one of (A) user information, (B) game state-based information, (C) user input information, (D) other information, and (E) ad spot information, perhaps in connection with ad serving constraints. Once the ad or ads have been determined, the method 400 may forward the ad(s) back to the gaming system. (Block 460)

[0054] Referring back to block 440, the user information may include user information stored on the game system. Alternatively, or in addition, user information from another source may be used. (Recall, e.g., 180 of FIG. 1.) That is, the ad server might have sent a request for user information, where the request includes a user identifier, or a gaming system identifier.

[0055] Further, the method 400 may perform arbitration operations in order to determine winning ads among a number of competing ads since there may be too many ads contending for too few ad spots. Hence, advertisers may submit offer information (e.g., bids) along with their ads. As a result, when selecting ads, the method 400 may consider the user information, game state-based information, user input information, ad spot information and/or other information to determine relevant ads, and then use offer information, perhaps in addition to other factors, to score or rank the relevant ads.

[0056] § 4.3.2 Exemplary Apparatus

[0057] FIG. 5 is a high-level block diagram of a machine 500 that may perform one or more of the operations discussed above. The machine 500 basically includes one or more processors 510, one or more input/output interface units 530, one or more storage devices 520, and one or more system buses and/or networks 540 for facilitating the communication of information among the coupled elements. One or more input devices 532 and one or more output devices 534 may be coupled with the one or more input/output interfaces 530.

[0058] The one or more processors 510 may execute machine-executable instructions (e.g., C or C++ running on the Solaris operating system available from Sun Microsystems Inc. of Palo Alto, Calif. or the Linux operating system widely available from a number of vendors such as Red Hat, Inc. of Durham, N.C.) to effect one or more aspects of the present invention. At least a portion of the machine executable instructions may be stored (temporarily or more permanently) on the one or more storage devices 520 and/or may be received from an external source via one or more input interface units 530.

[0059] In one embodiment, the machine 500 may be one or more conventional personal computers, and/or one or more video game apparatus (i.e., any device on which a video game may be played such as, for example, a video game console, a personal computer, a mobile phone, a personal digital assistant, etc.). In this case, the processing units 510 may be one or more microprocessors. The bus 540 may include a system bus. The storage devices 520 may include system memory, such as read only memory (ROM) and/or random access memory (RAM). The storage devices 520 may also include a hard disk drive for reading from and writing to a hard disk, a magnetic disk drive for reading from or writing to a (e.g., removable) magnetic disk, and an optical disk drive for reading from or writing to a removable (magneto-) optical disk such as a compact disk or other (magneto-) optical media.

[0060] A user may enter commands and information into the personal computer through input devices 532, such as a keyboard and pointing device (e.g., a mouse) for example. Other input devices such as a microphone, a joystick, a game pad, a satellite dish, a scanner, or the like, may also (or alternatively) be included. These and other input devices are often connected to the processing unit(s) 510 through an appropriate interface 530 coupled to the system bus 540. The output devices 534 may include a monitor or other type of display device, which may also be connected to the system bus 540 via an appropriate interface. In addition to (or instead of) the monitor, the personal computer may include other (peripheral) output devices (not shown), such as speakers and printers for example.

[0061] § 4.3.3 Alternatives and Extensions

[0062] The methods for targeting online in-game ads is not limited by the methods described above. There could be a number of different ways and variations to the aforementioned for targeting online in-game ads. For instance, one could just simply target ads based on the type of the game and the expected demographics. Eligible ads could be selected using an arbitration process, such as an auction for example. The methods for targeting online in-game ads is not limited by the methods described above. There could be a number of different ways and variations to the aforementioned for targeting online in-game ads. For instance, one could just simply target ads based on the type of the game and the expected demographics. Eligible ads could be selected using an arbitration process, such as an auction for example.
video game (or an instance thereof) without any relevance information provided from a particular video game console. As yet another example, user information from some other source may be used to target ads to ad spots in a video game being played on a gaming system associated with the user. Other combinations of these features are possible. 

[0064] According to the aforementioned, the system may collect information about a user’s game-play behavior. Examples of information that could be useful, particularly in massive multiplayer online RPG’s, may be the specific dialogue entered by the users while chatting or interacting with other players/characters within the game. For example, the dialogue could indicate that the player is aggressive, profane, polite, literate, iliterate, influenced by current culture or subculture, etc. Also decisions made by the players may provide more information such as whether the player is a risk taker, risk averse, aggressive, passive, intelligent, follower, leader, etc. This information may be used and analyzed in order to help select and deliver more relevant ads to users. 

[0065] Furthermore, although ad creatives may be images akin to banner ads, the system may use ad creatives that are text and speech of a character that the player may interact with. For instance, in the popular game series Simms, a character that a user interacts with may suggest (as an advertisement) to listen to the newly released Coldplay album. The user may reply positively (if given a choice) and listen to clips from the new Coldplay album. As another example in a car racing game, after a user crashes his Honda civic, an announcer could be used to advertise by saying for instance “if he had a Hummer, he would have gotten the better of that altercation”, etc. 

[0066] Users’ inputs may imply a positive or negative response to an advertisement. For example, in a Simms type game, the ad might be a character saying “What to listen to the new Coldplay album.” A response such as “yes”, “sure”, “absolutely”, “you bet”, etc. could indicate a positive user response to the ad (like a selection of a text or banner ad on a Webpage), while a response such as “no”, “nay”, etc. could indicate a negative user response to the ad (like clicking the close box of an ad on a Webpage). Such user-ad actions may be tracked and used for various purposes such as billing, billing conditions, ad scoring, etc. For example, a rate of a particular user action or group of actions with respect to ad impressions can be tracked and used in a manner similar to ad selection rates, and/or ad conversion rates. 

[0067] Games may already have ads in place. For example, games may come with hundred or even thousand ads of all different types already installed or loaded. This may be used to ensure that there will always be available ads to display in the game and not interfere with gameplay since there could be circumstances wherein, ads may not be returned soon enough, the gaming system is offline, a desired degree of relevancy could not be determined, etc. These ads may be shipped with targeting criteria and may be selected for ad display by a “lightweight” virtual ad server running on the user’s gaming system to emulate how ads would be selected by a real ad server from a gaming system connected online. Thus, ads, and perhaps targeting criteria and other ad information, may be provided on the same storage media (e.g., CD, ROM, DVD, etc.) as the video game. 

[0068] All popular current generation video consoles (i.e., Playstation, Xbox, Gamecube, etc) use games shipped on non-writable optical disk media (i.e., CD, DVD, BD, etc) hence, game state-based information and user information are saved onto memory cards (or some other non-volatile, readable and writable memory means) utilized by the consoles. This allows players to save their game and continue perhaps at a later time. These memory cards allow players to store game information from many different games depending on the memory capacity of the card. Typically, dozens of games may be saved. Such saved information may be thought of state information, and offers a valuable source of information to the advertisers and the present invention. Specifically, by examining a gaming system’s memory card every time a player connects online, the present invention (system) may examine the player’s gaming history and stored status information. This may provide a large amount of information that may be used to better target ads to the user. Games the user is currently active and interested in can be determined. For instance, if a user has saved information from ten games and eight out of the ten games are racing games, then it may be inferred that the player is a racing fanatic and might find car-related ads, ads for other racing games the player might not have played already, etc., useful. The system could even examine the game state-based and user information of the various games saved on the memory card. For example, if it is found that the player is mostly racing with a BMW and generally German automobiles throughout the saved racing games on the memory card, then it might be inferred that the user is a BMW and German automobile aficionado, and may find ads for such cars useful. As can be appreciated from the foregoing, by examining a gaming system’s memory card(s), useful insights about the user may be gained. 

[0069] Although many of the exemplary embodiments described above concerned video games, embodiments consistent with the present invention may be used in other virtual environments or immersive environments. 

§ 4.4 Examples of Operations in an Exemplary Embodiment Consistent with the Present Invention

[0070] FIG. 6 is a messaging diagram illustrating operations of an exemplary system consistent with the present invention. When generating a request to fill an ad spot, ad spot filling operations 138 may accept game information 610 as indicated by 620. The game information 610 may include one or more of user input information 118, game state-based information 130, other game information 134 and user information (local) 126. The ad spot filling operations 138 may generate an ad request including at least some of the ad information 610. The request may include other pertinent information about the ad spot to be filled (e.g., ad type, number of ads, when needed, etc.). As indicated by 630, the ad request is forwarded to ad serving operations 172. The ad serving operations 172 may simply use the information included in the request 630, as well as ad information 168, as indicated by 670 and 680, to generate one or more relevant ads. The ad(s) may then be returned to the ad spot filling operations 138 as indicated by 690. 

[0071] Note that the ad serving operations 172 may also query the user information serving operations 184 as indicated by 640. User information serving operations 184 may obtain requested user information (remote) 188 as indicated
by 650 and provide the requested user information (remote) back to the ad serving operations 172 as indicated by 660.

[0072] The game information may be different for different users. Consider, for example, a virtual racing video game used by three (3) users—A, B, and C. Suppose that user A selects an outdoor, dirt, 4x4 course, selects a yellow H2 Hummer, selects a male driver, and drives aggressively during the race. Suppose, that user B selects a city race, selects a tuned Toyota Supra in multi-color with a pink base, selects a female driver, and drives in a neutral manner during the race. Finally, suppose that user C selects a World Cup Race track in Madrid Spain, selects an Audi R8R in multi-color, selects a male driver, and drives in a strategic manner during the race.

[0073] Given the assumptions in the foregoing example, suppose that Dodge wants to place an advertisement. It may have various alternative ads with different serving constraints or targeting criteria. Suppose further that it has a variable color, with a default value. Thus, the system may show a “Dodge RAM-Tough Truck” ad creative with a yellow truck to user A, a “Dodge Neon Sport” ad creative with a pink car to user B, and a “Dodge Viper” ad creative with a Dodge Viper in a default color to user C. Suppose that a ticket broker wants to advertise tickets for various events. Three ads for three events, each having different serving constraints or targeting criteria, may be—tickets for an NFL football game, tickets for a Gwen Stefani concert, and tickets for the US Open Golf Tournament. Thus, the system may show the ad creative for the NFL football game tickets to user A, the ad creative for the Gwen Stefani concert tickets to user B, and the ad creative for tickets for the US Open Golf Tournament to user C. As a final example, suppose that there are different ad creatives for different television shows. An ad creative for the TV show “Fear Factor” may be shown to user A, an ad creative for the TV show “American Idol” may be shown to user B, and an ad creative for the “Nightly Business Report” may be shown to user C. As these examples demonstrate, embodiments consistent with the present invention may be used to serve more relevant and more useful ads to video game players. Such ads may be rendered on ad spots within the video games, though they may be rendered on ad spots on other documents instead or in addition.

§ 4.5 Conclusions

[0074] As can be appreciated from the foregoing, embodiments consistent with the present invention may be used to target in-game ads and serve more relevant and useful ads. Embodiments consistent with the present invention may monitor user video game inputs to improve ad targeting and provide more relevant and useful ads to the users.

What is claimed is:

1. A computer-implemented method comprising:
   a) generating an ad request, wherein the ad request includes video game information;
   b) transmitting the ad request to an ad server;
   c) determining at least one ad responsive to the ad request using at least the video game information included in the ad request;
   d) transmitting the at least one ad to a video game apparatus; and
   e) rendering the at least one ad in a video game being played by the video game apparatus.

2. The computer-implemented method of claim 1 wherein the video game information included in the ad request includes video game state-based information.

3. The computer-implemented method of claim 1 wherein the video game information included in the ad request includes user interactions with the video game.

4. The computer-implemented method of claim 3 wherein the user interactions with the video game include at least one of (A) user video game character selections, (B) user video game character apparel selections, and (C) user video game character physical attribute selections.

5. The computer-implemented method of claim 3 wherein the user video game character selections, (B) user video game sports player selections, and (C) user video game apparatus location information.

6. The computer-implemented method of claim 1 wherein the video game information included in the ad request includes video game apparatus location information.

7. The computer-implemented method of claim 1 wherein the video game information included in the ad request includes an identifier of a video game being played.

8. The computer-implemented method of claim 1 further comprising:
   tracking at least one of user selections and user game play;
   and
   inferring user characteristics from the tracked at least one user selections and user game play, wherein the ad request includes at least some of the inferred user characteristics.

9. The computer-implemented method of claim 8 wherein the act of inferring user characteristics occurs on the video game apparatus.

10. The computer-implemented method of claim 8 wherein the act of inferring user characteristics occurs on a system remote from the video game system.

11. The computer-implemented method of claim 1 wherein the video game information is session information.

12. The computer-implemented method of claim 11 wherein the session information includes at least one of (A) start times, (B) stop times, and (C) pause times.

13. The computer-implemented method of claim 1 wherein the act of determining at least one ad includes determining, from a plurality of ads including targeting information, at least one relevant ad using the targeting information and the video game information.

14. The computer-implemented method of claim 13 wherein the targeting information includes a video game identifier.

15. The computer-implemented method of claim 13 wherein the targeting information includes a video game type or genre.

16. The computer-implemented method of claim 13 wherein the targeting information includes video game apparatus location information.

17. The computer-implemented method of claim 13 wherein the targeting information includes at least one of time and date information.
18. The computer-implemented method of claim 13 wherein the targeting information includes user information.

19. The computer-implemented method of claim 13 includes the act of determining at least one ad further includes scoring each of the at least one relevant ad, and selecting the at least one ad from the ad least one relevant ad using the score.

20. The computer-implemented method of claim 19 wherein each of the relevant ads has offer information, and wherein the act of scoring each of the at least one relevant ad uses the offer information.

21. The computer-implemented method of claim 20 wherein the offer information is an offer per ad impression in a video game.

22. The computer-implemented method of claim 1 wherein the act of transmitting the ad request to the ad server occurs after the video game system is turned on and responsive to the video game system being turned on.

23. The computer-implemented method of claim 1 wherein the act of transmitting the ad request is responsive to an ad spot becoming available imminently.

24. The computer-implemented method of claim 1 wherein the act of transmitting the ad request is responsive to an ad spot becoming available with more than a predetermined probability.

25. The computer-implemented method of claim 1 wherein the video game information includes information for more than one video game.

26. The computer-implemented method of claim 1 wherein the video game information includes information, stored on a non-volatile readable and writeable memory means residing with a video game apparatus, for more than one video game.

27. The computer-implemented method of claim 1 wherein the ad server resides on the video game apparatus, and wherein the act of determining at least one ad responsive to the ad request using at least the video game information included in the ad request is performed on the video game apparatus resident ad server.

28. The computer-implemented method of claim 27 wherein the at least one ad determined responsive to the ad request is selected from a group of ads provided on a computer-readable medium on which the video game is also stored.

29. A computer-implemented method comprising:

a) tracking at least one of user selections and user play in the context of a video game;

b) inferring user characteristics from the tracked at least one user selections and user game play; and

c) determining ads relevant to the user using the inferred user characteristics.

30. A computer-implemented method comprising:

a) generating an ad request, wherein the ad request includes video game information;

b) transmitting the ad request to an ad server;

c) receiving at least one ad that was determined using at least the video game information included in the ad request; and

d) rendering the at least one ad in a video game being played by the video game apparatus.

31. A computer-implemented method comprising:

a) accepting an ad request, wherein the ad request includes video game information;

b) determining at least one ad responsive to the ad request using at least the video game information included in the ad request; and

c) transmitting the at least one ad to a video game apparatus for rendering in a video game being played by the video game apparatus.

32. Apparatus comprising:

a) means for accepting an ad request, wherein the ad request includes video game information;

b) means for determining at least one ad responsive to the ad request using at least the video game information included in the ad request; and

c) means for transmitting the at least one ad to a video game apparatus for rendering in a video game being played by the video game apparatus.

33. A computer-readable medium having stored thereon computer-executable instructions which, when executed by a computer, perform acts of:

a) accepting an ad request, wherein the ad request includes video game information;

b) determining at least one ad responsive to the ad request using at least the video game information included in the ad request; and

c) transmitting the at least one ad to a video game apparatus for rendering in a video game being played by the video game apparatus.

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