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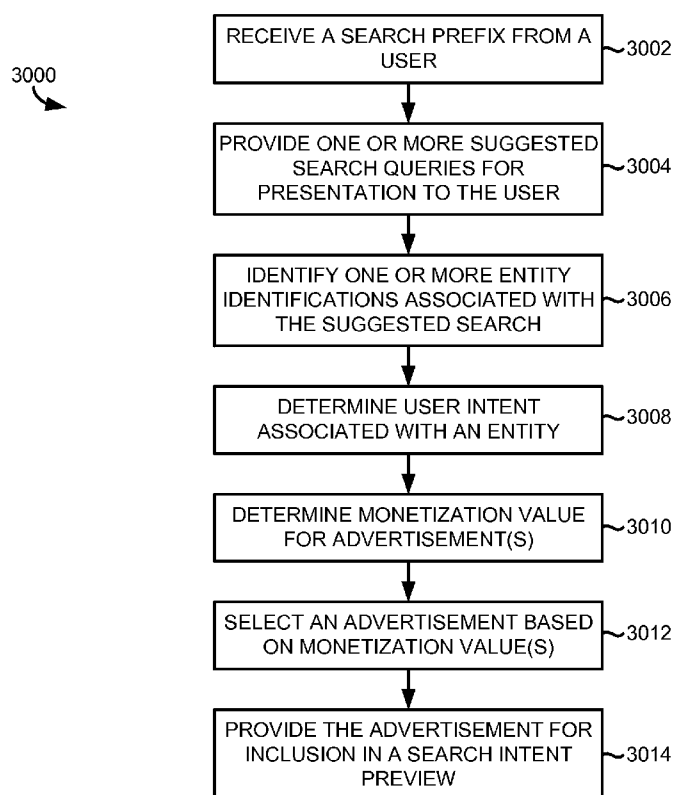
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- (54) **Title:** SERVING ADVERTISEMENTS FOR SEARCH PREVIEW BASED ON USER INTENTS



- (57) **Abstract:** Monetization is provided for a process of non-committal intent preview, disambiguation, and refinement of a search. Based on a non-committal intent preview, disambiguation, and refinement process, a user intent may be determined. The user intent may represent an action a user may intend to perform corresponding with a particular entity. An advertisement may be selected based on the identified user intent. The advertisement may then be communicated to a user device for inclusion in a search intent preview for presentation to a user prior to execution of a search query.



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SERVING ADVERTISEMENTS FOR SEARCH PREVIEW BASED ON USER INTENTS

BACKGROUND

5 [0001] Search engines and interfaces allow users to retrieve information by inputting search queries, for instance, into a search input region. While a user is inputting a search prefix associated with a search query, automatic systems provide likely completions or suggestions to the search prefix being input. When the user executes the search query, either by manually inputting the desired search query or by selecting a suggestion, the search
10 engine directs the user to a search engine results page (“SERP”).

SUMMARY

[0002] This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended
15 to be used as an aid in determining the scope of the claimed subject matter.

[0003] Embodiments of the present invention relate to monetizing a process for non-committal intent preview, disambiguation, and refinement of a search. Based on a non-committal intent preview, disambiguation, and refinement process, a user intent may be determined. The user intent may represent an action a user may intend to perform
20 corresponding with a particular entity. An advertisement may be selected based on the identified user intent. The advertisement may then be communicated to a user device for inclusion in a search intent preview for presentation to a user prior to execution of a search query.

BRIEF DESCRIPTION OF THE DRAWINGS

25 [0004] The present invention is illustrated by way of example and not limitation in the accompanying figures in which like reference numerals indicate similar elements and in which:

[0005] FIG. 1 is a block diagram of an exemplary computing environment suitable for use in implementing embodiments of the present invention;

30 [0006] FIG. 2 is a flow diagram showing an exemplary method for intent preview, disambiguation, and refinement of a search, in accordance with an embodiment of the present invention;

[0007] FIG. 3 schematically shows a network diagram suitable for performing embodiments of the present invention;

[0008] FIGS. 4-20 depict illustrative screen displays, in accordance with exemplary embodiments of the present invention;

5 [0009] FIG. 21 is a flow diagram showing an exemplary method for intent preview, disambiguation, and refinement of a search, in accordance with an embodiment of the present invention;

[0010] FIG. 22 schematically shows another network diagram suitable for performing embodiments of the present invention;

[0011] FIGS. 23-27 depict additional illustrative screen displays, in accordance with exemplary embodiments of the present invention;

10 [0012] FIG. 28 is a flow diagram showing an exemplary method for an advertiser to provide bidding information based on user intents in accordance with an embodiment of the present invention;

[0013] FIG. 29 is a flow diagram showing an exemplary method for selecting an advertisement based on user intent in accordance with an embodiment of the present
15 invention;

[0014] FIG. 30 is a flow diagram showing another exemplary method for selecting an advertisement based on user intent in accordance with an embodiment of the present invention; and

20 [0015] FIG. 31 is a flow diagram showing an exemplary method for determining whether an advertisement impression should be counted as a billable impression in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION

[0016] The subject matter of the present invention is described with specificity herein to meet statutory requirements. However, the description itself is not intended to limit the
25 scope of this patent. Rather, the inventors have contemplated that the claimed subject matter might also be embodied in other ways, to include different steps or combinations of steps similar to the ones described in this document, in conjunction with other present or future technologies. Moreover, although the terms “step” and/or “block” may be used herein to connote different elements of methods employed, the terms should not be interpreted as
30 implying any particular order among or between various steps herein disclosed unless and except when the order of individual steps is explicitly described.

[0017] Users are often searching for a particular entity. Entities are instances of abstract concepts and objects, including people, places, things, events, locations, businesses, movies,

and the like. Depending on the search query a user inputs or selects, the SERP may or may not include information about the particular entity the user is searching for.

[0018] Existing autosuggestion systems do not address tail queries (*i.e.*, infrequent or unseen queries) or intent the system has not encountered or otherwise ambiguous during the query formulation process. Intent refers to the target of the search, which may be an entity. Further, existing autosuggestion systems do not allow disambiguation of intent or allow users to express intent prior to retrieving the SERP. Any changes to the search query, such as selection of suggestions or input of additional characters, causes the SERP to refresh which can be distracting to the user and inefficient from a resource perspective. Still further, summarized data, such as in a search history or search session, is limited to presenting individual queries of a set. This can make it difficult for a user to ascertain the appropriate context or intent of a given session which effectively limits the ability to share the data in a meaningful way.

[0019] Various aspects of the technology described herein are generally directed to systems, methods, and computer-readable storage media for non-committal intent preview, disambiguation, and refinement of a search. A search prefix comprising one or more characters associated with an unexecuted search query is received. One or more intent suggestions are suggested to a user. For each of the one or more intent suggestions, one or more entity identifications associated with each of the one or more intent suggestions are received. Metadata corresponding to at least one entity associated with the one or more entity identifications is retrieved from an entity data store. Without retrieving search results for the unexecuted search query, an aggregated intent preview based on the retrieved metadata corresponding to the at least one entity is provided. In embodiments, the one or more entities are ranked based on entity-intrinsic signals (*i.e.*, number of attributes associated with an entity, entity type, number of information sources associated with an entity), query-entity interactions by users (*i.e.*, explicit interactions or clicks on an entity in a search window or third party entity repository, interactions attributed to an entity via a query-url-entity tripartite graph), and query pattern likelihood scores, populating the intent suggestions or aggregated intent preview in order of relevance or likelihood of query intent. In embodiments, a refined intent preview associated with metadata corresponding to one or more subentities based on a selected item of metadata associated with the one or more entities is provided, conserving time and resources by allowing the user to further refine intent without executing the unexecuted search query. In embodiments, task completion for a selected entity or subentity is enabled allowing the user to easily and quickly take a

particular action or complete a task associated with the entity or subentity without having to execute the unexecuted search query. In other words, task completion refers to the opening and execution or completion of a task within an application, independent window, link, or process with or without affecting the search or search window. In embodiments, a set of queries issued by the user and entities corresponding to the set of queries may be provided, enabling the user to easily and quickly interact with a search history via the provided entities.

[0020] Accordingly, one embodiment of the present invention is directed to one or more computer storage media storing computer-useable instructions that, when used by one or more computing devices, cause the one or more computing devices to perform a method of non-committal intent preview, disambiguation, and refinement of a search. The method includes receiving a search prefix from a user, the search prefix comprising one or more characters associated with a search query. One or more intent suggestions are provided to the user based on a comparison of the search prefix with an autosuggest data store. One or more entity identifications associated with the intent suggestions are identified based on an entity ranking. An aggregated intent preview comprising metadata corresponding to one or more entities associated with at least one of the one or more entity identifications is provided. A refinement request is received from the user. The refinement request comprises an indication that the user has selected an item of metadata corresponding to a subentity and associated with the one or more entities. A refined intent preview comprising metadata corresponding to the subentity is provided.

[0021] Another embodiment of the present invention is directed to computer storage media having computer-executable instructions embodied thereon that, when executed by one or more computing devices, cause the one or more computing devices to produce a graphical user interface (GUI) for non-committal intent preview, disambiguation, and refinement of a search. The GUI includes a search display area that displays a search bar for receiving a search prefix corresponding to an unexecuted search from a user. An autosuggest display area displays, without executing the search, one or more intent suggestions to the user. An entity display area displays, without executing the search, an aggregated intent preview comprising metadata associated with at least one entity corresponding to entity identifications associated with the one or more intent suggestions. A refinement display area displays, without executing the search, a refined intent preview comprising metadata associated with a subentity corresponding to an item of metadata selected by the user and associated with the at least one entity.

[0022] Yet another embodiment of the present invention includes a system for providing non-committal intent preview, disambiguation, and refinement of a search. The system includes one or more processors coupled to a computer storage medium, the computer storage medium having stored thereon a plurality of computer software components executable by the processor. The computer software components include an autosuggest component that receives a search prefix comprising one or more characters associated with an unexecuted search query and suggests one or more intent suggestions to a user. An entity identification component receives, for each of the one or more intent suggestions, one or more associated entity identifications. A metadata component retrieves metadata from an entity data store. The metadata corresponds to at least one entity associated with the one or more entity identifications. A preview component provides, without retrieving search results for the unexecuted search query, an aggregated intent preview based on the retrieved metadata corresponding to the at least one entity.

[0023] Further embodiments are directed to monetizing the non-committal intent preview, disambiguation, and refinement processes discussed herein. Traditionally, advertisements have been selected for delivery within web search environments using an auction or bidding process involving keywords. In particular, advertisers may bid on keywords relevant to their advertisements. A bid on a keyword may represent how much the advertiser is willing to pay to have its advertisement selected for presentation in response to a user search query that includes or otherwise results in identification of the keyword. Depending on the monetization model employed, this may include an amount the advertiser is willing to pay for an impression (i.e., presentation of the advertisement), a user click on the advertisement, a conversion (i.e., purchase of a product/service) based on the advertisement, or other action. Using this auction approach, when users submit search queries to search engines, one or more keywords are identified based on the search queries and advertisements are selected based at least in part on how much advertisers bid on those keywords for their advertisements. Some monetization models may consider additional factors in selecting advertisements (e.g., click-through rates, user demographic information, etc.), but the main basis for advertisement selection has been keywords.

[0024] Embodiments of the present invention employ an approach for advertisement selection that deviates from the traditional keyword approach. Instead of relying on keywords identified based on a user's search query, embodiments evaluate users' actual intentions during a search preview process and select advertisements based on those actual intentions. More particularly, a disambiguation and refinement process, such as that

generally described above and described in further detail below, may be employed to identify user intents for a non-committal intent preview and advertisements selected based on the user intents. As used herein, a “user intent” refers to an action a user may intend to perform associated with a given entity. By way of example only and not limitation, the action may include obtaining information about an entity, purchasing a product/service, viewing images or videos, booking a flight, getting reviews, getting directions, etc.

[0025] Instead of bidding on keywords, advertisers may bid on user intents using embodiments of the present invention. This may be done by an advertiser specifying a bid amount for its advertisement to be presented for a particular action associated with a given entity. In some instances, the advertiser may specify additional metadata that further defines the user intent the advertiser wishes to target. When users enter search prefixes, a user intent may be identified using, for instance, a disambiguation and refinement process described herein, and an advertisement may be selected for inclusion in a search intent preview based on advertisers’ bids on the identified user intent. Other factors (e.g., user demographic information, etc.) could be used in conjunction with the user intent information for the advertisement selection. The advertisement is delivered to a user device where it is included in a search intent preview that may include a number of tiles representing the user intents identified. The advertisement is provided as one of the tiles. The remaining tiles may represent other user intents and may include paid and/or non-paid content/actions. Accordingly, embodiments allow advertisers to sponsor actions for entities presented as tiles or other UI elements within a search intent preview.

[0026] By way of specific example to illustrate, suppose a user begins to enter a search prefix, “aven”. A search query suggestion of “avengers” may be identified based on the search prefix. Additionally, the 2012 movie “The Avengers” may be identified as an associated entity. Further, a number of actions may be determined to be available for this movie. These actions could include obtaining information regarding the movie, viewing images from the movie, viewing a trailer of the movie, and viewing the movie using a streaming video service. Each of these actions associated with this entity (i.e., “The Avengers” movie) represent a possible user intent and a tile or other UI element may be presented within a user intent preview UI that allows the user to access each action. In accordance with embodiments of the present invention, one or more of these user intents could be monetized by allowing advertisers to bid on the user intents and selecting advertisement(s) to be presented as part of the user intent preview UI based on these bids. For instance, a number of different streaming video providers (e.g., the NETFLIX and

AMAZON INSTANT VIDEO streaming video providers) may have bid on the user intent of streaming “The Avengers” movie. Based on these bids, an advertisement from one of the streaming video providers may be selected for presentation within the search intent preview. Generally, the presented advertisement may allow the user to complete the user intent (i.e.,
5 stream “The Avengers” movie). For instance, the advertisement could be: an app for the streaming media provider that allows the user to start viewing “The Avengers” movie; an advertisement to obtain such an app; or a link to a website that allows the user to otherwise stream the movie.

[0027] A search intent preview display may be intermittent as different intent previews
10 may be displayed as the user continues to type a search prefix or otherwise provides input that changes the identified user intents. Therefore, there may be some advertisements displayed as part of an intermittent display provided while the user is typing. For example, suppose a user types “a” and “Amazon” is identified as a top entity and a preview shown around that entity, including an advertisement selected from Amazon.com. However, the
15 user continues to type “d” such that the search prefix is now “ad” and the top entity is now “adorama”. The preview is updated around the “adorama” entity, including an advertisement from Adorama.com. If an impression monetization model is used, it may be incorrect to count the impression from the Amazon.com advertisement as a billable impression, as the user did not get a chance to interact with it or possibly even view the
20 advertisement. Accordingly, in some embodiments, an impression is considered billable only if the impression is shown in the preview for a predetermined period of time or if the user performs some action before that period of time (e.g., interacts with content in the preview or executes the search query).

[0028] Accordingly, one embodiment of the present invention is directed to a method for
25 selecting an advertisement based on user intent for presentation within a search intent preview. The method includes receiving, at a server, a request for an advertisement. The method also includes identifying an indication of the user intent corresponding with the request for the advertisement, the user intent having been determined based on a search prefix from a user and representing an action the user intends to perform corresponding with
30 an entity identified based on the search prefix. The method further includes selecting the advertisement based on the user intent and at least one user intent bid value for the advertisement. The method still further includes providing the advertisement for inclusion in the search intent preview for presentation to the user before a search is executed.

[0029] In another embodiment, the present invention is directed to one or more computer storage media storing computer-useable instructions that, when used by one or more computing devices, cause the one or more computing devices to perform a method. The method includes receiving a search prefix from a user, the search prefix comprising one or more characters associated with a search query. The method also includes providing one or more intent suggestions for presentation to the user based on a comparison of the search prefix to an autosuggest data store. The method further includes identifying one or more entity identifications associated with the intent suggestions based on an entity ranking. The method also includes determining a user intent associated with an entity corresponding to the first entity identification, the user intent representing an action a user intends to perform corresponding with the entity. The method also includes determining a monetization value for each of one or more advertisements based on the user intent, wherein the monetization value for each advertisement is based on one or more user intent values provided for each advertisement. The method further includes selecting an advertisement for presentation based on the monetization value of each of the one or more advertisements. The method still further includes providing the advertisement for inclusion in a search intent preview for presentation to the user before a search is executed.

[0030] In yet another embodiment, the present invention is directed to one or more computer storage media storing computer-useable instructions that, when used by one or more computing devices, cause the one or more computing devices to perform a method. The method includes receiving an advertisement request, selecting an advertisement in response to the advertisement request, and providing the advertisement for inclusion in a search intent preview for presentation to the user before a search is executed. The method also includes determining whether the advertisement was shown for purposes of considering the advertisement as a billable impression. If a determination is made that the advertisement was shown, the method further includes marking the advertisement as a billable impression. If a determination is made that the advertisement was not shown, the method further includes not marking the advertisement as a billable impression.

[0031] Having briefly described an overview of embodiments of the present invention, an exemplary operating environment in which embodiments of the present invention may be implemented is described below in order to provide a general context for various aspects of the present invention. Referring to the figures in general and initially to FIG. 1 in particular, an exemplary operating environment for implementing embodiments of the present invention is shown and designated generally as computing device 100. The computing

device 100 is but one example of a suitable computing environment and is not intended to suggest any limitation as to the scope of use or functionality of embodiments of the invention. Neither should the computing device 100 be interpreted as having any dependency or requirement relating to any one component nor any combination of components illustrated.

[0032] Embodiments of the invention may be described in the general context of computer code or machine-useable instructions, including computer-useable or computer-executable instructions such as program modules, being executed by a computer or other machine, such as a personal data assistant or other handheld device. Generally, program modules include routines, programs, objects, components, data structures, and the like, and/or refer to code that performs particular tasks or implements particular abstract data types. Embodiments of the invention may be practiced in a variety of system configurations, including hand-held devices, consumer electronics, general-purpose computers, more specialty computing devices, and the like. Embodiments of the invention may also be practiced in distributed computing environments where tasks are performed by remote-processing devices that are linked through a communications network.

[0033] With continued reference to FIG. 1, the computing device 100 includes a bus 110 that directly or indirectly couples the following devices: a memory 112, one or more processors 114, one or more presentation components 116, one or more input/output (I/O) ports 118, one or more I/O components 120, and an illustrative power supply 122. The bus 110 represents what may be one or more busses (such as an address bus, data bus, or combination thereof). Although the various blocks of FIG. 1 are shown with lines for the sake of clarity, in reality, these blocks represent logical, not necessarily actual, components. For example, one may consider a presentation component such as a display device to be an I/O component. Also, processors have memory. The inventors hereof recognize that such is the nature of the art, and reiterate that the diagram of FIG. 1 is merely illustrative of an exemplary computing device that can be used in connection with one or more embodiments of the present invention. Distinction is not made between such categories as “workstation”, “server”, “laptop”, “hand-held device”, etc., as all are contemplated within the scope of FIG. 1 and reference to “computing device”.

[0034] The computing device 100 typically includes a variety of computer-readable media. Computer-readable media may be any available media that is accessible by the computing device 100 and includes both volatile and nonvolatile media, removable and non-removable media. Computer-readable media comprises computer storage media and

communication media; computer storage media excluding signals per se. Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer-readable instructions, data structures, program modules or other data. Computer storage media
5 includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical disk storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by computing device 100.

10 **[0035]** Communication media, on the other hand, embodies computer-readable instructions, data structures, program modules or other data in a modulated data signal such as a carrier wave or other transport mechanism and includes any information delivery media. The term “modulated data signal” means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example,
15 and not limitation, communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, RF, infrared and other wireless media. Combinations of any of the above should also be included within the scope of computer-readable media.

[0036] The memory 112 includes computer-storage media in the form of volatile and/or
20 nonvolatile memory. The memory may be removable, non-removable, or a combination thereof. Exemplary hardware devices include solid-state memory, hard drives, optical-disc drives, and the like. The computing device 100 includes one or more processors that read data from various entities such as the memory 112 or the I/O components 120. The presentation component(s) 116 present data indications to a user or other device. Exemplary
25 presentation components include a display device, speaker, printing component, vibrating component, and the like.

[0037] The I/O ports 118 allow the computing device 100 to be logically coupled to other devices including the I/O components 120, some of which may be built in. Illustrative I/O components include a microphone, joystick, game pad, satellite dish, scanner, printer,
30 wireless device, a controller, such as a stylus, a keyboard and a mouse, a natural user interface (NUI), and the like.

[0038] A NUI processes air gestures (*i.e.*, motion or movements associated with a user’s hand or hands or other parts of the user’s body), voice, or other physiological inputs generated by a user. These inputs may be interpreted as search prefixes, search requests,

requests for interacting with intent suggestions, requests for interacting with entities or subentities, or requests for interacting with advertisements, entity or disambiguation tiles, actions, search histories, and the like provided by the computing device 100. These requests may be transmitted to the appropriate network element for further processing. A NUI
5 implements any combination of speech recognition, touch and stylus recognition, facial recognition, biometric recognition, gesture recognition both on screen and adjacent to the screen, air gestures, head and eye tracking, and touch recognition associated with displays on the computing device 100. The computing device 100 may be equipped with depth cameras, such as, stereoscopic camera systems, infrared camera systems, RGB camera
10 systems, and combinations of these for gesture detection and recognition. Additionally, the computing device 100 may be equipped with accelerometers or gyroscopes that enable detection of motion. The output of the accelerometers or gyroscopes is provided to the display of the computing device 100 to render immersive augmented reality or virtual reality.

15 **[0039]** Aspects of the subject matter described herein may be described in the general context of computer-executable instructions, such as program modules, being executed by a computing device. Generally, program modules include routines, programs, objects, components, data structures, and so forth, which perform particular tasks or implement particular abstract data types. Aspects of the subject matter described herein may also be
20 practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote computer storage media including memory storage devices.

[0040] Furthermore, although the term “intent disambiguation engine” is used herein, it
25 will be recognized that this term may also encompass a server, a Web browser, a set of one or more processes distributed on one or more computers, one or more stand-alone storage devices, a set of one or more other computing or storage devices, any application, process, or device capable of providing search functionality; search intent preview, disambiguation, and refinement as described herein; a combination of one or more of the above; and the like.

30 **[0041]** As previously mentioned, embodiments of the present invention are generally directed to systems, methods, and computer-readable storage media for non-committal intent preview, disambiguation, and refinement of a search. A search prefix comprising one or more characters associated with an unexecuted search query is received. One or more intent suggestions are suggested to a user. For each of the one or more intent suggestions,

one or more associated entity identifications are received. Metadata corresponding to at least one entity associated with the one or more entity identifications is retrieved from an entity data store. Without retrieving search results for the unexecuted search query, an aggregated intent preview based on the retrieved metadata corresponding to the at least one entity is provided. The one or more entities may be ranked based on entity-intrinsic signals, query-entity interactions by users, and query pattern likelihood scores. A refined intent preview associated with metadata corresponding to one or more subentities based on a selected item of metadata associated with the one or more entities may be provided. Task completion for a selected entity or subentity may be enabled. A set of queries issued by the user and entities corresponding to the set of queries may be provided. In embodiments, the entities enable the user to interact with a search history.

[0042] Referring to FIG. 2, a flow diagram is provided showing an exemplary method 200 for intent preview, disambiguation, and refinement of a search, in accordance with an embodiment of the present invention. The method 200 allows a user to surface content (e.g., an intent) that is difficult to find using common expressions. The user can enter the method 200 at any point. Similarly, a user can exit the method 200 at any point, such as by executing the unexecuted query. However, the user may determine that reentry is necessary to refine the query.

[0043] At the concept stage 210, an initial essence of the query is expressed. For example, the user may begin inputting a search prefix associated with the search query “Harry Potter”. The user may actually type “Harry Potter” or an intent suggestion for “Harry Potter” may be provided and selected based on the search prefix. Because a search term like “Harry Potter” may map onto a large set of entities varying in type (e.g., books, characters, movies, actors, costumes, toys, and the like), the search term by itself may be ambiguous. In order to identify the intent or target of the search, intent suggestions identifying basic groups of entities or a few of the top-most ranked entity groups can be provided to the user.

[0044] At the segment disambiguation stage 220, a type of entity may be expressed. For example, the user may type “Harry Potter movie” or select an intent suggestion “Harry Potter movie”. Similarly, at the entity disambiguation stage 230, more specific information regarding the type of entity may be expressed. For example, the user may desire information about a particular Harry Potter movie. The user may type “Harry Potter movie prisoner of Azkaban” or selected an intent suggestion “Harry Potter movie prisoner of Azkaban”. Each token or word added to the unexecuted query string provides a deeper understanding of the intent.

[0045] At the intent refinement stage 240, the user may focus the search on a particular aspect of the previewed entity. In the present example, the user may desire to locate information about the cast of the selected movie. For instance, the user may type or select “Harry Potter movie prisoner of Azkaban cast”. As previously mentioned, once the user is satisfied the intent or target of the unexecuted search query has been properly identified, the user can execute the unexecuted search query, at the consume stage 250, and the SERP 252 is provided. The user may desire to narrow the focus of the search and may refine the search further at the react stage 260.

[0046] Referring now to FIG. 3, a block diagram is provided illustrating an exemplary computing system 300 in which embodiments of the present invention may be employed. Generally, the computing system 300 illustrates an environment in which a search session may be conducted utilizing pre-existing search navigation patterns. Among other components not shown, the computing system 300 generally includes user computing devices 310 (e.g., mobile device, television, kiosk, watch, touch screen or tablet device, workstation, gaming system, internet-connected consoles, and the like) and an intent disambiguation engine 320 in communication with one another via a network 302. The network 302 may include, without limitation, one or more local area networks (LANs) and/or wide area networks (WANs). Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet. Accordingly, the network 302 is not further described herein.

[0047] It should be understood that any number of user computing devices 310 and/or intent disambiguation engines 320 may be employed in the computing system 300 within the scope of embodiments of the present invention. Each may comprise a single device/interface or multiple devices/interfaces cooperating in a distributed environment. For instance, the intent disambiguation engine 320 may comprise multiple devices and/or modules arranged in a distributed environment that collectively provide the functionality of the intent disambiguation engine 320 described herein. Additionally, other components or modules not shown also may be included within the computing system 300.

[0048] In some embodiments, one or more of the illustrated components/modules may be implemented as stand-alone applications. In other embodiments, one or more of the illustrated components/modules may be implemented via a user computing device 310, the intent disambiguation engine 320, or as an Internet-based service. It will be understood by those of ordinary skill in the art that the components/modules illustrated in FIG. 3 are exemplary in nature and in number and should not be construed as limiting. Any number of

components/modules may be employed to achieve the desired functionality within the scope of embodiments hereof. Further, components/modules may be located on and/or shared by any number of intent disambiguation engines and/or user computing devices. By way of example only, the intent disambiguation engine 320 might be provided as a single computing device (as shown), a cluster of computing devices, or a computing device remote from one or more of the remaining components.

[0049] It should be understood that this and other arrangements described herein are set forth only as examples. Other arrangements and elements (*e.g.*, machines, interfaces, functions, orders, and groupings of functions, etc.) can be used in addition to or instead of those shown, and some elements may be omitted altogether. Further, many of the elements described herein are functional entities that may be implemented as discrete or distributed components or in conjunction with other components, and in any suitable combination and location. Various functions described herein as being performed by one or more entities may be carried out by hardware, firmware, and/or software. For instance, various functions may be carried out by a processor executing instructions stored in memory.

[0050] The user computing device 310 may include any type of computing device, such as the computing device 100 described with reference to FIG. 1, for example. Generally, the user computing device 310 includes a display and is capable of executing a search or acting as a host for search results. The search process, among other things, is configured to render search engine home pages (or other online landing pages) and search engine results pages (SERPs), in association with the display of the user computing device 310. The user computing device 310 is further configured to receive user input of requests for various web pages (including search engine home pages), receive user input search queries, receive user input to refine search intent and/or take action on an entity (generally input via a user interface provided on the display and permitting alpha-numeric, voice, motion/gesture, and/or textual input into a designated search input region) and to receive content for presentation on the display, for instance, from the intent disambiguation engine 320. It should be noted that the functionality described herein as being performed by the user device 310 and/or intent disambiguation engine 320 may be performed by any operating system, application, process, web browser, web browser chrome or via accessibility to an operating system, application, process, web browser, web browser chrome, or any device otherwise capable of executing a search or acting as a host for search results. It should further be noted that embodiments of the present invention are equally applicable to mobile computing devices and devices accepting touch, gesture, and/or voice input. Any and all such

variations, and any combination thereof, are contemplated to be within the scope of embodiments of the present invention.

[0051] The intent disambiguation engine 320 of FIG. 3 is configured to, among other things, provide intent preview, disambiguation, and refinement of a search. The intent disambiguation engine 320 is additionally configured to, among other things, enable actions on entities and provide entity-centric search history and shared data. As illustrated, in various embodiments, the intent disambiguation engine 320 includes a search prefix component 322, an autosuggest component 324, an entity identification component 326, a metadata component 328, a preview component 330, a ranking component 332, a refinement component 334, and an action component 336. The illustrated intent disambiguation engine 320 also has access to a completion trie 340 and an entity data store 350. The completion trie 340 is a data store configured to store and associate intent suggestions with entity identifications ("entity IDs"). The entity data store 350 is a high performance data store configured to provide fast lookup of entities and metadata associated with entities corresponding to one or more entity IDs identified by the completion trie 340. It will be understood and appreciated by those of ordinary skill in the art that the information stored in association with the completion trie 340 and the entity data store 350 may be configurable and may include any information relevant to search queries/terms/histories, intent suggestions, entity identifications, entities, and metadata associated with the entities. The content and volume of such information are not intended to limit the scope of embodiments of the present invention in any way. Further, though illustrated as two, independent components, each of the completion trie 340 and the entity data store 350 may, in fact, be a plurality of storage devices, for instance a database cluster, portions of which may reside in association with the intent disambiguation engine 320, the user computing device 310, another external computing device (not shown), and/or any combination thereof. Further, the completion trie 340 and the entity data store 350 may be combined in a single storage device or database cluster.

[0052] The search prefix component 322 of the intent disambiguation engine 320 is configured to receive a search prefix, for instance, utilizing search functionality associated with the user computing device 310. The search prefix comprises one or more characters associated with an unexecuted search query. Upon receiving the one or more characters associated with the unexecuted search query, the search prefix component 322 communicates the search prefix to the autosuggest component 324.

[0053] The autosuggest component 324 of the intent disambiguation engine 320 is configured to receive the search prefix comprising one or more characters associated with an unexecuted search query. Upon receiving the search prefix, the autosuggest component 324 retrieves one or more intent suggestions associated with the search prefix. In one embodiment, the one or more intent suggestions are retrieved from the completion trie 340. The intent suggestions represent the most likely intent of the user and/or target(s) of the unexecuted search query. The most likely intent of the user and/or target of the unexecuted search query may be determined by determining the type of query and possible types of entities associated with that type of query. Each of the intent suggestions may also be associated with one or more entity IDs. An entity ID indicates the intent suggestion is associated with one or more entities and may assist the user in distinguishing one intent suggestion from another.

[0054] If the intent suggestion is associated with an entity ID, the entity identification component ("entity ID component") 326 of the intent disambiguation engine 320 is configured to retrieve the entity ID. The entity ID may be used to look up metadata associated with one or more entities that is stored, in one embodiment, in the entity data store 350. The entity ID may further describe or indicate the type of entity associated with the entity ID. Such indication may help the user readily locate or identify a particular search within a search history or share a particular search with others.

[0055] The metadata component 328 of the intent disambiguation engine 320 is configured to retrieve metadata from the entity data store 350. The metadata corresponds to at least one entity associated with the one or more entity identifications. The metadata may include content associated with the entity such as data or snippets of data that may be returned by or be available via links in search results for that entity. Metadata for multiple entities may be retrieved allowing the user to narrow or refine a search. For example, a primary intent suggestion representing the likely primary focus of the search as well as one or more secondary intent suggestions representing subcategories or subentities of the primary intent suggestion can be retrieved. Similarly, a primary intent suggestion representing the most likely target of the search as well as secondary intent suggestions representing less likely targets of the search can be retrieved. A request to retrieve metadata, in one embodiment, is initiated when the user hovers over or selects an intent suggestion. In another embodiment, metadata for the first intent suggestion or most likely intent suggestion is automatically selected or retrieved.

[0056] The preview component 330 of the intent disambiguation engine 320 is configured to provide an aggregated intent preview based on the retrieved metadata corresponding to the at least one entity. The aggregated intent preview is provided without retrieving search results for the unexecuted search query. This allows the user to preview metadata associated with the intent suggestions without consuming the resources necessary to execute the full unexecuted search query. Rather than updating the SERP each time the user selects one of the intent suggestions, the aggregated intent preview provides the user with enough information about a particular entity to narrow the focus of the search. In other words, the aggregated intent preview provides a non-committal preview of one or more entities or subentities to help the user to refine an intent associated with the search without committing to the search until the user is actually ready to execute the search. More simply, the aggregated intent preview does not distract the user by constantly refreshing a SERP associated with a search because the search query is not executed until the user is satisfied the intent of the search is properly identified and adequately focused.

[0057] For example, a user may be searching for a particular person or thing. After receiving a search prefix associated with a search query input by the user seeking information regarding that person or thing, the autosuggest component 334 may retrieve several intent suggestions associated with the search prefix. Each of the intent suggestions may be associated with an entity ID that is associated with an intent suggestion that completes the search prefix (e.g., completes the spelling of one or more persons or things associated with the search prefix). The one or more entities or subentities identified in the aggregated intent preview is associated with the intent suggestion and may further identify one or more subcategories or subentities associated with the intent suggestion to help the user refine the search accordingly.

[0058] In one embodiment, the ranking component 332 of the intent disambiguation engine 320 is configured to rank the one or more entities. The ranking may be utilized to automatically determine the intent or target of the unexecuted search query. The ranking may be based on entity-intrinsic signals, query-entity interactions by users, and/or query pattern likelihood scores. The entity-intrinsic signals may comprise a number of attributes or a number of information sources. For example, one intent suggestion may be ranked higher than another if it includes more attributes associated with a particular entity. Similarly, one intent suggestion may be associated with a particular entity that has a higher number of information sources than another intent suggestion associated with a different entity. Each of these entity-intrinsic signals may be utilized to assign a static ranking score

to the intent suggestion, independent of the unexecuted search query. The same methodology can be utilized to rank and influence the display of entities or subentities provided in the aggregated intent preview.

[0059] The query pattern likelihood scores may be based on expected patterns. The
5 expected patterns may be based on entity type, quality standards independent of an individual entity, quality standards independent of associated queries, dominance of one particular entity over another, non-entity associations of the query, and the like.

[0060] Expected patterns represent the identification by the system of one or more
10 expected terms, based on the entity type, associated with the intent suggestion. Expected patterns generally are based on data that is typically associated with an entity and which users have come to expect having associated with the particular entity type. For example, each intent suggestion associated with an entity can be examined to identify expected patterns based on the entity type. If the entity type is a business, expected patterns of the intent suggestions may include business names, locations, type of businesses, and the like.
15 On the other hand, if the entity type is a person, expected patterns of the intent suggestions may include first names, middle initials, locations, last names, occupations, and the like.

[0061] The quality standards may be independent of the individual entity but may be based on the entity type. For example, a determination can be made to make sure the query includes at least one well known business name or person name. The quality standards may
20 also be independent of the intent suggestions or unexecuted search query. For example, entities may only be included in the aggregate intent preview if they contain a minimum number of attributes or have been updated recently (e.g., within a predetermined or configurable amount of time). Thus, the quality standards ensure that items associated with the query or the entities included in the aggregate intent preview are expected or known
25 (e.g., one or more known terms), meet minimum requirements (e.g., minimum number of entity-intrinsic signals), and up-to-date.

[0062] In the instance where one particular entity (e) dominates intent suggestions for an unexecuted search query, it may be determined that intent suggestions associated with a less dominant entity (e', e'', e''', etc.) should not be provided for the unexecuted search query.
30 When one entity (e) exceeds a particular configurable, predetermined, or automatically determined threshold (e.g., given a set of intent suggestions for an unexecuted search query, a percentage of those intent suggestions that corresponds to/is directed to the entity (e) meets or exceeds a threshold), entity (e) may be considered to dominate the intent suggestions for the unexecuted search query. For example, if over fifty percent of the intent suggestions for

an unexecuted search query are associated with an entity (e), entity (e) dominates the intent suggestions for the unexecuted search query. As a result, it may be determined that intent suggestions associated with other entities (e', e'', e''', etc.) should not be provided for the unexecuted search query.

5 [0063] However, in situations where multiple entity types may be identified as the possible or likely target or intent of the search, less dominant entities may be associated with the selected intent suggestion even when another more dominant query-entity pair exceeds the particular configurable or automatically determined threshold. For example, a business entity may be dominant to all other entities for the intent suggestion “hotel California”.
10 However, song entities associated with the intent suggestion “hotel California” may actually be the target or intent of the user. Even if the business entity exceeds the threshold to be determined a dominant entity for that particular intent suggestion, the song entities are still associated with the intent suggestion until the actual intent or target of the unexecuted search query is determined.

15 [0064] Similarly, non-entity associations of an intent suggestion may also be considered to determine whether a particular entity is dominant. For example, an intent suggestion or unexecuted search query may not have an entity intent (an entity intent suggests the intent or target of the search is an entity). In other words, the intent suggestion or target of the unexecuted search query is not an entity. The intent suggestion or the target of the
20 unexecuted search query may instead target a web resource. In this instance, even when an entity (e.g., business or person entity) exists, the primary intent is the web resource and the query-entity associated is dropped. The primary intent may be determined based on user signals at the time the search prefix is input, how the user interacts with the intent suggestions or aggregated intent preview (e.g., query-entity interactions, entity clicks or
25 clicks on an entity in a search window or third party entity repository, etc.), a search history associated with the user (e.g., search logs, previous query-entity interactions, previous entity clicks or clicks on an entity in a search window or third party entity repository, etc.), third party search history (e.g., search logs, previous third party query-entity interactions, previous third party entity clicks or clicks on an entity in a search window or third party
30 entity repository, etc.).

[0065] The refinement component 334 of the intent disambiguation engine 320 is configured to, without retrieving search results for the unexecuted search query, provide a refined intent preview. The refined intent preview is associated with metadata corresponding to one or more subentities. The one or more subentities are based on a selected item of

metadata associated with the one or more entities. For example, a user may select or interact with an item from the aggregated intent preview. The selected item may be based on metadata corresponding to the one or more entities associated with an intent suggestion. The selected item may be associated with one or more subentities related to the entity. Such a selection allows the user to further refine the search by narrowing the focus or intent of the search without actually executing the unexecuted search query.

[0066] The action component 336 of the intent disambiguation engine 320 is configured to enable task completion for a selected entity or subentity in association with the aggregated intent preview. This allows the aggregated intent preview to not only identify an intent of the search but actually allows the user to complete a task or action associated with the unexecuted search query. For example, a user may desire information about a particular movie. The action component allows the user to actually view or download the movie, such as on Netflix®. The action component may provide a link or tile that, upon selection, opens an application, independent window, link, or process to execute the task. In one embodiment, upon selection of the link or tile, the action component opens an application, independent window, link, or process without affecting the search window. In one embodiment, upon selection of the link or tile, the action component opens an application, independent window, link, or process and the search is refined or updated. In one embodiment, upon selection of the link or tile, the action component opens an application, independent window, link, or process and the search window is closed. As can be appreciated, any number of actions or tasks may be enabled by the action component 336. For example, an application may be available that relates to a particular entity or subentity. Upon selection, the application is installed on the user device. Similarly, tickets or reservations to a particular event or place can be purchased or made by the action component 336. In one embodiment, the action component 336 is configured to include paid placement text or display advertisements in association with the aggregated intent preview.

[0067] With reference to FIGs. 4-19, illustrative screen displays for non-committal intent preview, disambiguation, and refinement of a search are provided. It is understood that each of the illustrative screen displays are connected logically, such that they comprise a user interface designed for non-committal intent preview, disambiguation, and refinement of a search. The screen displays may appear in any order and with any number of screen displays, without regard to whether the screen display is described or depicted herein.

[0068] Referring now to FIG. 4, an illustrative screen display 400 of an embodiment of the present invention is shown. A search display area displays a search bar 410 for receiving

a search prefix 412 from a user corresponding to an unexecuted search. Autosuggest display area 420 displays, without executing the search, one or more intent suggestions 421, 422, 423, 424, 425, 426, 427, 428 to the user. Entity display area 430 displays, without executing the search, an aggregated intent preview comprising metadata associated with at least one entity 432, 434, 436, 438, 440 corresponding to entity identifications associated with the one or more intent suggestions. The aggregated intent preview may include a main or primary entity 432 that appears larger than the other entities (i.e., secondary entities). The primary entity 432 may be ranked higher than the other entities, such as by the ranking methodology described herein. The secondary entities 434, 436, 438, 440 may be subentities associated with the primary entity 432 or may be distinct entities altogether, such as lower ranked entities. Each of the entities may be selectable, such as to further refine the intent of the search, but without executing the search, or enable action or completion of a particular task, such as those actions and tasks described herein.

[0069] In FIG. 5, an illustrative screen display 500 of an embodiment of the present invention is shown. The search display area displays a search bar 510 with the search prefix 512 “aven”. Autosuggest display area 520 displays, without executing the search, intent suggestions 521, 522, 523, 524, 525, 526, 527, 528. In this example, intent suggestions 521, 522, 523, 524, 525, 526, 527, 528 include “avengers”, “avenue”, “avengers alternate opening”, “avengers trailer”, “avenged sevenfold”, “avengers games”, “avenade”, “aventa learning” to the user. The intent suggestions 521, 522, 523, 524, 525, 526, 527, 528 may be ranked such as by the ranking methodology described herein. Entity display area 530 displays, without executing the search, an aggregated intent preview comprising metadata associated with at least one entity. As illustrated, the entities include the primary entity 532, Marvel’s The Avengers and secondary entities 534, 536, 538, 540. In this example the secondary entities 534, 536, 538, 540 include Images (i.e., associated with the primary entity, “Marvel’s The Avengers”), Shopping (i.e., for items associated with the primary entity), Reviews (i.e., of the primary entity), Cast & Crew (i.e., for the primary entity) and correspond to entity identifications associated with the one or more intent suggestions or, in this case, the primary entity 532. The primary entity 532 may be identified by the user such, as by selecting an intent suggestion, or may be automatically selected corresponding to a ranking identifying the most likely entity (thus, intent) of the search. Each of the entities is selectable, such as to further refine the intent of the search, but without executing the search, or enable action or completion of a particular task, such as those actions and tasks described herein. For instance, the user can narrow the search to identify images associated with

“Marvel’s The Avengers” by selecting the tile or secondary entity 534 (e.g., Images), or by typing additional characters into the search bar 510. Selection of the Images entity may narrow the search further, such as by identifying particular scenes or characters. This results in the display of a refinement display area that displays, without executing the search, a refined intent preview comprising metadata associated with a subentity corresponding to a selected item of metadata associated with the at least one entity. Selection of the Images entity may also enable the user to complete a task, such as by allowing the user to view images associated with the movie via another website, application, and the like.

[0070] Turning now to FIG. 6, an illustrative screen display 600 of an embodiment of the present invention is shown. The search display area displays a search bar 610 with the search prefix 612. Autosuggest display area 620 displays, without executing the search, one or more intent suggestions to the user. The intent suggestions may be ranked such as by the ranking methodology described herein. Entity display area 630 displays, without executing the search, an aggregated intent preview comprising metadata associated with one or more entities 632, 634, 636. The entities 632, 634, 636 correspond to entity identifications associated with the one or more intent suggestions 620 or, in this case, multiple entities 632, 634, 636 of the same entity type. Although the most likely intent may be predicted or automatically selected, such as by the ranking methodology described herein, other candidates of the same entity type may also be provided to allow the user to more easily identify the target of the search. The most likely intent (i.e., primary intent) 632 is scaled, in one embodiment, to appear larger or occupy more space in the aggregated intent preview provided in the entity display area 630 than the less likely, secondary intents 634, 636. In one embodiment, the aggregated intent preview is automatically expanded based on intent confidence. In other words, if the intent confidence, as determined by the ranking methodology described herein or any methodology for determining confidence, exceeds a configurable threshold, the aggregated intent preview is automatically expanded and populated with one or more entities and associated metadata based on the determined or predicted intent.

[0071] As illustrated in FIG. 6, the search prefix 612 “michal j” and selection of intent suggestion “michael jackson” may result in the display of three entities 632, 634, 636 corresponding to the selected intent suggestion. The three entities 632, 634, 636 may be the same type, in this case people entities, each associated with a metadata corresponding to a subentity (e.g., profession, location, and the like) associated with each people entity. The entity display area 630 is scaled, in one embodiment, based on relevance signals or

likelihood of intent. For example, an entity tile associated with the primary intent 632 may appear larger or occupy more space in the entity display area 630 than other secondary intents 634, 636. Each of these primary and secondary intents 632, 634, 636 is selectable to allow the user to identify the appropriate intent of the search or further refine the search without actually executing the search. For instance, the user can narrow the search to identify, target, or preview subentities associated with the selected entity. Further, each of the entities 632, 634, 636 may enable action or completion of a particular task, such as those actions and tasks described herein. Once the user has properly identified or narrowed the intent of the search, the user can execute the search.

[0072] With reference now to FIG. 7, an illustrative screen display 700 of an embodiment of the present invention is shown. In one embodiment, a popular now display area 710 displays metadata 734, 736 associated with one or more entities 732 corresponding to entity identifications not associated with a search prefix received in the search bar. In other words, the popular now display area 710 can be provided without receiving a search prefix corresponding to a search. Rather, the popular now display area 710 displays intent suggestions 720 associated the most popular entities based on a search history, query-entity interactions, or entity click data. The search history, query-entity interactions, or entity click data may be associated with a user or group of users, such as a group of users associated with the user in a social network, location, place of employment, occupation, interest, proximity, subscription, school, demographics, and the like. The search history, query-entity interactions, or entity click data may be based on a configurable time range. The configurable time range may be set for any time range in the past, present, or future (i.e., such as for predicting likely popular searches, search terms, and entities in the future based on expected news, forecasts, events, schedules, holidays, press releases, product information, and the like).

[0073] In FIG. 8, an illustrative screen display 800 of an embodiment of the present invention is shown. As illustrated, after a search prefix 812 is received in the search bar 810, the autosuggest display area 820 displays, without executing the search, one or more intent suggestions to the user. Once an intent suggestion 822 is selected, the entity display area 830 displays, without executing the search, an aggregated intent preview comprising metadata associated with at least one entity corresponding to entity identifications associated with the one or more intent suggestions. In this example, the intent suggestion 822 “kelly white” was selected. As illustrated, multiple entities corresponding to the entity identification associated with the intent suggestion “kelly white” are provided in the entity

display area 830. Metadata corresponding to each entity is provided allowing the user to determine which entity or “kelly white” is the intent or target of the search. In some instances, the search may need to be refined further, such as by selecting one of the entities in the entity display area 830. For example, there may be multiple entities or subentities associated with one of the entities. In this case, there may be multiple ski instructors named “Kelly White” in North Bend, WA. The user may select the corresponding entity to refine the search further, in which case additional metadata is retrieved and provided for subentities associated with the selected entity allowing the user to select the appropriate entity or subentity.

[0074] Turning now to FIG. 9, an illustrative screen display 900 of an embodiment of the present invention is shown. Similar to the example set forth and illustrated in FIG. 8, FIG. 9 depicts an entity display area 930 displaying multiple entities associated with a selected intent suggestion 922. Each of the entities allows the user to further refine the search until the actual intent is determined and the search query is executed. For example, a user may type the search prefix 912 “canon cameras”. Intent suggestions are provided in the autosuggest display area 920. Once the intent suggestion 922 is selected, either automatically based on intent confidence or manually by the user, metadata corresponding to entities associated with the intent suggestion is retrieved and provided in the entity display area 930. As desired, the user can refine the search further by selecting an entity or subentity which results in subentities and corresponding metadata being provided in the entity display area 930.

[0075] With reference now to FIG. 10, an illustrative screen display 1000 of an embodiment of the present invention is shown. As illustrated, the metadata provided by the entity display area 1030 is provided for a single entity and is divided into entity or intent disambiguation tiles corresponding to a primary intent 1032 and secondary intents 1034, 1036, 1038, 1040. The primary intent 1032 may allow the user to execute the search for the selected intent suggestions or entity depicted by the entity display area 1030, while the secondary intents 1034, 1036, 1038, 1040 may allow the user to refine the search further for the entity or a particular subentity as already described herein.

[0076] In FIG. 11, an illustrative screen display 1100 of an embodiment of the present invention is shown. A navigational display area 1134 may appear in the entity display area 1130 corresponding to the intent suggestion 1122 selected from the one or more intent suggestions 1120. The navigational display area 1134 may represent local intent associated with the entity 1132. As illustrated, the navigational display area 1134 displays a map and/or

directions to an entity provided in the entity display area 1130. The navigational display area 1134 may further enable an action or task, as described in more detail below, such as providing directions from a location associated with the user to the nearest entity or an entity associated with a selected location. In one embodiment, an advertisement display area 1136 displays text or display advertisements for a particular entity. The text or display advertisements may be paid for by or auctioned to a provider distinct or independent of the search provider, such as the provider associated with the entity (e.g., Starbucks®). The text or display advertisements (e.g., paid placement for advertisements) may also be associated with an action or completion of a task (e.g., promoting download of an application) as described in more detail below.

[0077] Turning now to FIG. 12, an illustrative screen display 1200 of an embodiment of the present invention is shown. An action display area 1232, in one embodiment, displays an action available for the user to take on a particular entity. The action enables task completion for the intent suggestion 1222 selected from the one or more intent suggestions 1220. In one embodiment, the task completion is provided by a provider distinct or independent of the search provider. In one embodiment, the action may request or install an application associated with the distinct or independent provider.

[0078] Similarly, and with reference now to FIG. 13, an illustrative screen display 1300 of an embodiment of the present invention is shown. The action display area 1332 may appear in the entity display area 1330 corresponding to the intent suggestion 1322 selected from the one or more intent suggestions 1320. In one embodiment, the action is provided by a provider distinct or independent of the search provider. In one embodiment, the action may execute an application provided by the distinct or independent application provider, request permission to install the application, or request login credentials for an account associated with the application or provider.

[0079] In FIGs. 14A and 14B, illustrative screen displays depict mobile embodiments of the present invention. As illustrated in FIG. 14A, after a search prefix 1412 is received in the search bar 1410, the autosuggest display area 1420 displays, without executing the search, one or more intent suggestions to the user. Once an intent suggestion 1422 is selected, the entity display area 1430 displays (as illustrated in FIG. 14B), without executing the search, an aggregated intent preview comprising metadata associated with at least one entity corresponding to entity identifications associated with the one or more intent suggestions. In this example, the intent suggestion 1422 “rihanna” was selected. As illustrated, multiple entities corresponding to the entity identification associated with the

intent suggestion “rihanna” are provided in the entity display area 1430. Metadata corresponding to each entity is provided allowing the user to determine which entity associated with the intent suggestion “rihanna” is the actual intent or target of the search. In some instances, the search may need to be refined further, such as by selecting one of the entities in the entity display area 1430. For example, there may be multiple entities or subentities associated with one of the entities. In this case, there may be multiple items of metadata 1434, 1436, 1438, 1440, each representing secondary intents or subentities associated with the primary intent or entity 1432. The user may select the desired entity or subentity to refine the search further, in which case additional metadata is retrieved and provided for the selected entity or subentity allowing the user to identify the appropriate entity or subentity.

[0080] Turning now to FIG. 15, an illustrative screen display 1500 of an embodiment of the present invention is shown. As illustrated, a search history display area 1510 displays, in one embodiment, a set of queries 1520 issued by the user and entities 1540 corresponding to the set of queries 1520. The entities 1540 enable the user to interact with the search history. This allows a user to quickly assimilate and understand a view associated with the user’s search history. In one embodiment, the search history display area 1510 displays an aggregate set of queries issued by multiple users and entities corresponding to the aggregate set of queries, such as might be implemented in an embodiment to display which entities are being searched for the most by a population of users.

[0081] With reference now to FIG. 16, an illustrative screen display of an embodiment of the present invention is shown. As illustrated, a social network display area 1600 displays a topic or entity 1620 shared by one or more users 1610 via a social network. The topic or entity represents a set of queries issued by the one or more users 1610 and characterized by metadata associated with the at least one entity 1620. The entity may be selectable, allowing a user to retrace the steps of the research performed by the user sharing the entity 1620. The entity may be selectable, allowing a user to execute a search associated with the entity 1620. In one embodiment, the search may be executed with the same operating system, application, process, web browser, web browser chrome, or device otherwise capable of executing a search or acting as a host for search results as the original shared search. In one embodiment, the search may be executed with a different operating system, application, process, web browser, web browser chrome or via accessibility to an operating system, application, process, web browser, web browser chrome, or any device otherwise capable of executing a search or acting as a host for search results than the original shared search.

[0082] In FIG. 17, an illustrative screen display 1700 of an embodiment of the present invention is shown. As illustrated, a multi-user history display area 1700 displays a set of entities 1730 corresponding to a set of most popular searched for entities 1720 over a predetermined period of time by a population of users. The multi-user history display area 1700 may be tailored by a user to select specific topics or entities. The multi-user history display area 1700 then identifies the set of most popular searched for entities corresponding to the selected topic or entity. For example, and referring again to FIG. 17, a user may be interested in the most researched presidents in the last month. As illustrated, a most popular search for presidents entity search may result in a set of entities 1730 that includes presidents 1732, 1734, 1736.

[0083] Turning now to FIG. 18, an illustrative screen display 1800 of an embodiment of the present invention is shown. As illustrated, an annotated query display area 1800 displays an annotated query 1810 with a set of previously identified entities 1812, 1814, 1816 for the query 1810. Similarly, and with reference now to FIG. 19, an illustrative screen display 1900 of an embodiment of the present invention is shown. As illustrated, an annotated entity display area 1900 displays an annotated entity 1912, 1914, 1916, 1918, 1920 with a set of previously identified metadata 1922, 1924, 1926, 1928, 1930 for each entity. In each of the annotated query display area 1800 and annotated entity display area 1900, the set of previously identified entities for a query or metadata for the entity is automatically populated with previously existing information. This allows the intent disambiguation engine 320 of FIG. 3, for example, to retrieve valuable information for a user with minimal time, effort, and resources.

[0084] In FIG. 20, an illustrative screen display 2000 of an embodiment of the present invention is shown. As illustrated, the metadata provided by the entity preview area 2010 is provided for related intents 2032, 2034, 2036, 2038. The related intents 2032, 2034, 2036, 2038 are the result of a user executing a query for a selected primary intent, contextual signals, and further interaction. Referring back to FIG. 10, a user may select to execute the search for one of the entities the primary intent 1032 of FIG. 10. If the user is not satisfied with the search results, any interactions (e.g., query-entity interactions, entity clicks, etc.) may provide contextual information when the user further interacts with the search bar 2020 for the selected intent suggestion 2010. As a result, rather than identifying the same primary intent 1032 and secondary intents 1034, 1036, 1038, 1040 as illustrated in FIG. 10, by identifying and leveraging any contextual information, related intents 2032, 2034, 2036, 2038 are provided instead. The related intents 2032, 2034, 2036, 2038 allow the user to

continue the search experience recognizing that the intent has changed in accordance with the contextual information and further interaction with the search bar 2020.

[0085] Referring now to FIG. 21, a flow diagram is illustrated showing an exemplary method 2100 of non-committal intent preview, disambiguation, and refinement of a search.

5 As indicated at block 2110, a search prefix is received from a user (*e.g.*, utilizing the search prefix receiving component 322 of the intent disambiguation engine 320 of FIG. 3). The search prefix comprises one or more characters associated with a search query. As indicated at block 2112, one or more intent suggestions are provided to the user (*e.g.*, utilizing the autosuggest component 324 of the intent disambiguation engine 320 of FIG. 3). The one or
10 more intent suggestions may be based on a comparison of the search prefix to an autosuggest store. The one or more intent suggestions may be retrieved by an application programming interface (API) call to the autosuggest store. The one or more intent suggestions may be rendered by a separate service from the intent disambiguation engine 320.

[0086] One or more entity IDs associated with the intent suggestions are identified as
15 indicated at block 2114 (*e.g.*, utilizing the entity identification component 326 of the intent disambiguation engine 320 of FIG. 3). The one or more intent suggestions may be based on an entity ranking. In other words, the entities associated with the intent suggestions that are the most likely target or intent of the search may be ranked and identified. The ranking may be in accordance with the ranking methodology described herein. For example, in one
20 embodiment, the one or more entities are ranked based on entity-intrinsic signals, query-entity interactions by users, and query pattern likelihood scores. In one embodiment, the query pattern likelihood scores are based on entity type, quality standards independent of an individual entity, quality standards independent of associated queries, dominance of one particular entity over another, and non-entity associations of the query. In one embodiment,
25 the ranked entities are associated with a set of user queries. The set of user queries may be associated with a single user or multiple users over time.

[0087] An aggregated intent preview is provided as indicated at step 2116 (*e.g.*, utilizing the preview component 330 of the intent disambiguation engine 320 of FIG. 3). The aggregated intent preview comprises metadata corresponding to one or more entities
30 associated with at least one of the one or more entity IDs (the metadata is retrieved, for example, by the metadata component 328 of the intent disambiguation engine 320 of FIG. 3). To provide better efficiency and conserve network, bandwidth, and user device resources, the metadata may be retrieved in a separate API call from the user interface than the API call that retrieves the one or more intent suggestions. In one embodiment, a separate

service renders the metadata than the service rendering the one or more intent suggestions and/or the intent disambiguation engine 330.

[0088] As indicated at block 2118, a refinement request is received from the user. The refinement request comprises an indication the user has selected an item associated with the one or more entities. More simply, the refinement request is an indication the user determined to refine or narrow the focus or intent of the search. The item of metadata may correspond to a subentity (*i.e.*, a subset of metadata associated with the entity that may focus on one aspect associated with or further define or distinguish the entity). Metadata associated with the selected subentity is retrieved, for example, by the metadata component 328 of the intent disambiguation engine 320 of FIG. 3.

[0089] A refined intent preview is provided as indicated at block 2120 (*e.g.*, utilizing the refinement component 334 of the intent disambiguation engine 320 of FIG. 3). The refined intent preview allows the user to narrow the intent of the unexecuted search without executing the search. For example, the user may enter the search prefix “bellevue weath”. Based on this search prefix, one of the intent suggestions provided may be “bellevue weather”. After selecting this intent suggestion, either automatically based on confidence or manually by the user, the aggregated intent preview may comprise metadata corresponding to “Bellevue, Washington weather”, “Bellevue, Nebraska weather”, and “Bellevue, Ohio” weather. Based on the intent of the user, the user is able to identify the appropriate location of desired weather and refine the intent accordingly. After the user refines the intent to the desired location, additional metadata associated with that selected location may be provided and refined even further, as described herein.

[0090] As indicated previously, further embodiments are directed to monetizing user intents in a search intent preview. Referring now to FIG. 22, a block diagram is provided illustrating an exemplary computing system 2200 in which embodiments of the present invention may be employed. Generally, the computing system 2200 illustrates an environment in which advertisements may be selected based on user intents and provided as part of the search intent preview experience. Among other components not shown, the computing system 2200 generally includes user computing devices 2210 (*e.g.*, mobile device, television, kiosk, watch, touch screen or tablet device, workstation, gaming system, internet-connected consoles, and the like), an intent disambiguation engine 2220, and an advertisement delivery engine 2260 in communication with one another via a network 2202. The network 2202 may include, without limitation, one or more local area networks (LANs) and/or wide area networks (WANs). Such networking environments are commonplace in

offices, enterprise-wide computer networks, intranets and the Internet. Accordingly, the network 2202 is not further described herein.

[0091] It should be understood that any number of user computing devices 2210, intent disambiguation engines 2220, and/or advertisement delivery engines 2260 may be employed in the computing system 2200 within the scope of embodiments of the present invention. Each may comprise a single device/interface or multiple devices/interfaces cooperating in a distributed environment. For instance, the intent disambiguation engine 2220 may comprise multiple devices and/or modules arranged in a distributed environment that collectively provide the functionality of the intent disambiguation engine 2220 described herein. Additionally, other components or modules not shown also may be included within the computing system 2200.

[0092] In some embodiments, one or more of the illustrated components/modules may be implemented as stand-alone applications. In other embodiments, one or more of the illustrated components/modules may be implemented via a user computing device 2210, the intent disambiguation engine 2220, the advertisement delivery engine 2260 or as an Internet-based service. It will be understood by those of ordinary skill in the art that the components/modules illustrated in FIG. 22 are exemplary in nature and in number and should not be construed as limiting. Any number of components/modules may be employed to achieve the desired functionality within the scope of embodiments hereof. Further, components/modules may be located on and/or shared by any number of intent disambiguation engines, advertisement delivery engines and/or user computing devices. By way of example only, the intent disambiguation engine 2220 might be provided as a single computing device (as shown), a cluster of computing devices, or a computing device remote from one or more of the remaining components. As another example, the intent disambiguation engine 2220 and advertisement delivery engine 2260 could be provide together on a single computing device, a cluster of computing devices, or a computing device remote from one or more of the remaining components. Additionally, the intent disambiguation engine 2220 and advertisement delivery engine 2260 may be provided by a single entity or multiple entities. For instance, a search engine provider could provide both the disambiguation engine 2220 and advertisement delivery engine 2260. Alternatively, a search provider could provide the intent disambiguation engine 2220 and a separate advertisement system provider could provide the advertisement delivery engine 2260. Any and all such variations are contemplated to be within the scope of embodiments herein.

[0093] Each of the user computing devices 2210 and the intent disambiguation engine 2220 may be similar to the user devices 310 and intent disambiguation engine 320, respectively, discussed above with reference to FIG. 3. Additionally, the intent disambiguation engine 2220 may include a number of components (search prefix component 2222, autosuggest component 2224, entity identification component 2226, metadata component 2228, preview component 2230, ranking component 2232, refinement component 2234, and action component 2236) and operate using a completion trie 2240 and entity data store 2250 in a manner similar to that described above with reference to FIG. 3. As such, details of these components of FIG. 22 will not be described in further detail here.

[0094] The advertisement delivery engine 2260 generally operates to select advertisements based on identified user intents for including the selected advertisements within search intent previews provided to users on user computing devices 2210. As shown in FIG. 22, the advertisement delivery engine 2260 includes an advertiser UI component 2262, an advertisement selection component 2264, an advertisement interface 2266, and an impression recognition component 2268.

[0095] The advertiser UI component 2262 generally provides one or more UIs to advertisers to allow the advertisers to interact with the advertisement delivery engine 2260 and provide advertisement-related information. For instance, an advertiser may employ a computing device (not shown) to access the advertiser UI component 2262 via network 2202. It should be understood that an advertiser may provide advertisement-related information to an advertisement delivery system provider in a number of other ways.

[0096] The advertiser UI component 2262 may provide, for instance, one or more UIs that allow an advertiser to create a new advertising campaign and/or edit an existing advertising campaign. The UIs provided for creating and/or editing an advertising campaign allow the advertiser to specify information for the advertising campaign. This may include submitting and/or editing information for one or more advertisements. For instance, the UIs may allow the advertiser to submit an advertisement or otherwise specify advertisement content that may be delivered to users when the advertiser's advertisement is selected for presentation. As used herein, an "advertisement" may refer to any advertiser-sponsored content.

[0097] Additionally, the UIs may allow the advertiser to specify bidding information for the advertisement. In accordance with embodiments of the present invention, the advertiser may bid on user intents. In particular, the advertiser may bid on actions associated with particular entities. For instance, the advertiser may bid on a user intent of streaming a particular movie. The advertiser may specify bid values for one or multiple user intents for

a given advertisement. Depending on the monetization model employed, the bidding information may be a cost-per-impression (CPI) bid, cost-per-click (CPC), cost-per-performance (CPP) bid, or other type of bid. A CPI bid, as used herein, refers to an amount that an advertiser is willing to pay for each impression of their advertisement, *i.e.*, each time their advertisement is displayed. A CPC bid, as used herein, refers to an amount an advertiser is willing to pay each time their advertisement is selected or “clicked” by a user. A CPP bid, as used herein, refers to an amount an advertiser is willing to pay once a user performs some action after selecting their advertisement. For instance, a user may purchase the advertiser’s product upon selecting the advertisement. In addition to specifying bids on user intents, an advertiser may provide further bidding information that may be employed during an auction process used to select advertisements for a given impression. This could include, for instance, specifying demographic information of users targeted by the advertiser.

[0098] In some instances, the bidding information may include bids on metadata of varying specificity that may form a part of a user intent. In particular, an entity may have a variety of associated metadata. In some instances, the metadata may be in the form of features and/or feature-value pairs. For instance, an entity may be digital cameras and metadata associated with digital cameras may include different features of digital cameras, such as brand, megapixels (resolution), type, screen size, etc. Feature-value pairs could be provided by specifying values for features (e.g., specifying 16 mp for the megapixels feature). As such, if an advertiser (e.g., a camera manufacturer) is interested in advertising a particular camera model for users’ interested in purchasing a 16 mp digital camera, the advertiser may bid on a user intent associated with an action of purchasing a digital camera with a 16 mp resolution. Alternatively or additionally, the advertiser could bid at a level of lower specificity (e.g., user intent of purchasing a digital camera in which resolution is important to the user) or higher specificity (e.g., user intent of purchasing a Canon camera with a 16 mp resolution).

[0099] Advertisements, advertisement content, and/or bidding information may be stored in an ad store 2270 accessible by the advertisement delivery engine 2260. It should be understood and appreciated that the information stored by the ad store 2270 may be configurable and may include any information relevant to selecting and/or delivering advertisements for inclusion with search intent previews. The content and volume of such information are not intended to limit the scope of embodiments of the present invention in any way. Further, though illustrated as one component in FIG. 22, the ad data store 2270

may, in operation, be a plurality of storage devices, for instance a database cluster, portions of which may reside in association with the advertisement delivery engine 2260, intent disambiguation engine 2220, a user computing device 2210, another external computing device (not shown), and/or any combination thereof.

5 **[0100]** The advertisement interface 2266 operates to receive requests for advertisements and respond with selected advertisements for inclusion in search intent previews as users enter search prefixes. The advertisement interface 1266 may receive advertisement requests, for instance, for the intent disambiguation engine 2220 and/or from a user device 2210. An advertisement request may identify a user intent for use in selecting an advertisement. The
10 identification of the user intent may be included with the advertisement request or may be communicated separately.

[0101] The advertisement selection component 2264 operates to select advertisements for received advertisement requests based on user intents identified for the requests and user intent bidding information stored in the ad store 2270. The advertisement selection
15 component 2264 may identify advertisements that have bid values for the user intent. The bid values may then be used in an auction/bidding process that calculates a monetization value for each advertisement. In some instance, the advertisement selection component 2264 may employ other factors in conjunction with user intents for selecting advertisements. This may include, for instance, information such as click-through rates, conversion rates, user
20 demographic information, etc. In some instances, an advertisement with the highest monetization value is selected. In other instances, a particular number of advertisements with the highest monetization values are selected.

[0102] The selected advertisement for a given request is returned by the advertisement interface 2266, for instance, to a user device 2210 or to the intent disambiguation engine
25 2220 component or other component that may package the advertisement with other information for delivery to a user device 2210. The advertisement may then be presented within a search intent preview presented on the receiving user device 2210.

[0103] The impression recognition component 2268 operates to determine if an impression for a selected and delivered advertisement should be considered a billable
30 impression. After an advertisement is provided to a user device 2210, the user device 2210 or another component may determine if the advertisement is displayed for a threshold period of time (e.g., 3 seconds). If so, a shown call may be returned to the impression recognition component 2268, which marks the advertisement as shown such that the impression is counted as a billable impression. Alternatively, a user may interact with preview content or

execute a query before the predetermined period of time is reached. In those instances, a shown call is returned to the impression recognition component 2268, which marks the advertisement as shown such that the impression is counted as a billable impression. If the predetermined time is not reached and the user doesn't interact with the content or execute the search query, no shown call is returned. If the impression recognition does not receive a shown call, the impression is not marked as shown and is not counted as a billable impression. As an alternative to using a shown call, the user device 2210 or other component may provide a not shown call to indicate that the advertisement was not presented for the threshold period of time, the user did not interact with the preview, and/or the user did execute the search query. If the not shown call is received, the advertisement is marked as not shown. If the not shown call is not received, the advertisement is marked as shown.

[0104] With reference to FIGs. 23-27, illustrative screen displays of search intent previews with advertisements selected based on user intents are provided. It should be understood that the screen displays are provided by way of example only and should not be viewed as limiting. The screen displays may appear in any order and with any number of screen displays, without regard to whether the screen display is described or depicted herein.

[0105] Referring initially to FIG. 23, an illustrative screen display 2300 of an embodiment of the present invention is shown. In particular, an embodiment is shown in which an advertisement is provided for a deeplink in a search intent preview. As shown in FIG. 23, a search display area displays a search bar 2310 for receiving a search prefix 2312 from a user corresponding to an unexecuted search. Autosuggest display area 2320 displays, without executing the search, one or more intent suggestions to the user. Entity display area 2330 displays, without executing the search, an aggregated intent preview comprising user-selectable tiles associated with at least one entity corresponding to entity identifications associated with the one or more intent suggestions. Each of the tiles may be selectable, such as to further refine the intent of the search, but without executing the search, or enable action or completion of a particular task, such as those actions and tasks described herein. The tiles include a main tile corresponding with a main entity (e.g., Amazon.com) and subtiles, corresponding with subentities, which are deeplinks in this case. As used herein, the term "deeplink" refers to a hyperlink to web pages associated with the main destination web page that allow the user to access specific information or perform a specific task. In the present example, advertisers have bid on deeplinks such that advertisements 2332 and 2334 have been presented for two of the deeplinks.

[0106] FIG. 24 provides an illustrative screen display 2400 in which a user has entered the search prefix “avengers”. Autosuggest display 2420 displays, without executing the search, intent suggestions in an intent selection area 2420 and a particular intent suggestion 2422 “avengers” is highlighted. This has resulted in the identification of “The Avengers” movie as an entity. Some user intents also identified for this movie include buying tickets to the movie and streaming the movie using a video streaming service. As shown in FIG. 24, for the user intent of buying tickets to the movie, an advertisement has been selected and presented as a tile 2432 that may be a deeplink to a location at which tickets may be purchased. Additionally, for the user intent of streaming the movie, an advertisement has been selected and presented as at tile 2434. In the present example, the advertisement is a NETFLIX app that allows the user to stream the movie.

[0107] In some instances, such as that shown in FIG. 24, an app may be already installed on the user’s device and an advertisement may comprise a link to that installed app. In other instances, it may be determined that an app is not installed, and an advertisement may be presented to get the app. By way of example, FIG. 25 provides a screen display 2500 in which the user has entered the search prefix “Starbucks” result in a number of intent suggestions provided in an autosuggest display 2520, including a highlighted intent suggestion 2522 “starbucks”. The search intent preview includes a tile 2532, which is an advertisement to get the STARBUCKS app. By selecting the tile 2532, the user may be navigated to a location for downloading the app.

[0108] As previously discussed, some embodiments allow advertisers to bid on various metadata such their advertisements may be selected for user intents that include more specific metadata. FIG. 26 includes a screen display 2600 in which a user has entered a search prefix “digital cameras”. An autosuggest display area 2620 is presented that includes a number of intent suggestions. Some of these intent suggestions include additional metadata, including features (e.g., brand megapixels, type, and screen size) and values for some of the features (e.g., Nikon, canon, sony, and panasonic for the brand feature). This is one example in which additional metadata may be collected to further define the user intent. In the present example, the user has hovered a cursor 2622 over the 16 mp metadata portion of the intent suggestion “digital cameras by Megapixels”. Accordingly, this provides additional metadata that indicates the user desires a digital camera with 16 mp resolution. Based on this user intent information, an advertisement has been selected and presented as a main tile 2632 in the search intent preview, which may include other non-paid tiles 2634.

[0109] In further embodiments, advertisements may be selected based on user intent in the context of social information. In particular, some search engines may have access to information regarding other users with a user's social network (e.g., a user's friends on the FACEBOOK social network site) and employ that information when returning search results or otherwise providing search suggestions to users. With reference to FIG. 27, a screen display 2700 is provided in which both social information is used to define user intents and in turn select advertisements. As shown in FIG. 27, a user has entered a search prefix "hotels in san francisco that may friends". Based on this search prefix, an autosuggest area 2720 includes intent suggestions, including a highlight intent suggestion "hotels in san francisco that may friends liked". Based on social information available for the user, San Francisco hotels that the user's friends have liked may be identified. The presentation of a returned list of hotels may be monetized. In particular, a hotel advertiser may bid on this user intent such that an advertisement for that hotel is display more prominently (e.g., top of a list, larger tile, etc.). As shown in FIG. 27, the first tile 2732 is an advertisement for a hotel that has been liked by the user's friend. Other non-paid results 2734 are then displayed below the first tile 2732.

[0110] Referring now to FIG. 28, a flow diagram is provided that illustrates a method 2800 for an advertiser to provide bidding information based on user intents. As shown at block 2802, an advertiser accesses an advertisement delivery system. For instance, an advertiser may use a computing device to interface to access the advertiser UI component 2262 of FIG. 22. The advertiser may then be provided with one or more UIs for providing advertisement-related information.

[0111] As shown at block 2804, the advertiser provides or otherwise specifies advertisement content. In some instances, the advertiser may provide advertisement context, such as a multimedia advertisement or text for a text-based advertisement. In other instances, the advertiser may simply specify what type of advertisement should be provided. For instance, if the advertiser wishes to have an app delivered as an advertisement, the advertiser may specify the app as the advertisement without providing any advertisement content.

[0112] The advertiser also specifies bidding information, as shown at block 2806. In accordance with embodiments of the present invention, the advertiser may specify bid values for user intents. The user intents may comprise actions associated with particular entities. Additionally, the user intents may include metadata of varying specificity. Other

bidding information may also be specified by the advertiser, such as bid information associated with user demographics.

[0113] The bidding information is stored in association with an advertisement or indication of an advertisement, as shown at block 2808. For instance, the bidding information may be stored in the ad store 2210 of FIG. 22. Accordingly, the bid information is available for selecting advertisements based on user intents identified during search preview experiences for users.

[0114] Turning next to FIG. 29, a flow diagram is provided that illustrates a method 2900 for selecting an advertisement based on user intent. As shown at block 2902, a request for an advertisement is received. The request may be received from a user device, from an intent disambiguation engine (e.g., the intent disambiguation engine 2220 of FIG. 22), or another component. A user intent associated with the advertisement request is identified at block 2904. In some instances, the user intent may be provided with the request, while in other instances, the user intent may be received separately. Generally, the user intent may have been determined by an intent disambiguation engine (e.g., the intent disambiguation engine 2220 of FIG. 22) while a user has provided at least a search prefix. For instance, the user intent may be determined using a non-committal intent preview, disambiguation, and refinement of a search process such as that described above with reference to FIG. 21.

[0115] An advertisement is selected based on the user intent, as shown at block 2906. Generally, an advertisement for which an advertiser has bid on the user intent is selected. This may include performing an auction or bidding process to select one or more advertisements for which advertisers have bid on the user intent. This may include consideration of bid values submitted for the user intent in conjunction with other bid values and factors.

[0116] The selected advertisement is provided for presentation within a search intent preview, as shown at block 2908. In some instances, this may include providing an advertisement or indication of an advertisement to an intent disambiguation engine or other search engine component for delivery to a user device. In other instances, this may include providing the advertisement or indication of the advertisement directly to the user device.

[0117] Referring now to FIG. 30, a flow diagram is provided that illustrates another method 3000 for selecting an advertisement based on user intent. As indicated at block 3002, a search prefix is received from a user (e.g., utilizing the search prefix receiving component 2222 of the intent disambiguation engine 2220 of FIG. 22). The search prefix comprises one or more characters associated with a search query. As indicated at block 3004, one or more

intent suggestions are provided to the user (*e.g.*, utilizing the autosuggest component 2224 of the intent disambiguation engine 2220 of FIG. 22). The one or more intent suggestions may be based on a comparison of the search prefix to an autosuggest store. The one or more intent suggestions may be retrieved by an application programming interface (API) call to
5 the autosuggest store. The one or more intent suggestions may be rendered by a separate service from the intent disambiguation engine 2220.

[0118] One or more entity IDs associated with the intent suggestions are identified as indicated at block 3006 (*e.g.*, utilizing the entity identification component 2226 of the intent disambiguation engine 2220 of FIG. 22). The one or more intent suggestions may be based
10 on an entity ranking. In other words, the entities associated with the intent suggestions that are the most likely target or intent of the search may be ranked and identified. The ranking may be in accordance with the ranking methodology described herein. For example, in one embodiment, the one or more entities are ranked based on entity-intrinsic signals, query-entity interactions by users, and query pattern likelihood scores. In one embodiment, the
15 query pattern likelihood scores are based on entity type, quality standards independent of an individual entity, quality standards independent of associated queries, dominance of one particular entity over another, and non-entity associations of the query. In one embodiment, the ranked entities are associated with a set of user queries. The set of user queries may be associated with a single user or multiple users over time.

[0119] A user intent is determined at block 3008. The user intent may be determined based on an entity associated with at least one of the entity indications. This may include, for instance, recognizing actions the user may wish to perform corresponding with the entity. These actions may be identified, for instance, based on knowledge of the entity. For instance, there may be actions known to be common/popular actions for the entity (*e.g.*,
25 learned from search engine experience or manually defined by search engine operators) or there may be actions known to be common/popular actions for an entity type of the entity (*e.g.*, if the entity is the SOUTHWEST airline, the entity type may be airline, which may have corresponding common/popular actions such as “book a flight” or “check-in”). The actions may also be identified, for instance, based on knowledge of the user (search history
30 from previous searches, current user interactions, user demographics for the user, social information, etc.). Although not shown in FIG. 30, in some instances, additional steps, such as the steps 2016, 2018, and 2020 may be performed to obtain additional information that helps define the user intent.

[0120] Monetization values for one or more advertisements are determined based on the user intent, as shown at block 3010. This may include identifying advertisements for which advertisers have specified bid values for the identified user intent and conducting an auction/bidding process based on the specified bid values. The process may consider other factors (e.g., click-through-rates; demographic information, etc.) when determining the monetization values.

[0121] An advertisement is selected based on the determined monetization values, as shown at block 3012. In some instances, only one advertisement may be selected for a given user intent. For instance, a search intent preview UI may be configured to provide only a single tile with either paid or non-paid content directed to a given user intent. In other instances, multiple advertisements may be selected.

[0122] The selected advertisement is provided for presentation within a search intent preview, as shown at block 3014. In some instances, this may include providing an advertisement or indication of an advertisement to an intent disambiguation engine or other search engine component for delivery to a user device. In other instances, this may include providing the advertisement or indication of the advertisement directly to the user device.

[0123] With reference now to FIG. 31, a flow diagram is shown illustrating a method 3100 for determining whether an advertisement impression should be counted as a billable impression. As shown at block 3102, a request for an advertisement is received, and an advertisement is selected, as shown at block 3104. Additionally, the advertisement is provided for inclusion in a search intent preview, as shown at block 3106. The advertisement request may be received, the advertisement selected, and the advertisement provided, for instance, in the manner similar to that described above with reference to FIGS. 29 and 30.

[0124] A determination is made at block 3108 regarding whether the advertisement should be considered shown for billing purposes. In some instances, this may be done by using a shown call. The shown call may be received, for instance, from the user device to which the advertisement was delivered or from another component (e.g., a search engine server). The shown call is provided if the advertisement is presented in the search preview for a predetermined period of time (e.g., 3 seconds). In some instances, the shown call may also be provided if before the predetermined period of time is reached, the user interacts with the preview or executes the search query (i.e., a search is executed by the search engine to provide search results). Alternatively, a not shown call may be employed to indicate that the advertisement was not presented for the threshold period of time, the user did not interact with the preview, and/or the user did execute the search query.

[0125] If it is determined the advertisement was shown, the advertisement is marked as shown, as represented at block 3110. As such, the advertisement impression is treated as a billable impression. Alternatively, if it is determined the advertisement was not shown, the advertisement is not marked as shown (or marked as not shown), as represented at block 1312. As such, the advertisement impression is not treated as a billable impression.

[0126] As can be understood, embodiments of the present invention provide systems, methods, and computer-readable storage media for, among other things, monetizing non-committal intent preview, disambiguation, and refinement of a search.

[0127] The present invention has been described in relation to particular embodiments, which are intended in all respects to be illustrative rather than restrictive. Alternative embodiments will become apparent to those of ordinary skill in the art to which the present invention pertains without departing from its scope.

[0128] While the invention is susceptible to various modifications and alternative constructions, certain illustrated embodiments thereof are shown in the drawings and have been described above in detail. It should be understood, however, that there is no intention to limit the invention to the specific forms disclosed, but on the contrary, the intention is to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention.

[0129] It will be understood by those of ordinary skill in the art that the order of steps shown in methods discussed herein is not meant to limit the scope of the present invention in any way and, in fact, the steps may occur in a variety of different sequences within embodiments hereof. Any and all such variations, and any combination thereof, are contemplated to be within the scope of embodiments of the present invention.

CLAIMS

1. A method for selecting an advertisement based on user intent for presentation within a search intent preview, the method comprising:
 - receiving, at a server, a request for an advertisement;
 - identifying an indication of the user intent corresponding with the request for the advertisement, the user intent having been determined based on a search prefix from a user and representing an action the user may intend to perform corresponding with an entity identified based on the search prefix;
 - selecting the advertisement based on the user intent and at least one user intent bid value for the advertisement; and
 - providing the advertisement for inclusion in the search intent preview for presentation to the user before a search is executed.
2. The method of claim 1, wherein the request includes the indication of the user intent.
3. The method of claim 1, wherein the user intent is determined by:
 - receiving the search prefix from the user, the search prefix comprising one or more characters associated with a search query;
 - determining one or more intent suggestions based on a comparison of the search prefix to an autosuggest data store;
 - identifying the entity based on at least one intent suggestion; and
 - determining the user intent associated with the entity by identifying the action the user may intend to perform.
4. The method of claim 1, wherein the user intent further specifies metadata associated with the entity, wherein the metadata comprises an attribute of the entity and a value for the attribute, and wherein the advertisement is selected based on the entity, action, and metadata.
5. The method of claim 1, wherein selecting the advertisement comprises:
 - identifying a plurality of advertisements, each having a bid value corresponding with the user intent;
 - computing a monetization value for each advertisement based at least in part on the bid value associated with each advertisement; and
 - selecting the advertisement based on the monetization values for the advertisements.

6. The method of claim 1, wherein the advertisement is at least one selected from the following: a deeplink comprising a link to a landing page within a particular website at which the action may be performed; and an app that enables the user to perform the action for the entity.

7. The method of claim 1, wherein the method further comprises:
determining whether the advertisement was shown for purposes of considering the advertisement as a billable impression;
if a determination is made that the advertisement was shown, marking the advertisement as a billable impression; and
if a determination is made that the advertisement was not shown, not marking the advertisement as a billable impression.

8. One or more computer storage media storing computer usable instructions, that when used by one or more computing devices, cause the one or more computing devices to perform a method comprising:

receiving a search prefix from a user, the search prefix comprising one or more characters associated with a search query;

providing one or more intent suggestions for presentation to the user based on a comparison of the search prefix to an autosuggest data store;

identifying one or more entity identifications associated with at least one intent suggestion;

determining a user intent associated with an entity corresponding to a first entity identification, the user intent representing an action a user may intend to perform corresponding with the entity;

determining a monetization value for each of one or more advertisements based on the user intent, wherein the monetization value for each advertisement is based on one or more user intent values provided for each advertisement;

based on the monetization value of each of the one or more advertisements, selecting an advertisement for presentation; and

providing the advertisement for inclusion in a search intent preview for presentation to the user before a search is executed.

9. One or more computer storage media storing computer usable instructions, that when used by one or more computing devices, cause the one or more computing devices to perform a method comprising:

receiving an advertisement request;

selecting an advertisement in response to the advertisement request;

providing the advertisement for inclusion in a search intent preview for presentation to the user before a search is executed;

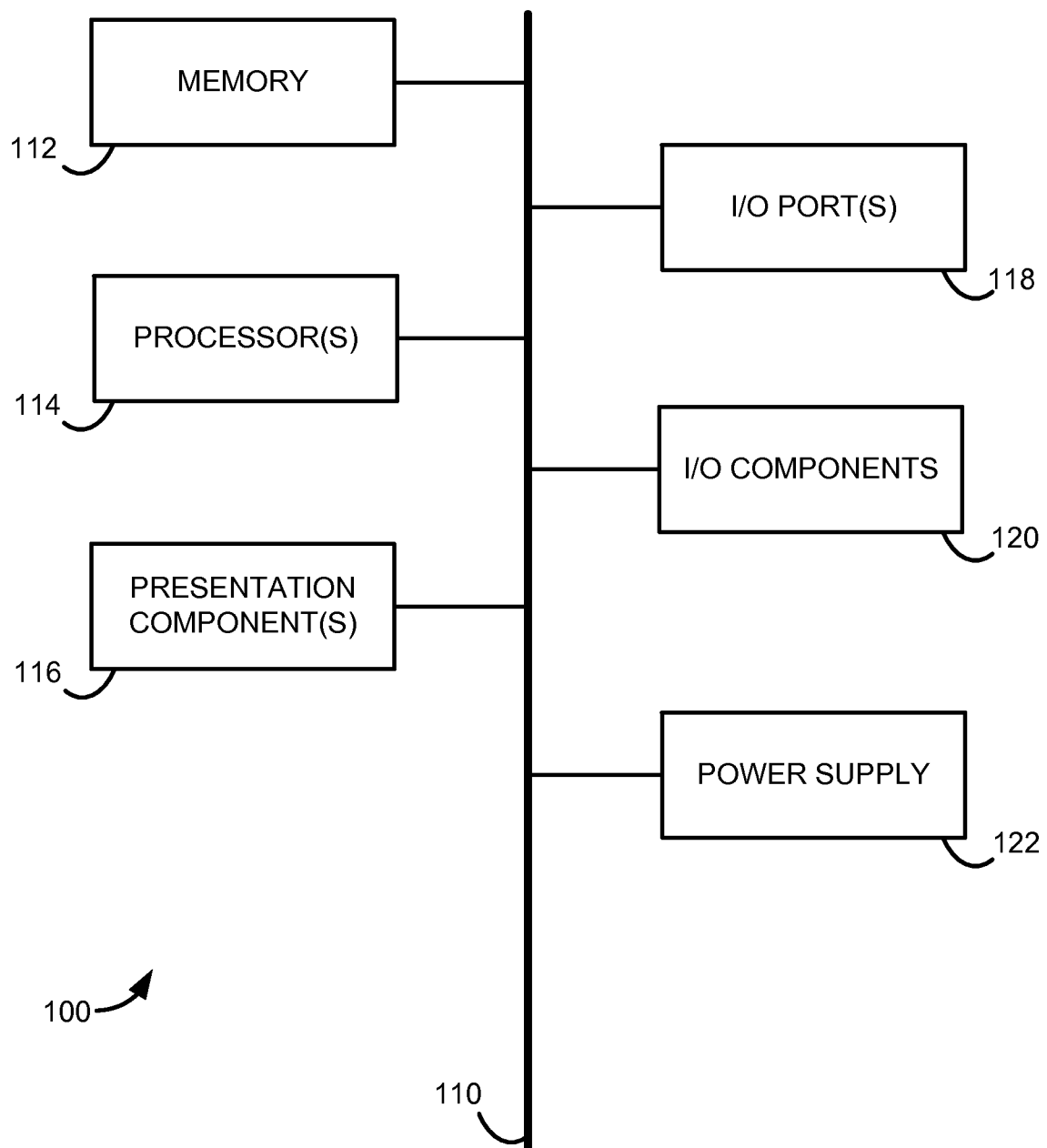
determining whether the advertisement was shown for purposes of considering the advertisement as a billable impression;

if a determination is made that the advertisement was shown, marking the advertisement as a billable impression; and

if a determination is made that the advertisement was not shown, not marking the advertisement as a billable impression.

10. The one or more computer storage media of claim 9, wherein determining whether the advertisement was shown for purposes of considering the advertisement as a billable impression comprises determining whether a shown call has been received, and wherein determining whether a shown call has been received comprises determining whether the shown call has been received from a user device.

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**FIG. 1.**

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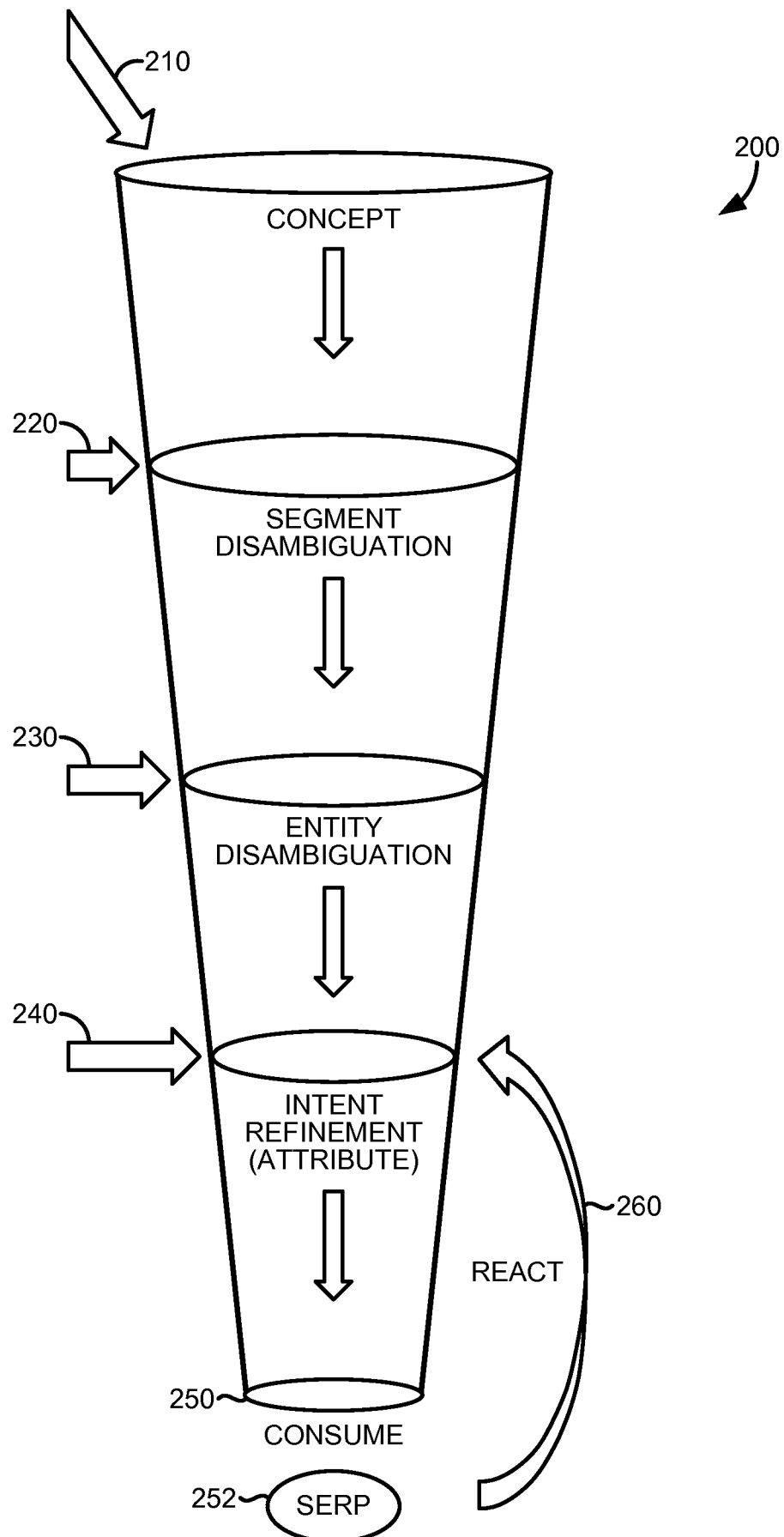


FIG. 2.

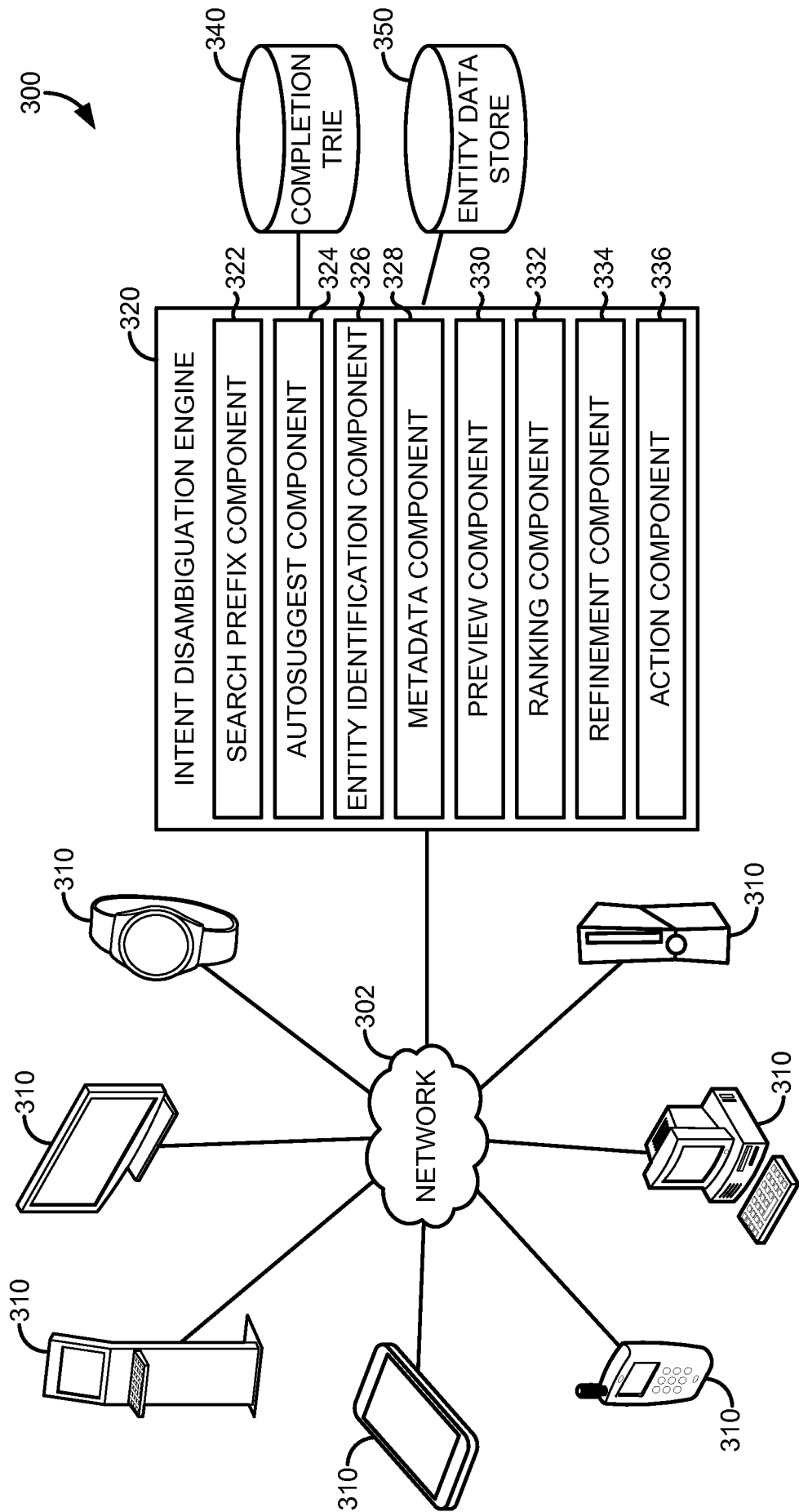


FIG. 3.

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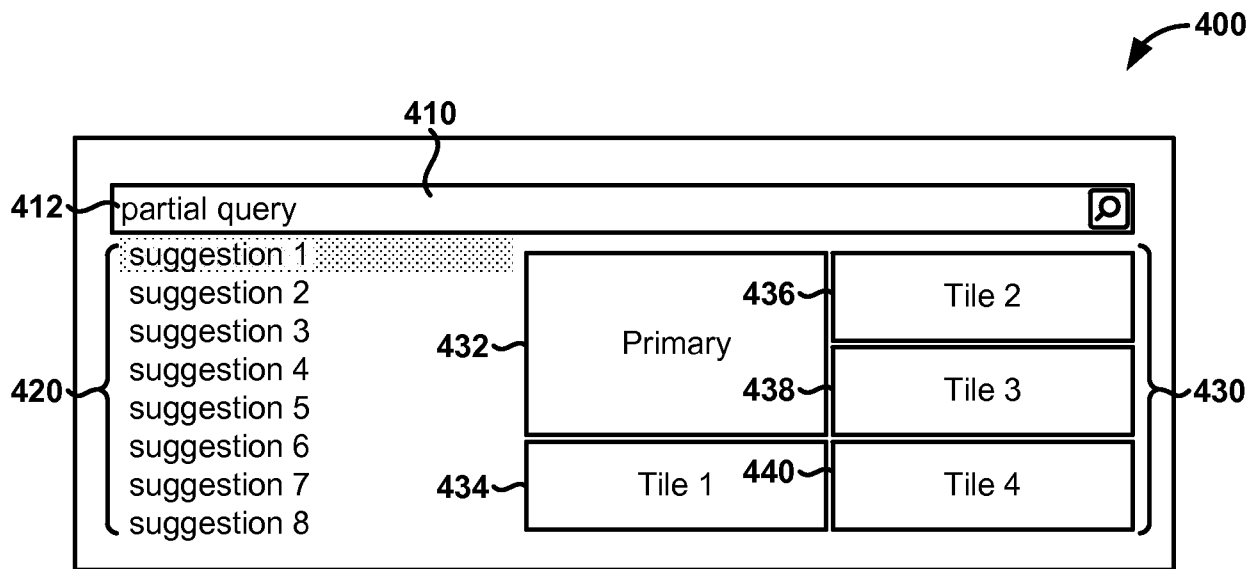


FIG. 4.

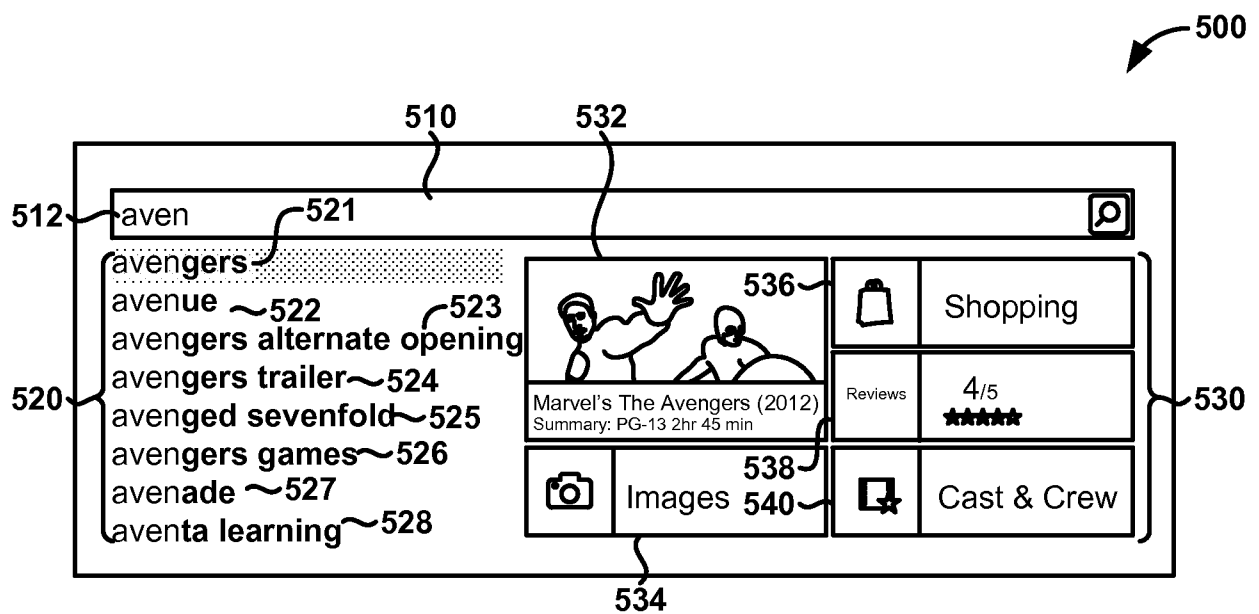


FIG. 5.

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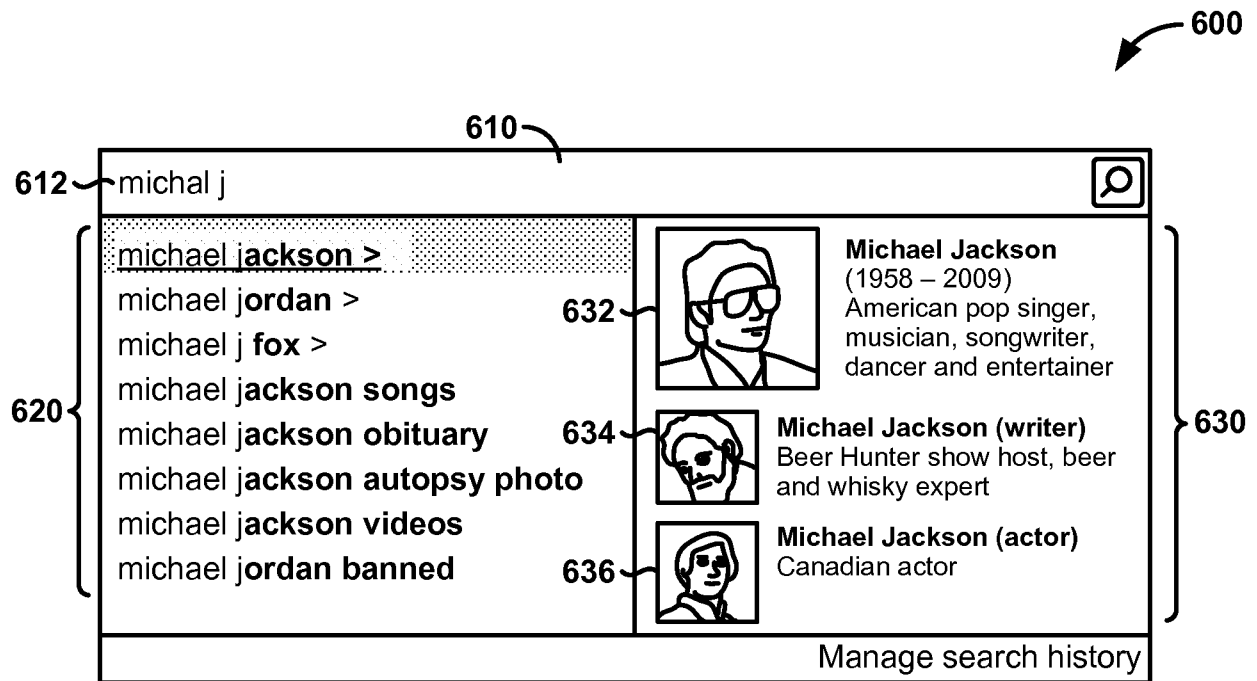


FIG. 6.

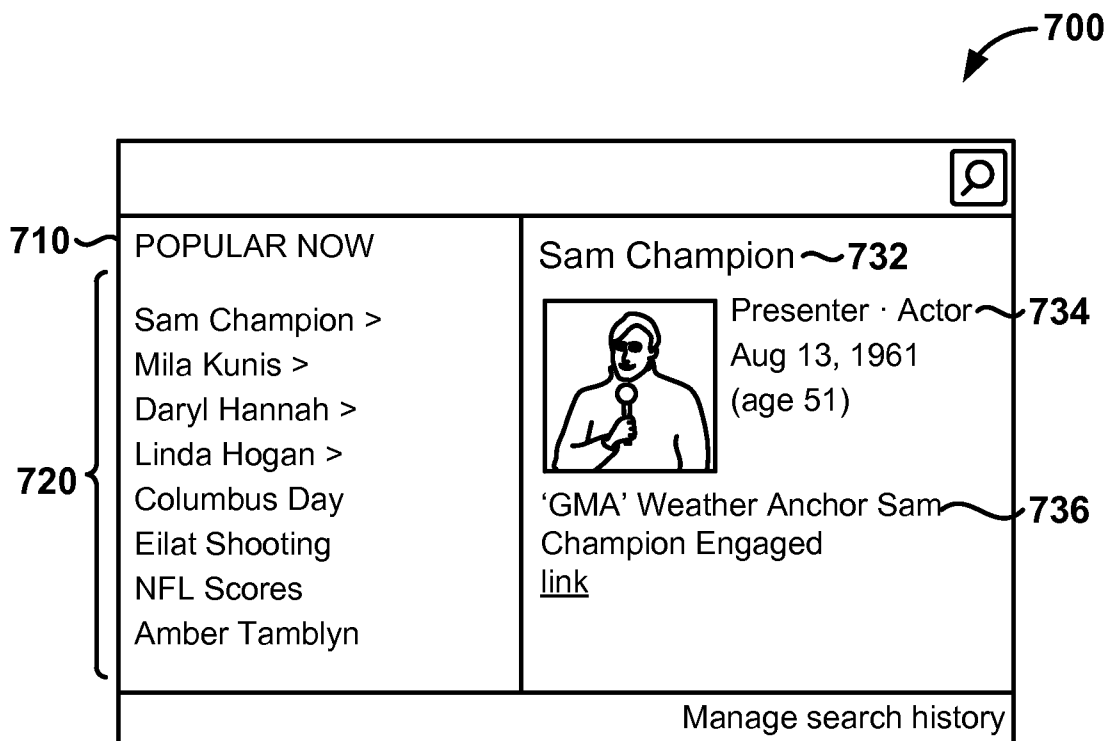


FIG. 7.

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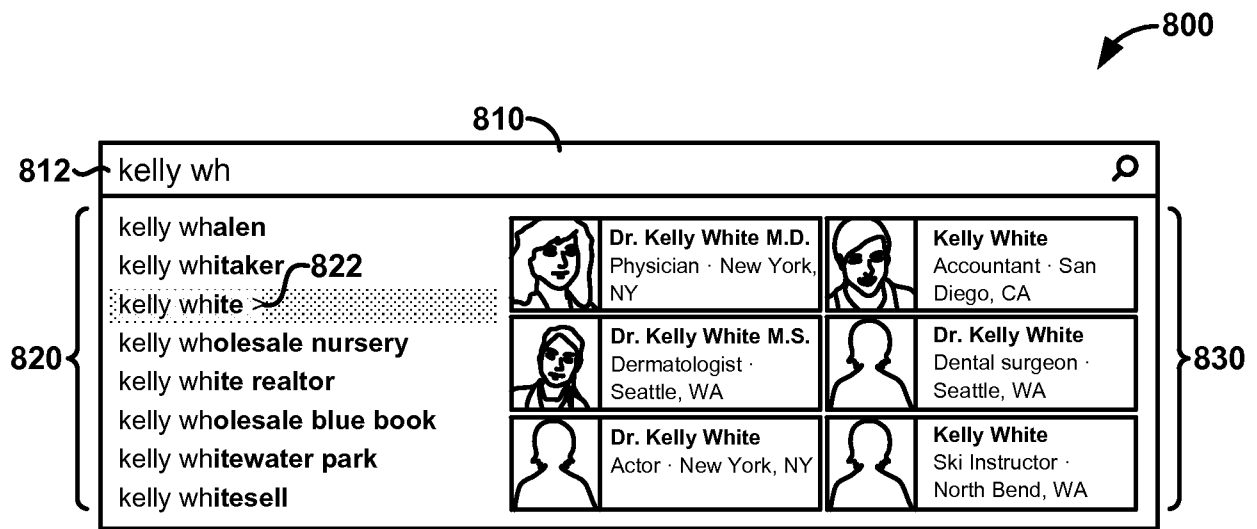


FIG. 8.

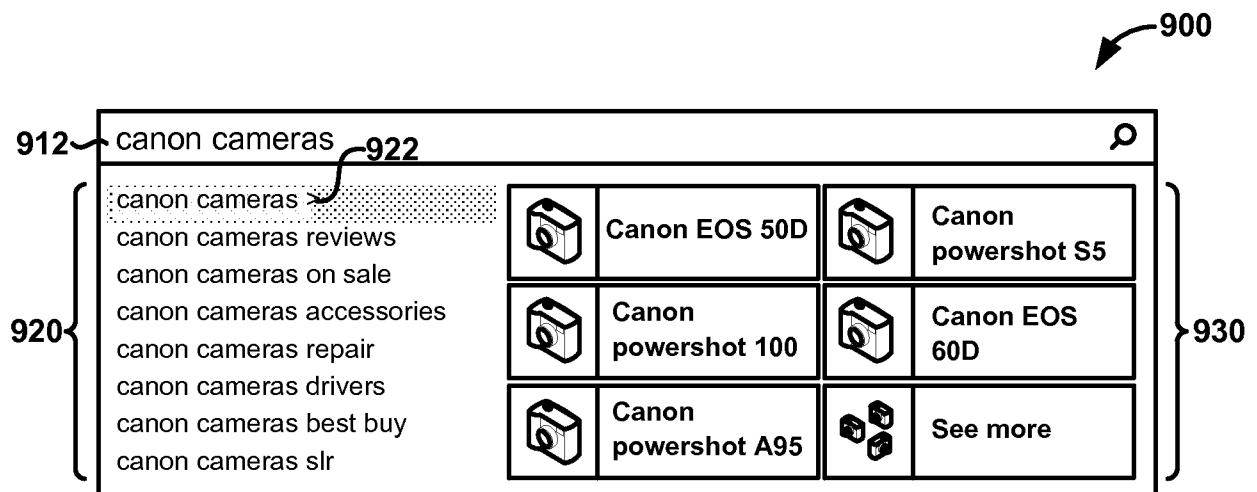


FIG. 9.

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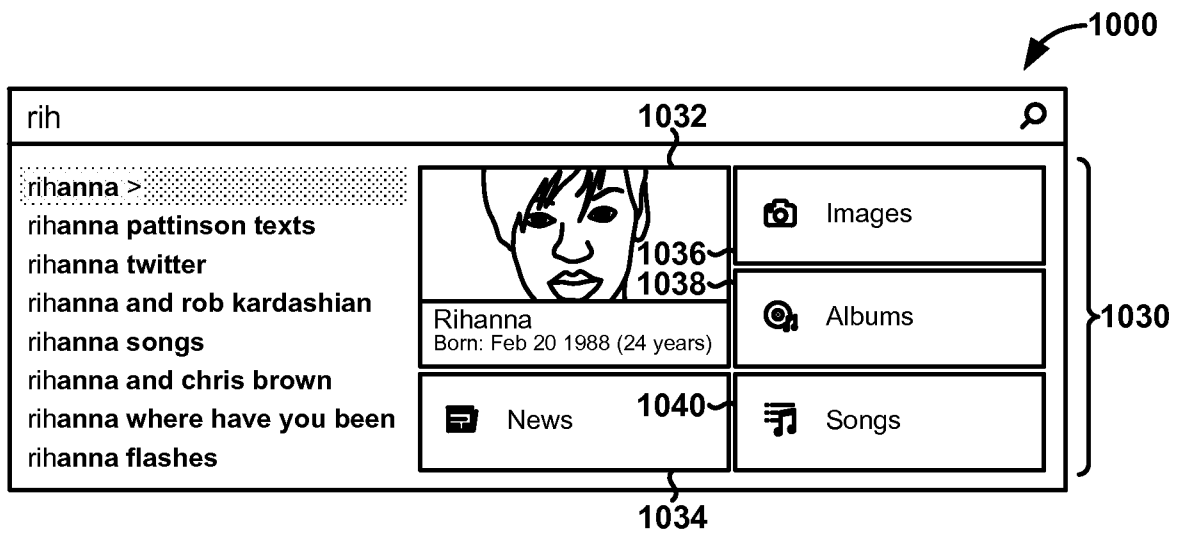


FIG. 10.

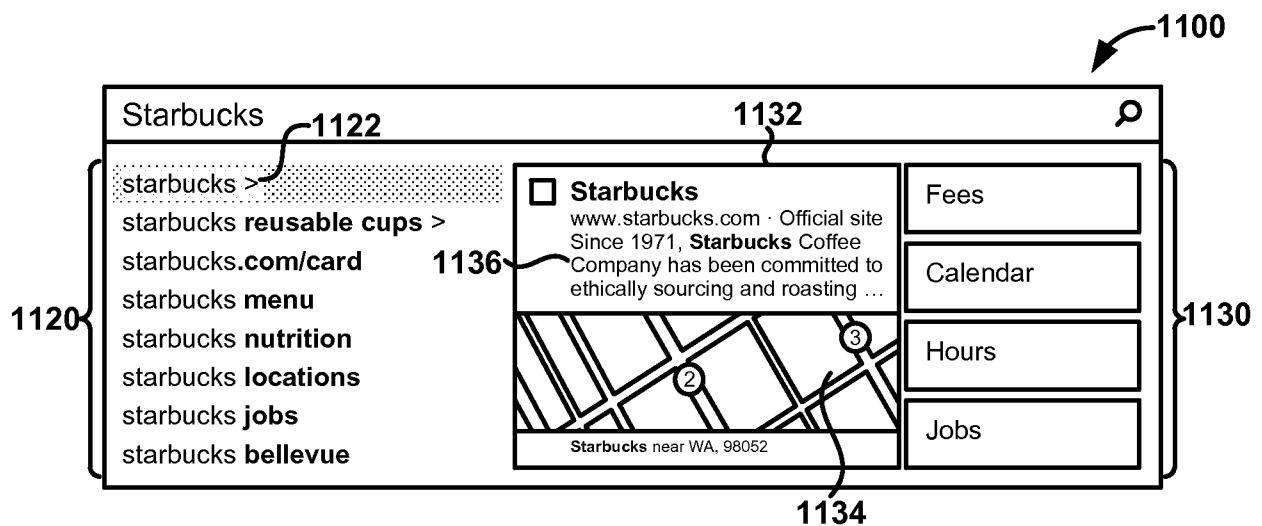


FIG. 11.

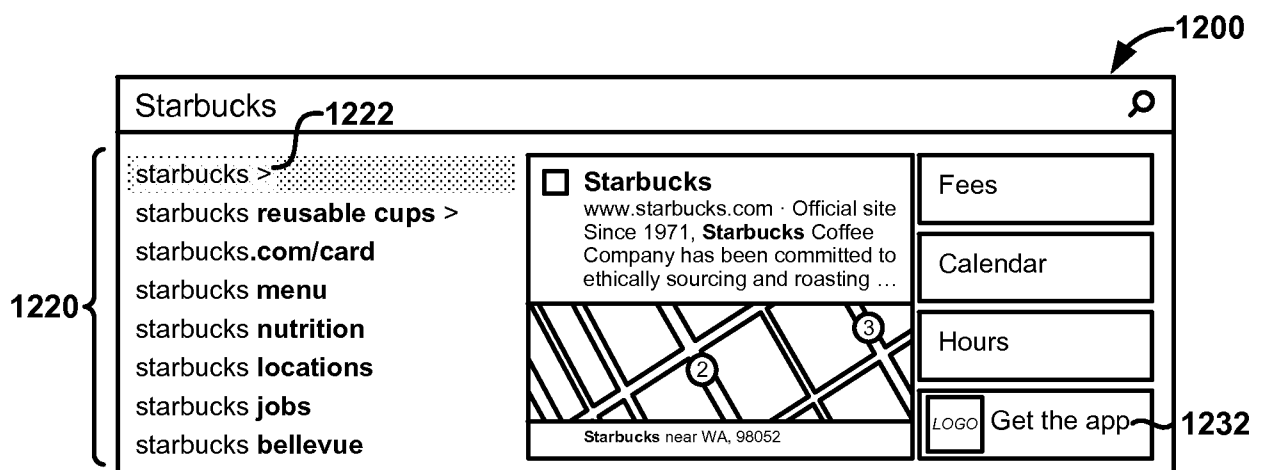


FIG. 12.

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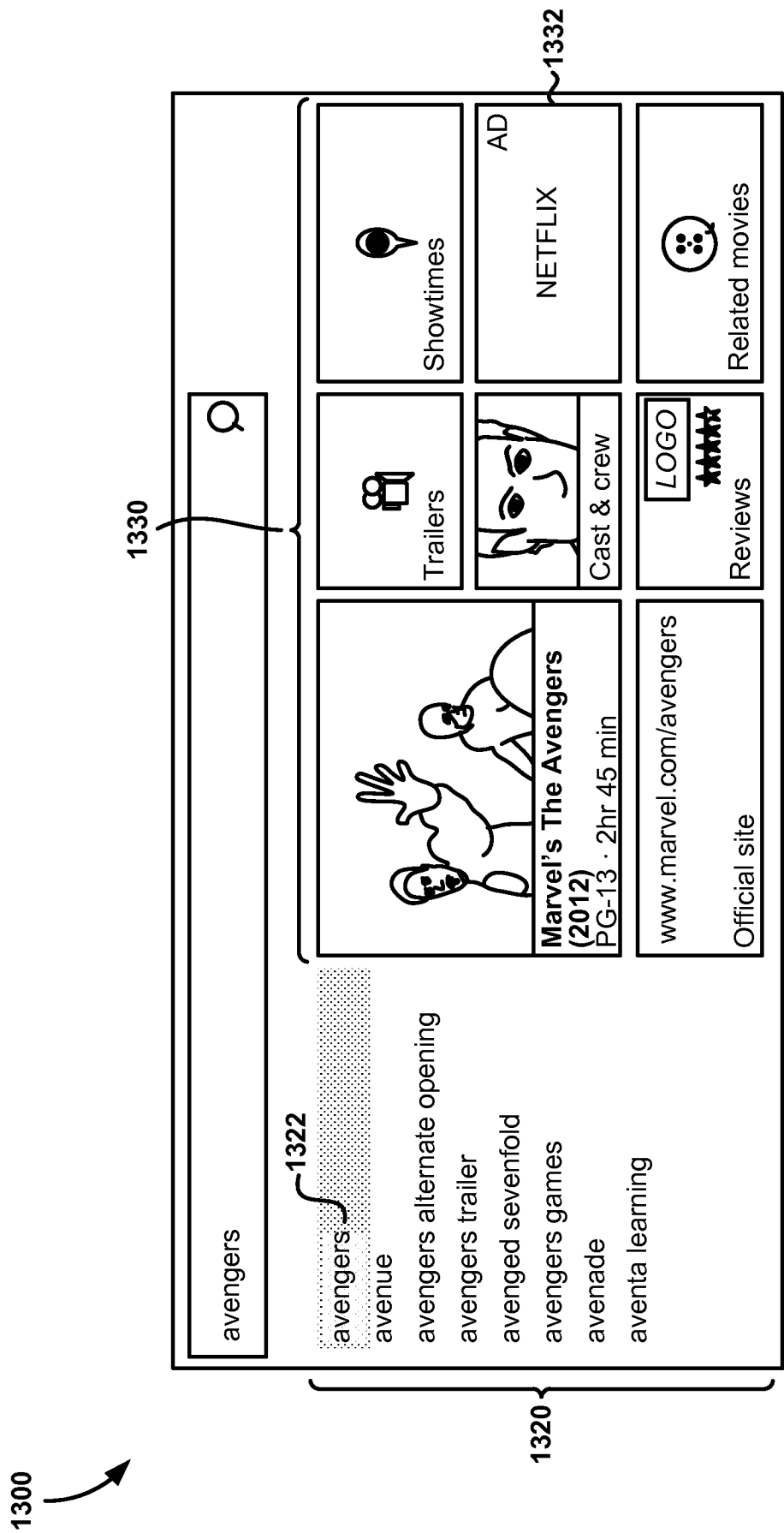


FIG. 13.

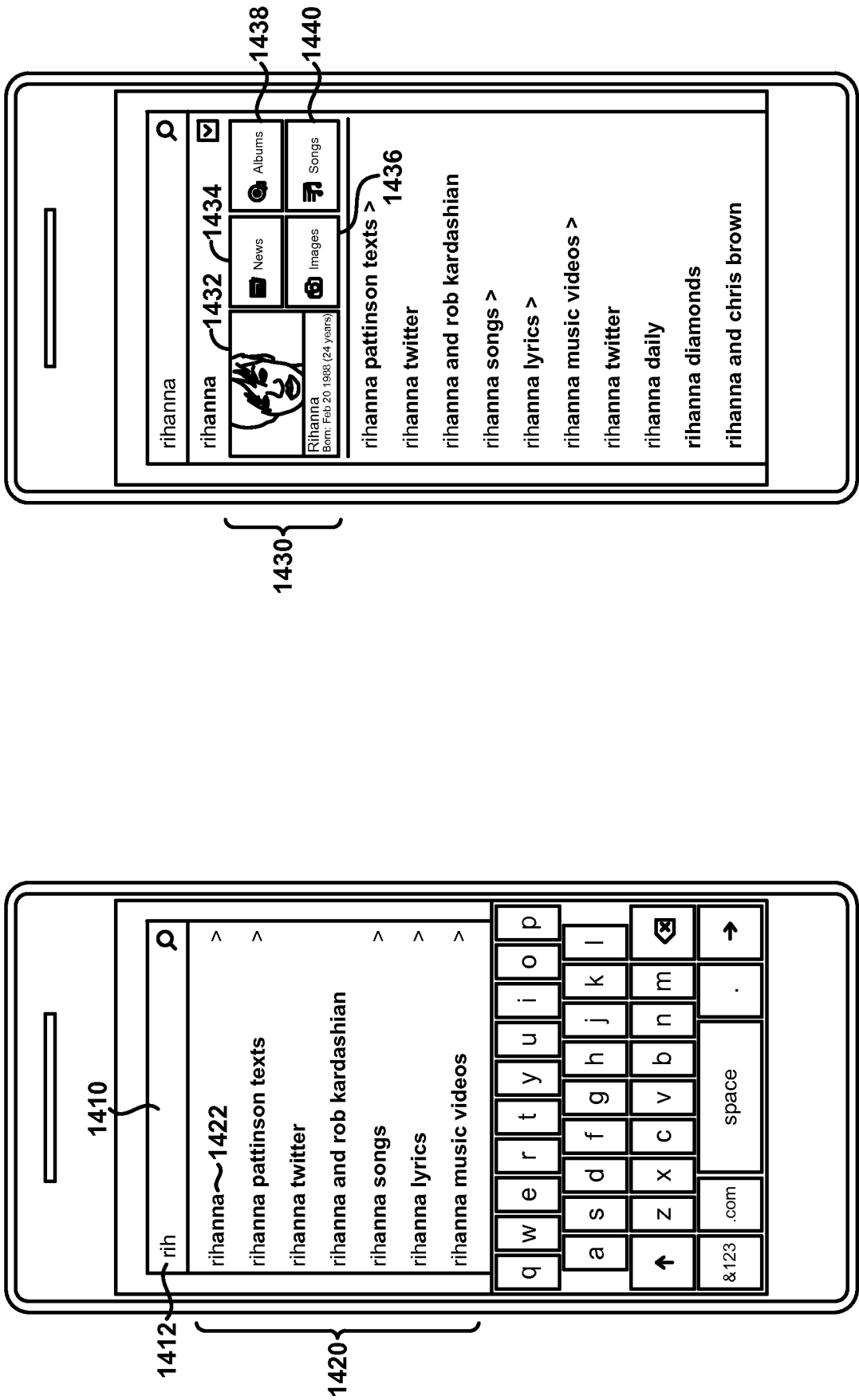


FIG. 14A.

FIG. 14B.

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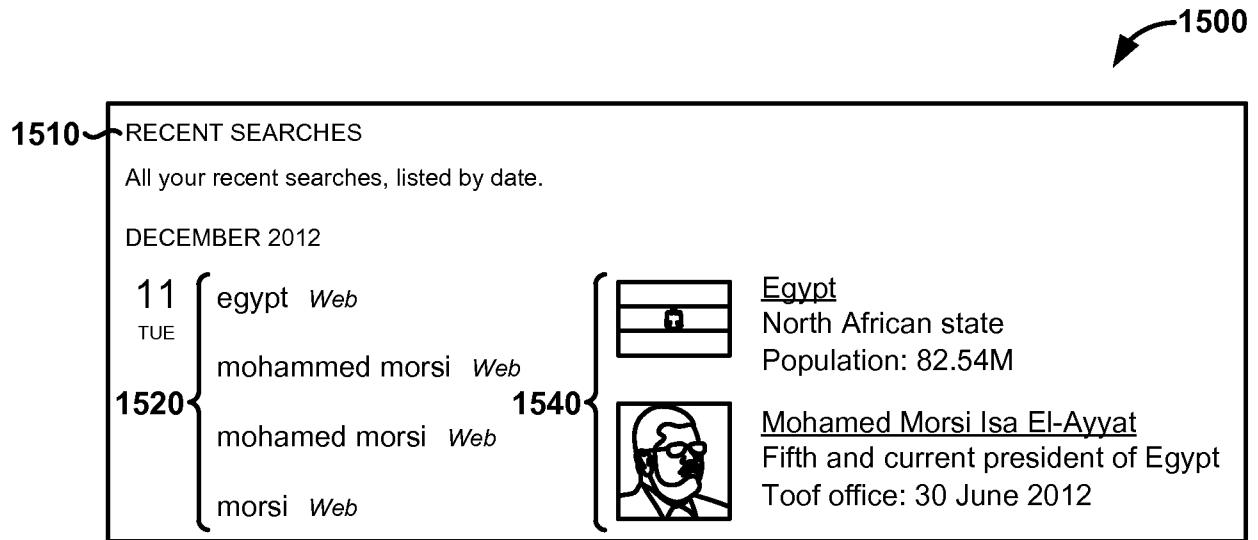


FIG. 15.

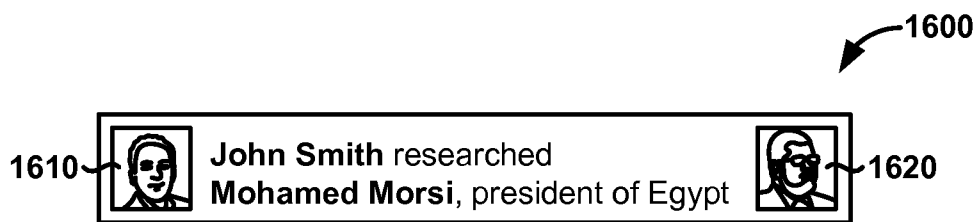


FIG. 16.



FIG. 17.

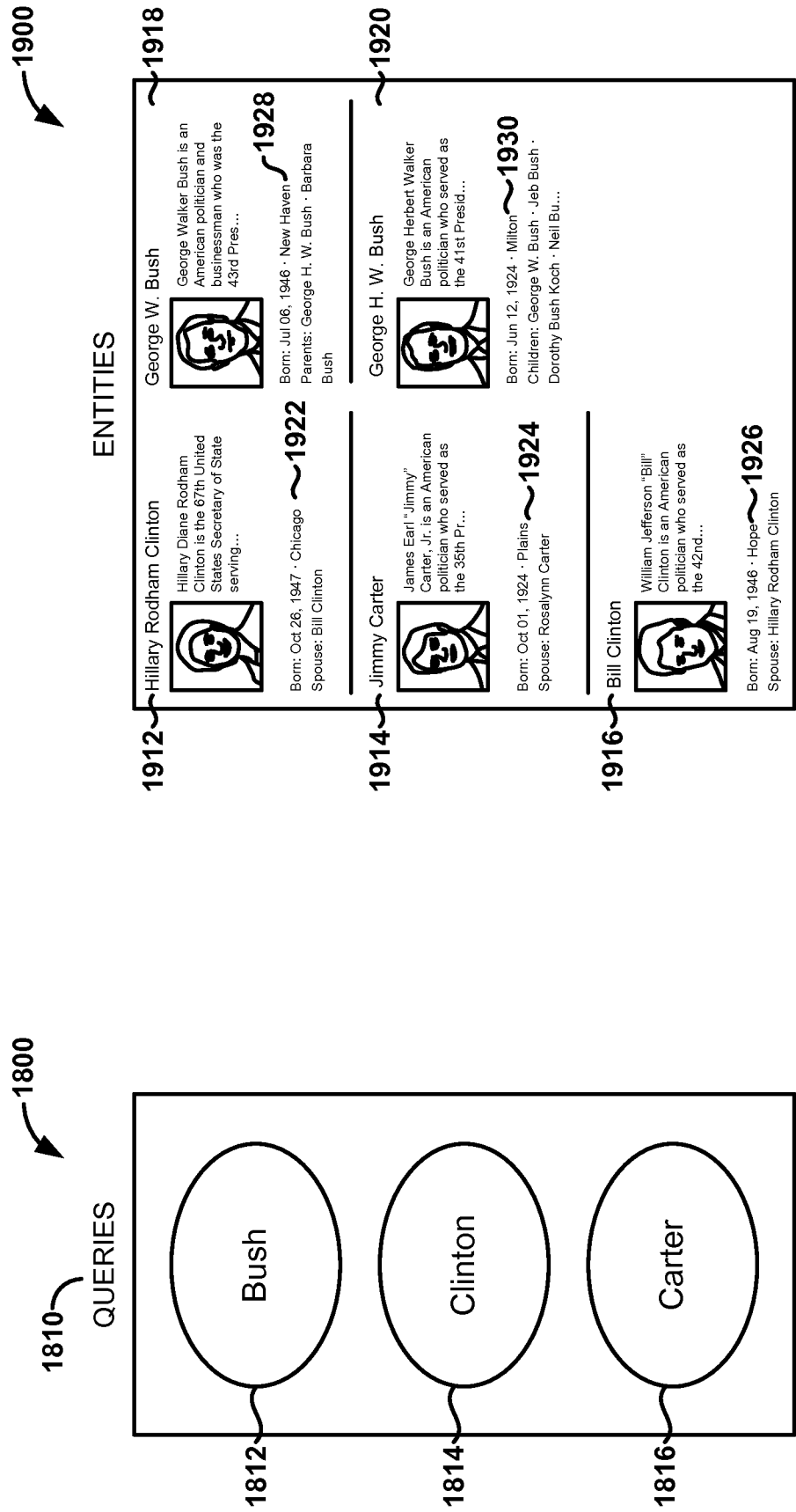


FIG. 19.

FIG. 18.

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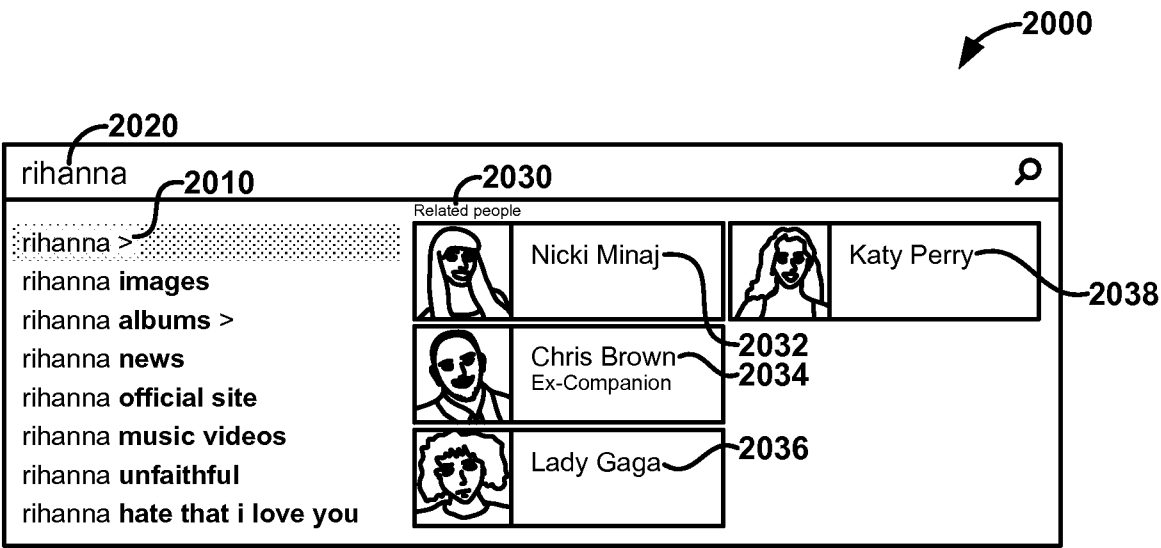
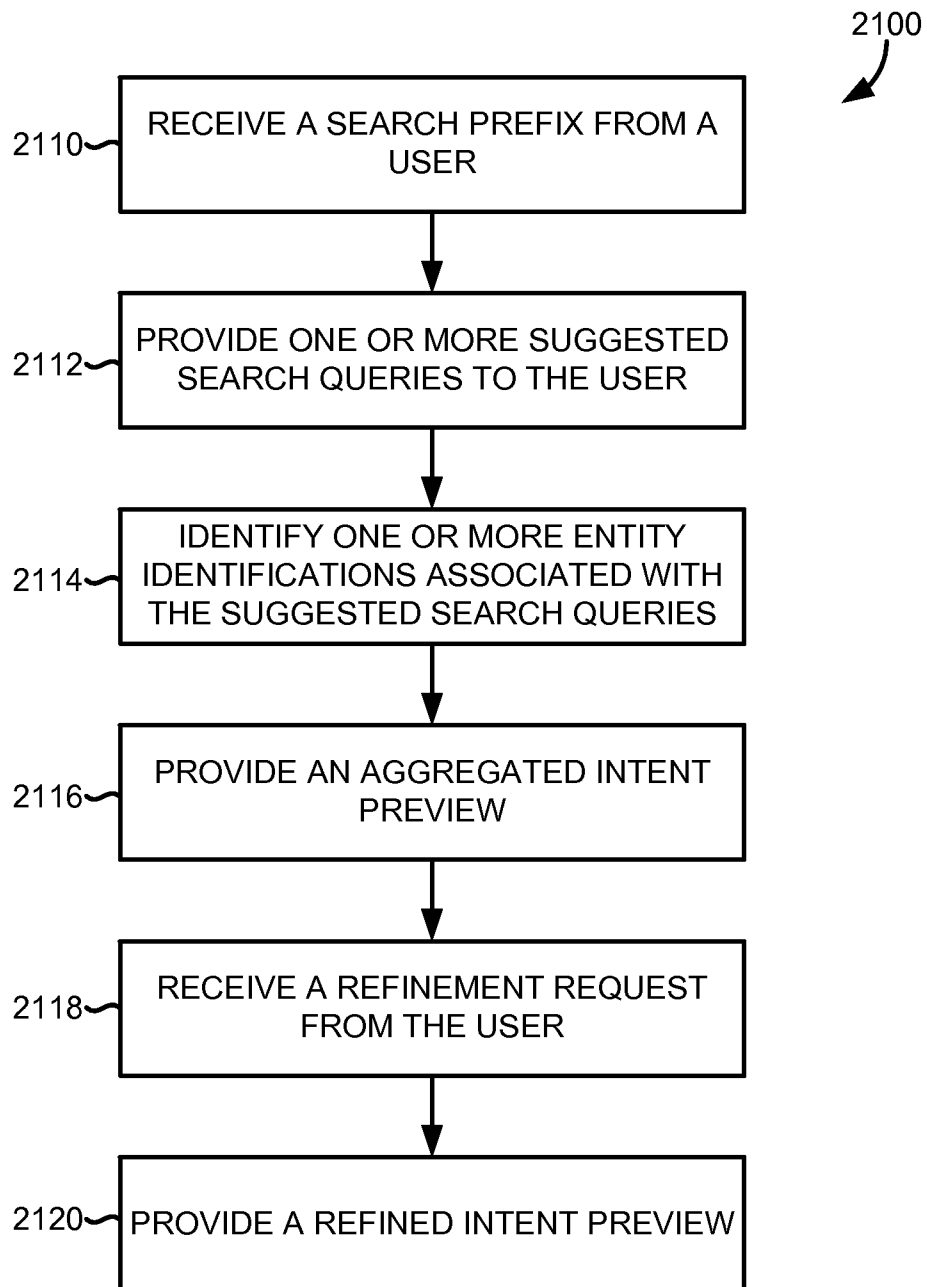


FIG. 20.

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**FIG. 21.**

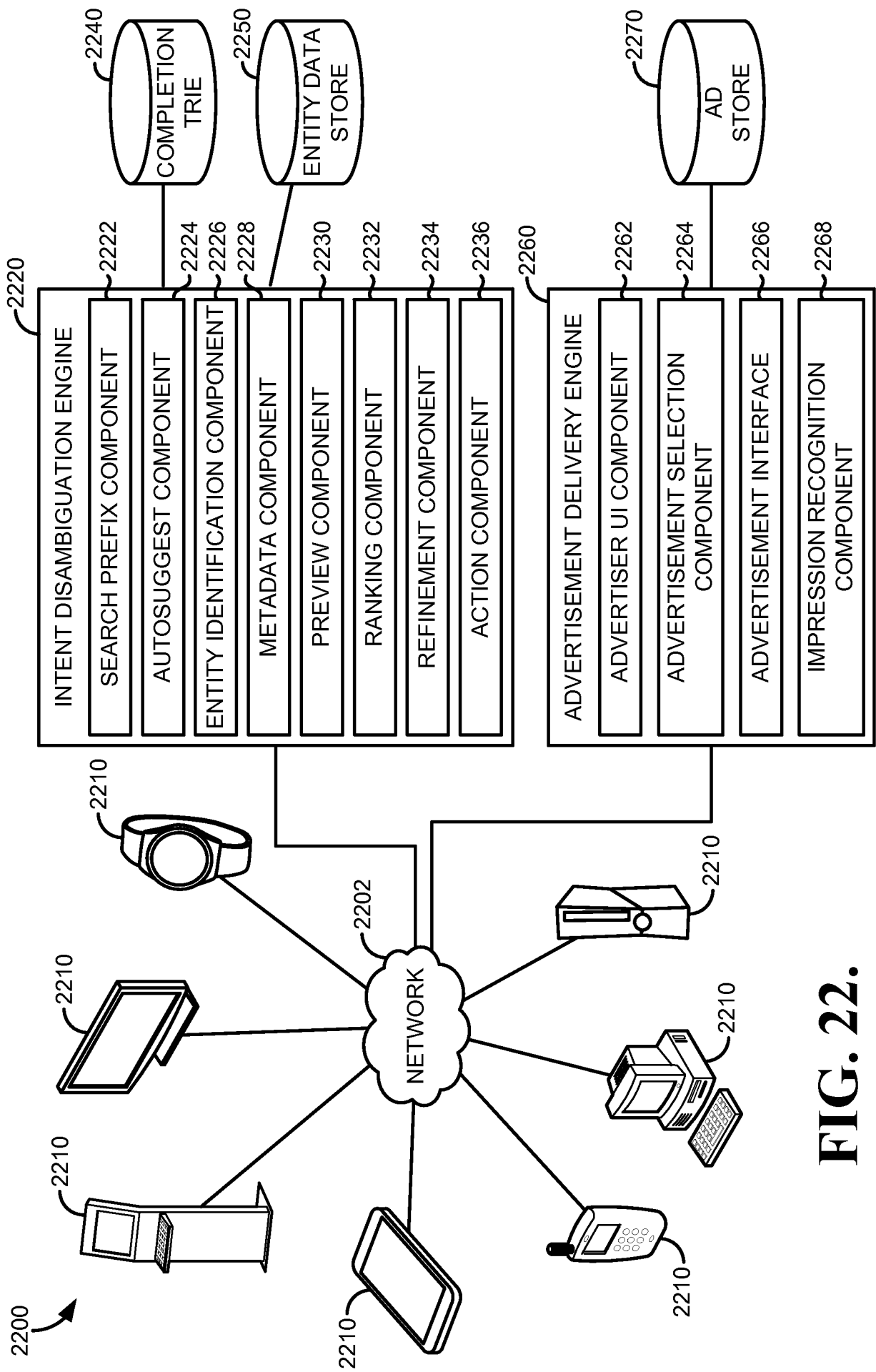


FIG. 22.

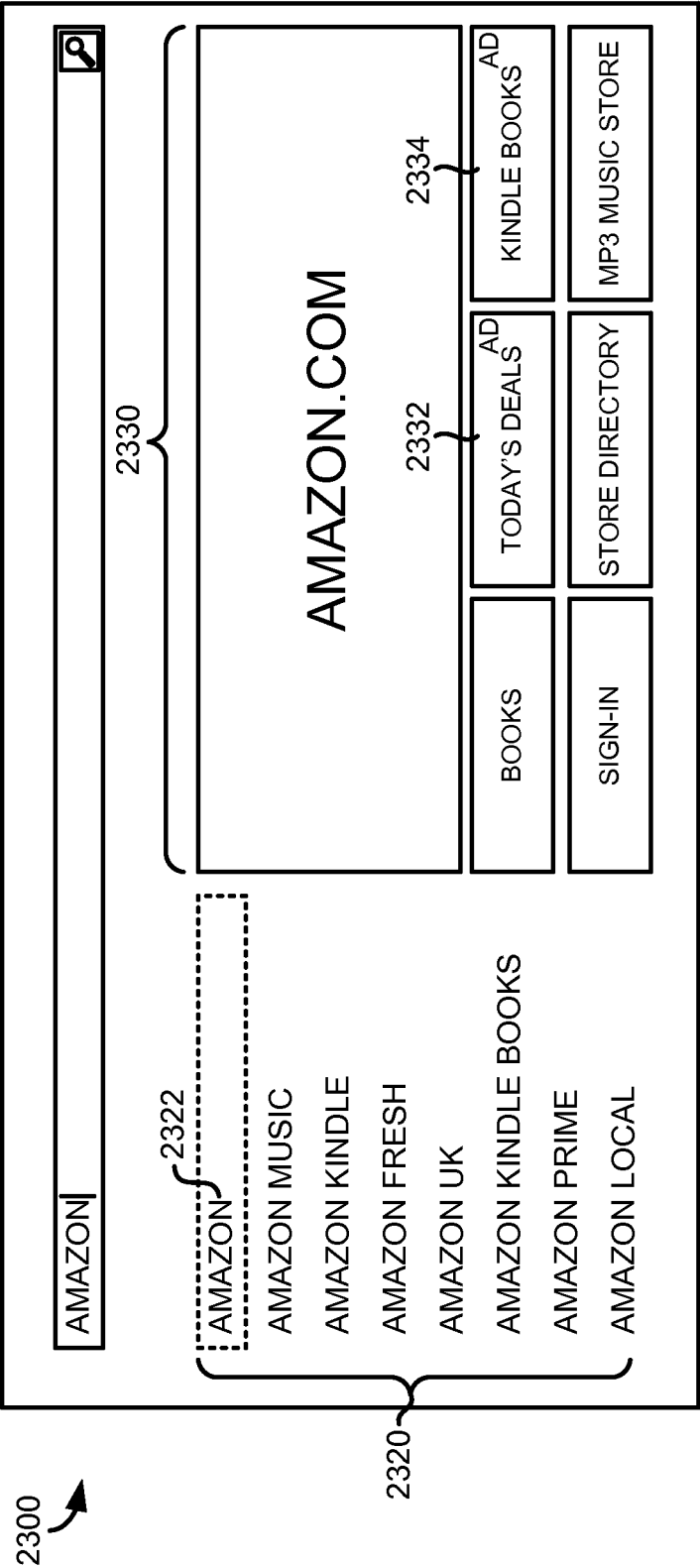


FIG. 23.

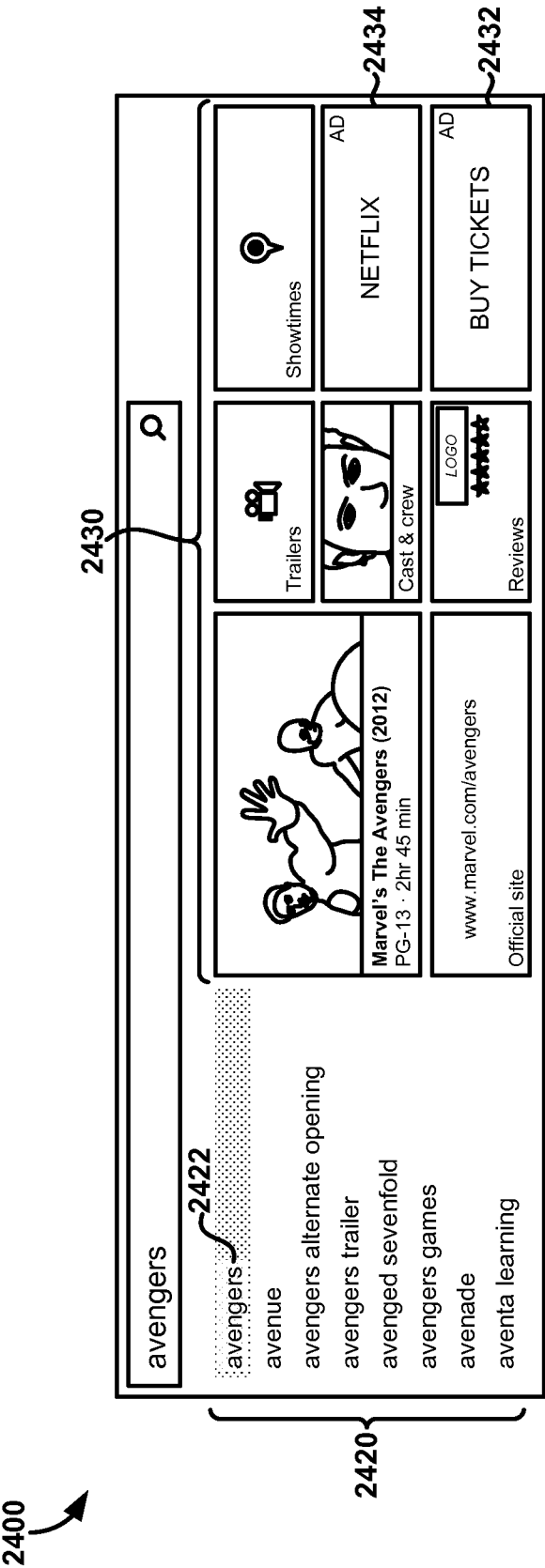


FIG. 24.

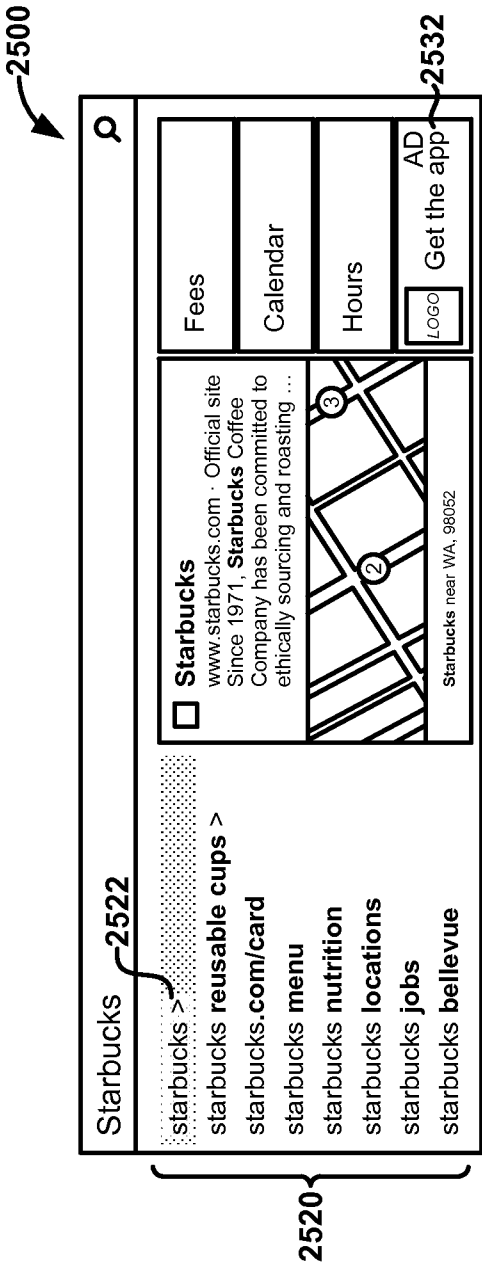


FIG. 25.

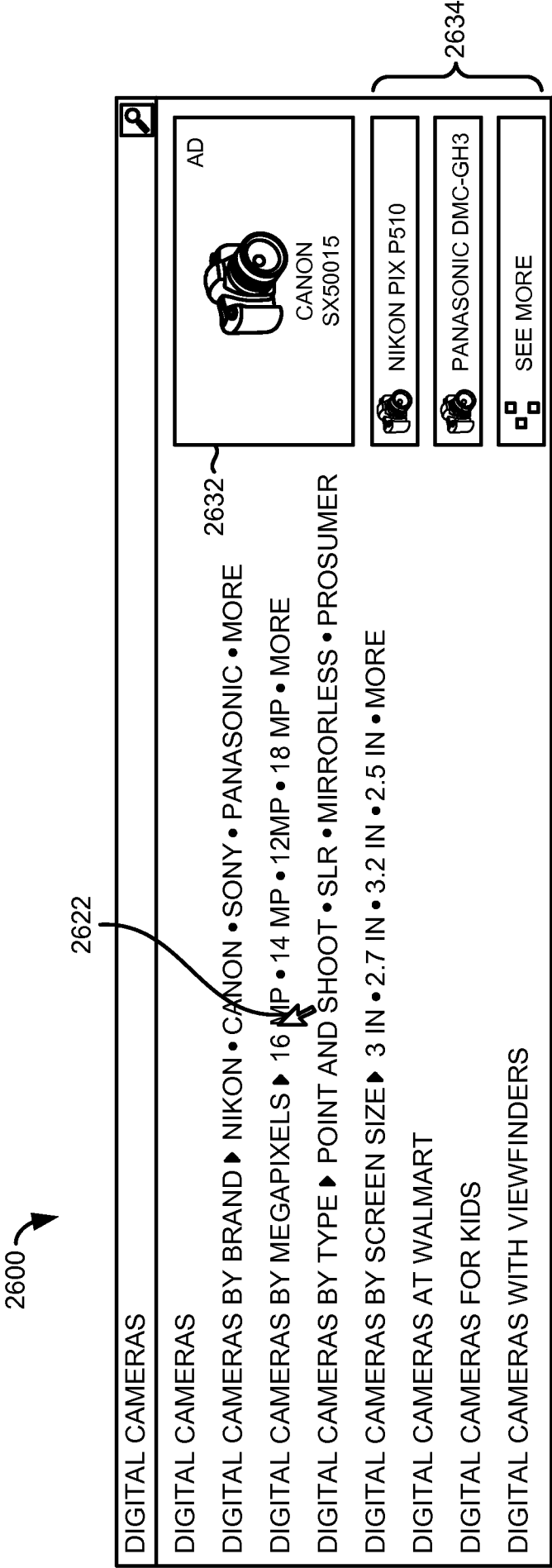


FIG. 26.

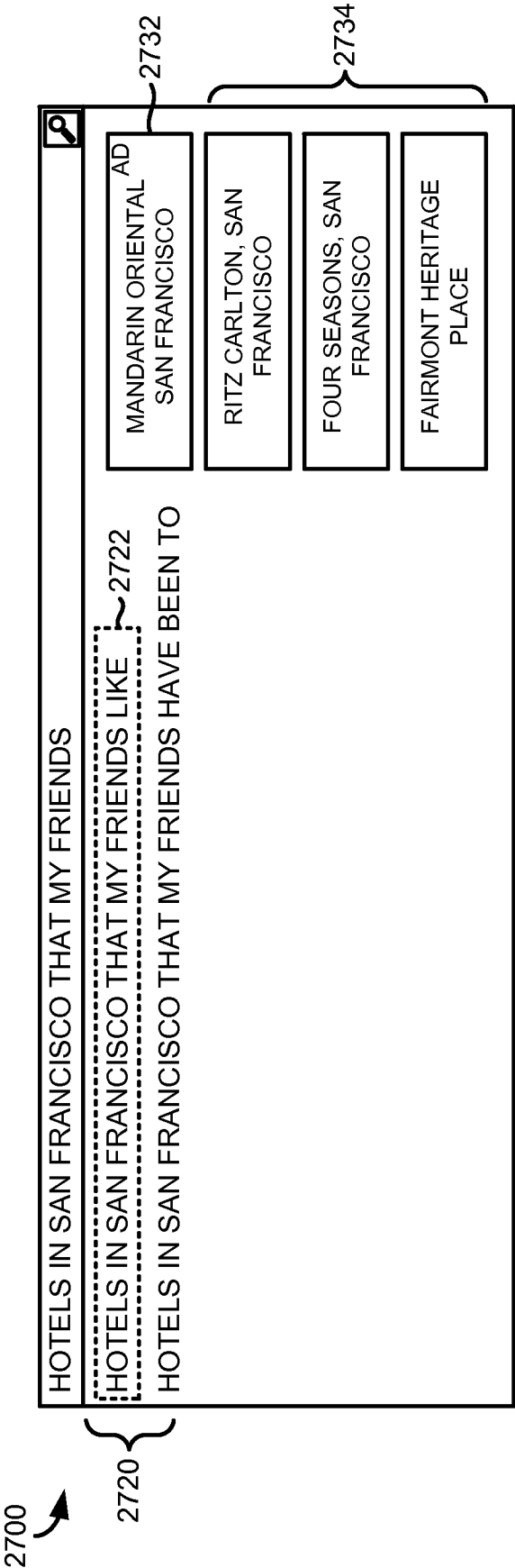


FIG. 27.

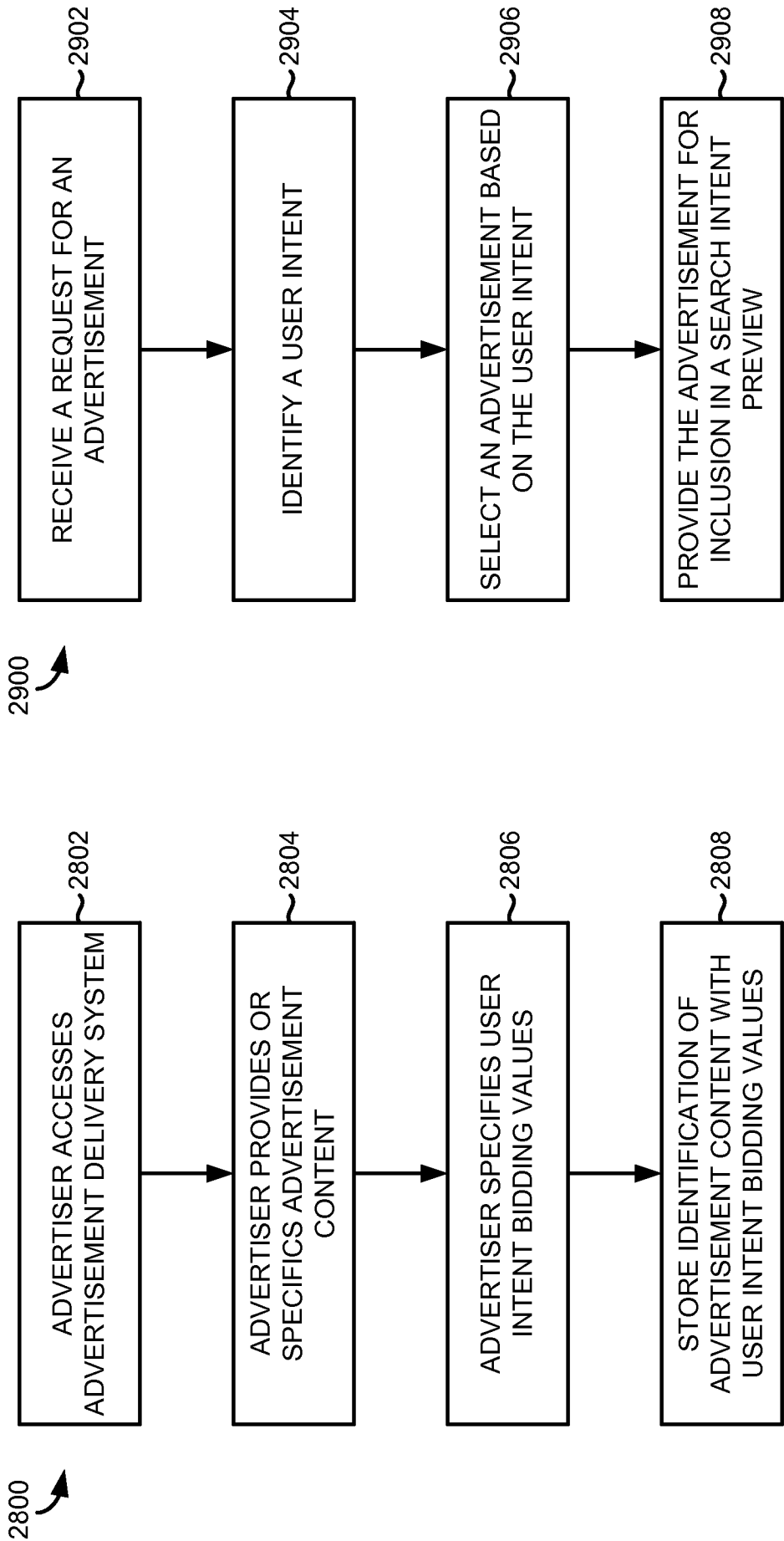
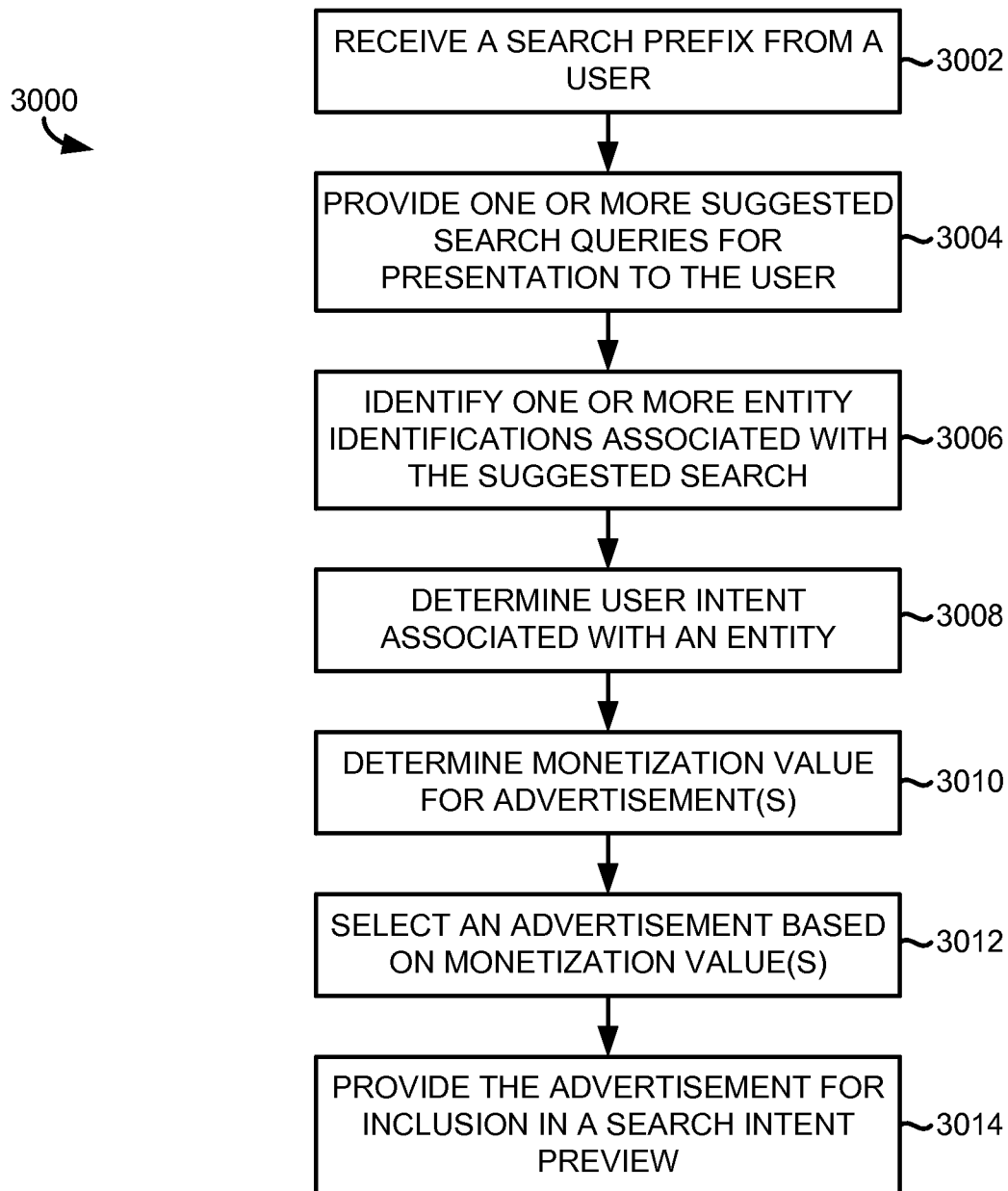


FIG. 28.

FIG. 29.

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**FIG. 30.**

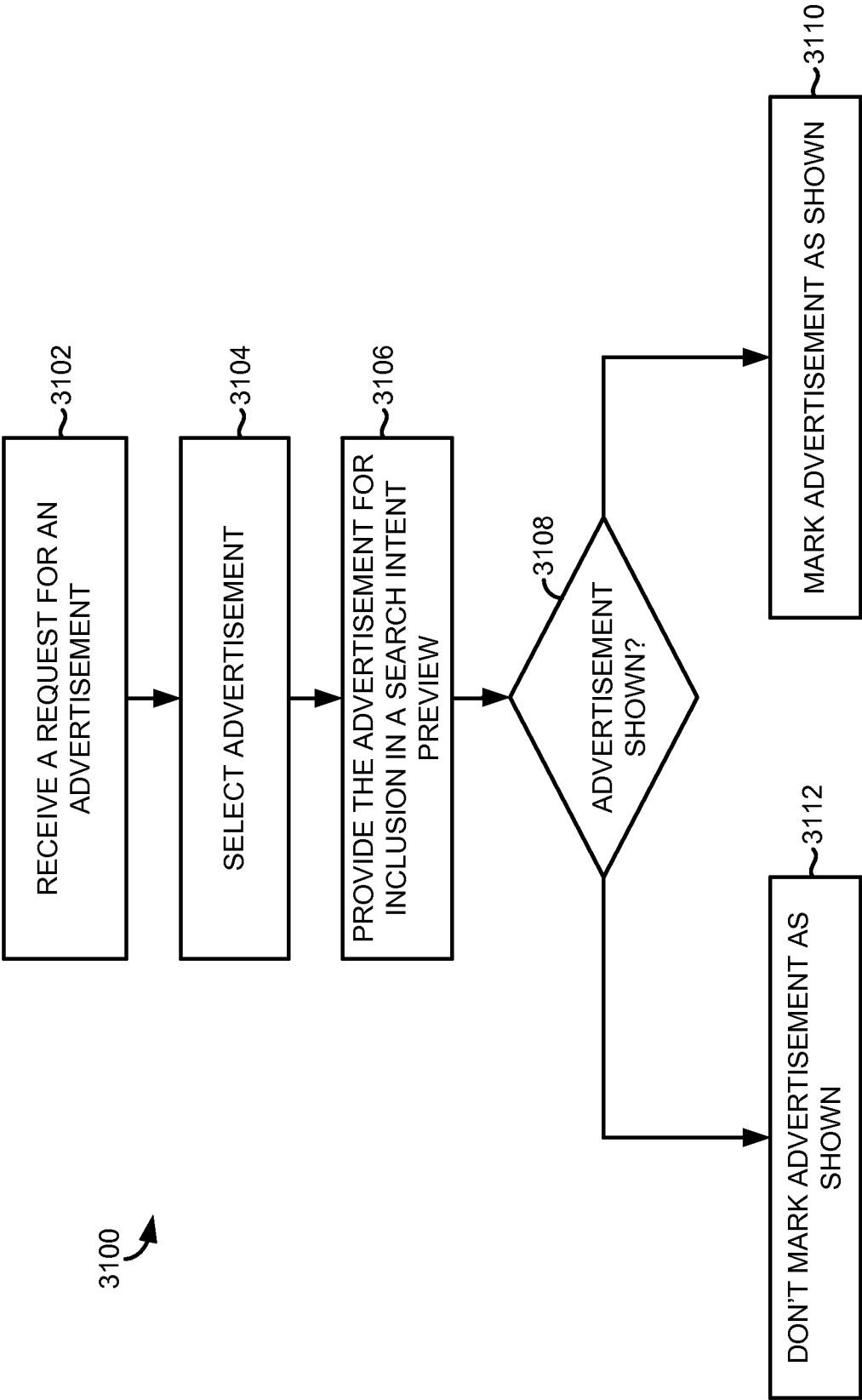


FIG. 31.