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- (54) **Title:** CONTEXTUAL ALTERNATE TEXT FOR IMAGES

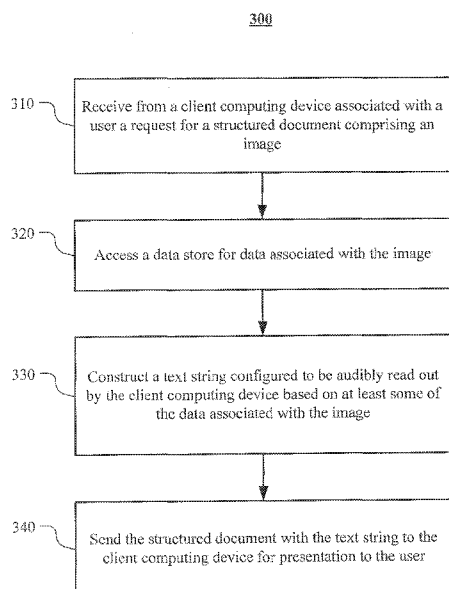


FIGURE 3

(57) **Abstract:** In one embodiment, one or more server computing devices receive from a client computing device associated with a user a request for a structured document including an image; the server computing devices access a data store for data associated with the image; the server computing devices construct based at least in part on at least some of the data associated with the image a text string corresponding to the image in the structured document; the text string is configured to be audibly read out by the client computing device; the server computing devices also send the structured document with the text string to the client computing device for presentation to the user.



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CONTEXTUAL ALTERNATE TEXT FOR IMAGES

TECHNICAL FIELD

- [1] This disclosure generally relates to user interface.

BACKGROUND

[2] A social-networking system, which may include a social-networking website, may enable its users (such as persons or organizations) to interact with it and with each other through it. The social-networking system may, with input from a user, create and store in the social-networking system a user profile associated with the user. The user profile may include demographic information, communication-channel information, and information on personal interests of the user. The social-networking system may also, with input from a user, create and store a record of relationships of the user with other users of the social-networking system, as well as provide services (e.g., wall posts, photo-sharing, event organization, messaging, games, or advertisements) to facilitate social interaction between or among users.

[3] The social-networking system may send over one or more networks content or messages related to its services to a mobile or other computing device of a user. A user may also install software applications on a mobile or other computing device of the user for accessing a user profile of the user and other data within the social-networking system. The social-networking system may generate a personalized set of content objects to display to a user, such as a newsfeed of aggregated stories of other users connected to the user.

SUMMARY OF PARTICULAR EMBODIMENTS

[4] Particular embodiments described methods for dynamically constructing an alternate text of an image included in a web page. One or more servers may receive from a client computing device a request for a structured document including an image. The servers may access data associated with the image. The servers may construct, based on the data associated

with the image, a text string corresponding to the image that is configured to be audibly read out by the client computing device. The servers may send the structured document with the text string to the client computing device for presentation.

BRIEF DESCRIPTION OF THE DRAWINGS

[5] FIGURE 1 illustrates an example network environment associated with a social-networking system.

[6] FIGURE 2 illustrates an example social graph.

[7] FIGURE 3 illustrates an example method for dynamically constructing an alternate text of an image included in a structured document.

[8] FIGURE 4 illustrates an example computer system.

DESCRIPTION OF EXAMPLE EMBODIMENTS

[9] FIGURE 1 illustrates an example network environment 100 associated with a social-networking system. Network environment 100 includes a user 101, a client system 130, a social-networking system 160, and a third-party system 170 connected to each other by a network 110. Although FIGURE 1 illustrates a particular arrangement of user 101, client system 130, social-networking system 160, third-party system 170, and network 110, this disclosure contemplates any suitable arrangement of user 101, client system 130, social-networking system 160, third-party system 170, and network 110. As an example and not by way of limitation, two or more of client system 130, social-networking system 160, and third-party system 170 may be connected to each other directly, bypassing network 110. As another example, two or more of client system 130, social-networking system 160, and third-party system 170 may be physically or logically co-located with each other in whole or in part. Moreover, although FIGURE 1 illustrates a particular number of users 101, client systems 130, social-networking systems 160, third-party systems 170, and networks 110, this disclosure contemplates any suitable number of users 101, client systems 130, social-networking systems 160, third-party systems 170, and networks 110. As an example and not by way of limitation, network environment 100 may

include multiple users 101, client system 130, social-networking systems 160, third-party systems 170, and networks 110.

[10] In particular embodiments, user 101 may be an individual (human user), an entity (e.g., an enterprise, business, or third-party application), or a group (e.g., of individuals or entities) that interacts or communicates with or over social-networking system 160. In particular embodiments, social-networking system 160 may be a network-addressable computing system hosting an online social network. Social-networking system 160 may generate, store, receive, and send social-networking data, such as, for example, user-profile data, concept-profile data, social-graph information, or other suitable data related to the online social network. Social-networking system 160 may be accessed by the other components of network environment 100 either directly or via network 110. In particular embodiments, social-networking system 160 may include an authorization server (or other suitable component(s)) that allows users 101 to opt in to or opt out of having their actions logged by social-networking system 160 or shared with other systems (e.g., third-party systems 170), for example, by setting appropriate privacy settings. A privacy setting of a user may determine what information associated with the user may be logged, how information associated with the user may be logged, when information associated with the user may be logged, who may log information associated with the user, whom information associated with the user may be shared with, and for what purposes information associated with the user may be logged or shared. Authorization servers may be used to enforce one or more privacy settings of the users of social-networking system 30 through blocking, data hashing, anonymization, or other suitable techniques as appropriate. In particular embodiments, third-party system 170 may be a network-addressable computing system that can host websites or application. Third-party system 170 may generate, store, receive, and send third-party system data, such as, for example, web pages, text, images, video, audio, or applications. Third-party system 170 may be accessed by the other components of network environment 100 either directly or via network 110. In particular embodiments, one or more users 101 may use one or more client systems 130 to access, send data to, and receive data from social-networking system 160 or third-party system 170. Client system 130 may access social-networking system 160 or third-party system 170 directly, via network 110, or via a third-party system. As an example and not by way of limitation, client system 130 may access third-party system 170 via social-

networking system 160. Client system 130 may be any suitable computing device, such as, for example, a personal computer, a laptop computer, a cellular telephone, a smartphone, or a tablet computer.

[11] This disclosure contemplates any suitable network 110. As an example and not by way of limitation, one or more portions of network 110 may include an ad hoc network, an intranet, an extranet, a virtual private network (VPN), a local area network (LAN), a wireless LAN (WLAN), a wide area network (WAN), a wireless WAN (WWAN), a metropolitan area network (MAN), a portion of the Internet, a portion of the Public Switched Telephone Network (PSTN), a cellular telephone network, or a combination of two or more of these. Network 110 may include one or more networks 110.

[12] Links 150 may connect client system 130, social-networking system 160, and third-party system 170 to communication network 110 or to each other. This disclosure contemplates any suitable links 150. In particular embodiments, one or more links 150 include one or more wireline (such as for example Digital Subscriber Line (DSL) or Data Over Cable Service Interface Specification (DOCSIS)), wireless (such as for example Wi-Fi or Worldwide Interoperability for Microwave Access (WiMAX)), or optical (such as for example Synchronous Optical Network (SONET) or Synchronous Digital Hierarchy (SDH)) links. In particular embodiments, one or more links 150 each include an ad hoc network, an intranet, an extranet, a VPN, a LAN, a WLAN, a WAN, a WWAN, a MAN, a portion of the Internet, a portion of the PSTN, a cellular technology-based network, a satellite communications technology-based network, another link 150, or a combination of two or more such links 150. Links 150 need not necessarily be the same throughout network environment 100. One or more first links 150 may differ in one or more respects from one or more second links 150.

[13] **FIGURE 2** illustrates example social graph 200. In particular embodiments, social-networking system 160 may store one or more social graphs 200 in one or more data stores. In particular embodiments, social graph 200 may include multiple nodes—which may include multiple user nodes 202 or multiple concept nodes 204—and multiple edges 206 connecting the nodes. Example social graph 200 illustrated in **FIGURE 2** is shown, for didactic purposes, in a two-dimensional visual map representation. In particular embodiments, a social-networking system 160, client system 130, or third-party system 170 may access social graph

200 and related social-graph information for suitable applications. The nodes and edges of social graph 200 may be stored as data objects, for example, in a data store (such as a social-graph database). Such a data store may include one or more searchable or queryable indexes of nodes or edges of social graph 200.

[14] In particular embodiments, a user node 202 may correspond to a user of social-networking system 160. As an example and not by way of limitation, a user may be an individual (human user), an entity (e.g., an enterprise, business, or third-party application), or a group (e.g., of individuals or entities) that interacts or communicates with or over social-networking system 160. In particular embodiments, when a user registers for an account with social-networking system 160, social-networking system 160 may create a user node 202 corresponding to the user, and store the user node 202 in one or more data stores. Users and user nodes 202 described herein may, where appropriate, refer to registered users and user nodes 202 associated with registered users. In addition or as an alternative, users and user nodes 202 described herein may, where appropriate, refer to users that have not registered with social-networking system 160. In particular embodiments, a user node 202 may be associated with information provided by a user or information gathered by various systems, including social-networking system 160. As an example and not by way of limitation, a user may provide his or her name, profile picture, contact information, birth date, sex, marital status, family status, employment, education background, preferences, interests, or other demographic information. In particular embodiments, a user node 202 may be associated with one or more data objects corresponding to information associated with a user. In particular embodiments, a user node 202 may correspond to one or more webpages.

[15] In particular embodiments, a concept node 204 may correspond to a concept. As an example and not by way of limitation, a concept may correspond to a place (such as, for example, a movie theater, restaurant, landmark, or city); a website (such as, for example, a website associated with social-network system 160 or a third-party website associated with a web-application server); an entity (such as, for example, a person, business, group, sports team, or celebrity); a resource (such as, for example, an audio file, video file, digital photo, text file, structured document, or application) which may be located within social-networking system 160 or on an external server, such as a web-application server; real or intellectual property (such as,

for example, a sculpture, painting, movie, game, song, idea, photograph, or written work); a game; an activity; an idea or theory; another suitable concept; or two or more such concepts. A concept node 204 may be associated with information of a concept provided by a user or information gathered by various systems, including social-networking system 160. As an example and not by way of limitation, information of a concept may include a name or a title; one or more images (e.g., an image of the cover page of a book); a location (e.g., an address or a geographical location); a website (which may be associated with a URL); contact information (e.g., a phone number or an email address); other suitable concept information; or any suitable combination of such information. In particular embodiments, a concept node 204 may be associated with one or more data objects corresponding to information associated with concept node 204. In particular embodiments, a concept node 204 may correspond to one or more webpages.

[16] In particular embodiments, a node in social graph 200 may represent or be represented by a webpage (which may be referred to as a “profile page”). Profile pages may be hosted by or accessible to social-networking system 160. Profile pages may also be hosted on third-party websites associated with a third-party server 170. As an example and not by way of limitation, a profile page corresponding to a particular external webpage may be the particular external webpage and the profile page may correspond to a particular concept node 204. Profile pages may be viewable by all or a selected subset of other users. As an example and not by way of limitation, a user node 202 may have a corresponding user-profile page in which the corresponding user may add content, make declarations, or otherwise express himself or herself. As another example and not by way of limitation, a concept node 204 may have a corresponding concept-profile page in which one or more users may add content, make declarations, or express themselves, particularly in relation to the concept corresponding to concept node 204.

[17] In particular embodiments, a concept node 204 may represent a third-party webpage or resource hosted by a third-party system 170. The third-party webpage or resource may include, among other elements, content, a selectable or other icon, or other inter-actable object (which may be implemented, for example, in JavaScript, AJAX, or PHP codes) representing an action or activity. As an example and not by way of limitation, a third-party webpage may include a selectable icon such as “like,” “check in,” “eat,” “recommend,” or

another suitable action or activity. A user viewing the third-party webpage may perform an action by selecting one of the icons (e.g., “eat”), causing a client system 130 to send to social-networking system 160 a message indicating the user’s action. In response to the message, social-networking system 160 may create an edge (e.g., an “eat” edge) between a user node 202 corresponding to the user and a concept node 204 corresponding to the third-party webpage or resource and store edge 206 in one or more data stores.

[18] In particular embodiments, a pair of nodes in social graph 200 may be connected to each other by one or more edges 206. An edge 206 connecting a pair of nodes may represent a relationship between the pair of nodes. In particular embodiments, an edge 206 may include or represent one or more data objects or attributes corresponding to the relationship between a pair of nodes. As an example and not by way of limitation, a first user may indicate that a second user is a “friend” of the first user. In response to this indication, social-networking system 160 may send a “friend request” to the second user. If the second user confirms the “friend request,” social-networking system 160 may create an edge 206 connecting the first user’s user node 202 to the second user’s user node 202 in social graph 200 and store edge 206 as social-graph information in one or more of data stores 164. In the example of FIGURE 2, social graph 200 includes an edge 206 indicating a friend relation between user nodes 202 of user “A” and user “B” and an edge indicating a friend relation between user nodes 202 of user “C” and user “B.” Although this disclosure describes or illustrates particular edges 206 with particular attributes connecting particular user nodes 202, this disclosure contemplates any suitable edges 206 with any suitable attributes connecting user nodes 202. As an example and not by way of limitation, an edge 206 may represent a friendship, family relationship, business or employment relationship, fan relationship, follower relationship, visitor relationship, subscriber relationship, superior/subordinate relationship, reciprocal relationship, non-reciprocal relationship, another suitable type of relationship, or two or more such relationships. Moreover, although this disclosure generally describes nodes as being connected, this disclosure also describes users or concepts as being connected. Herein, references to users or concepts being connected may, where appropriate, refer to the nodes corresponding to those users or concepts being connected in social graph 200 by one or more edges 206.

[19] In particular embodiments, an edge 206 between a user node 202 and a concept node 204 may represent a particular action or activity performed by a user associated with user node 202 toward a concept associated with a concept node 204. As an example and not by way of limitation, as illustrated in FIGURE 2, a user may “like,” “attended,” “played,” “listened,” “cooked,” “worked at,” or “watched” a concept, each of which may correspond to a edge type or subtype. A concept-profile page corresponding to a concept node 204 may include, for example, a selectable “check in” icon (such as, for example, a clickable “check in” icon) or a selectable “add to favorites” icon. Similarly, after a user clicks these icons, social-networking system 160 may create a “favorite” edge or a “check in” edge in response to a user’s action corresponding to a respective action. As another example and not by way of limitation, a user (user “C”) may listen to a particular song (“Imagine”) using a particular application (SPOTIFY, which is an online music application). In this case, social-networking system 160 may create a “listened” edge 206 and a “used” edge (as illustrated in FIGURE 2) between user nodes 202 corresponding to the user and concept nodes 204 corresponding to the song and application to indicate that the user listened to the song and used the application. Moreover, social-networking system 160 may create a “played” edge 206 (as illustrated in FIGURE 2) between concept nodes 204 corresponding to the song and the application to indicate that the particular song was played by the particular application. In this case, “played” edge 206 corresponds to an action performed by an external application (SPOTIFY) on an external audio file (the song “Imagine”). Although this disclosure describes particular edges 206 with particular attributes connecting user nodes 202 and concept nodes 204, this disclosure contemplates any suitable edges 206 with any suitable attributes connecting user nodes 202 and concept nodes 204. Moreover, although this disclosure describes edges between a user node 202 and a concept node 204 representing a single relationship, this disclosure contemplates edges between a user node 202 and a concept node 204 representing one or more relationships. As an example and not by way of limitation, an edge 206 may represent both that a user likes and has used at a particular concept. Alternatively, another edge 206 may represent each type of relationship (or multiples of a single relationship) between a user node 202 and a concept node 204 (as illustrated in FIGURE 2 between user node 202 for user “E” and concept node 204 for “SPOTIFY”).

[20] In particular embodiments, social-networking system 160 may create an edge 206 between a user node 202 and a concept node 204 in social graph 200. As an example and not by way of limitation, a user viewing a concept-profile page (such as, for example, by using a web browser or a special-purpose application hosted by the user's client system 130) may indicate that he or she likes the concept represented by the concept node 204 by clicking or selecting a "Like" icon, which may cause the user's client system 130 to send to social-networking system 160 a message indicating the user's liking of the concept associated with the concept-profile page. In response to the message, social-networking system 160 may create an edge 206 between user node 202 associated with the user and concept node 204, as illustrated by "like" edge 206 between the user and concept node 204. In particular embodiments, social-networking system 160 may store an edge 206 in one or more data stores. In particular embodiments, an edge 206 may be automatically formed by social-networking system 160 in response to a particular user action. As an example and not by way of limitation, if a first user uploads a picture, watches a movie, or listens to a song, an edge 206 may be formed between user node 202 corresponding to the first user and concept nodes 204 corresponding to those concepts. Although this disclosure describes forming particular edges 206 in particular manners, this disclosure contemplates forming any suitable edges 206 in any suitable manner.

[21] In addition, the degree of separation between any two nodes is defined as the minimum number of hops (or edges) required to traverse the social graph from one node to the other. A degree of separation between two nodes can be considered a measure of relatedness between the users or the concepts represented by the two nodes in the social graph.

[22] In particular embodiments, social-networking system 160 may determine the social-graph affinity (which may be referred to herein as "affinity") of various social-graph entities for each other. Affinity may represent the strength of a relationship or level of interest between particular objects associated with the online social network, such as users, concepts, content, actions, advertisements, other objects associated with the online social network, or any suitable combination thereof. Affinity may also be determined with respect to objects associated with third-party systems 170 or other suitable systems. An overall affinity for a social-graph entity for each user, subject matter, or type of content may be established. The overall affinity may change based on continued monitoring of the actions or relationships associated with the

social-graph entity. Although this disclosure describes determining particular affinities in a particular manner, this disclosure contemplates determining any suitable affinities in any suitable manner.

[23] In particular embodiments, social-networking system 160 may measure or quantify social-graph affinity using an affinity coefficient (which may be referred to herein as “coefficient”). The coefficient may represent or quantify the strength of a relationship between particular objects associated with the online social network. The coefficient may also represent a probability or function that measures a predicted probability that a user will perform a particular action based on the user’s interest in the action. In this way, a user’s future actions may be predicted based on the user’s prior actions, where the coefficient may be calculated at least in part a the history of the user’s actions. Coefficients may be used to predict any number of actions, which may be within or outside of the online social network. As an example and not by way of limitation, these actions may include various types of communications, such as sending messages, posting content, or commenting on content; various types of a observation actions, such as accessing or viewing profile pages, media, or other suitable content; various types of coincidence information about two or more social-graph entities, such as being in the same group, tagged in the same photograph, checked-in at the same location, or attending the same event; or other suitable actions. Although this disclosure describes measuring affinity in a particular manner, this disclosure contemplates measuring affinity in any suitable manner.

[24] In particular embodiments, social-networking system 160 may use a variety of factors to calculate a coefficient. These factors may include, for example, user actions, types of relationships between objects, location information, other suitable factors, or any combination thereof. In particular embodiments, different factors may be weighted differently when calculating the coefficient. The weights for each factor may be static or the weights may change according to, for example, the user, the type of relationship, the type of action, the user’s location, and so forth. Ratings for the factors may be combined according to their weights to determine an overall coefficient for the user. As an example and not by way of limitation, particular user actions may be assigned both a rating and a weight while a relationship associated with the particular user action is assigned a rating and a correlating weight (e.g., so the weights total 100%). To calculate the coefficient of a user towards a particular object, the rating assigned

to the user's actions may comprise, for example, 60% of the overall coefficient, while the relationship between the user and the object may comprise 40% of the overall coefficient. In particular embodiments, the social-networking system 160 may consider a variety of variables when determining weights for various factors used to calculate a coefficient, such as, for example, the time since information was accessed, decay factors, frequency of access, relationship to information or relationship to the object about which information was accessed, relationship to social-graph entities connected to the object, short- or long-term averages of user actions, user feedback, other suitable variables, or any combination thereof. As an example and not by way of limitation, a coefficient may include a decay factor that causes the strength of the signal provided by particular actions to decay with time, such that more recent actions are more relevant when calculating the coefficient. The ratings and weights may be continuously updated based on continued tracking of the actions upon which the coefficient is based. Any type of process or algorithm may be employed for assigning, combining, averaging, and so forth the ratings for each factor and the weights assigned to the factors. In particular embodiments, social-networking system 160 may determine coefficients using machine-learning algorithms trained on historical actions and past user responses, or data farmed from users by exposing them to various options and measuring responses. Although this disclosure describes calculating coefficients in a particular manner, this disclosure contemplates calculating coefficients in any suitable manner.

[25] In particular embodiments, social-networking system 160 may calculate a coefficient based on a user's actions. Social-networking system 160 may monitor such actions on the online social network, on a third-party system 170, on other suitable systems, or any combination thereof. Any suitable type of user actions may be tracked or monitored. Typical user actions include viewing profile pages, creating or posting content, interacting with content, joining groups, listing and confirming attendance at events, checking-in at locations, liking particular pages, creating pages, and performing other tasks that facilitate social action. In particular embodiments, social-networking system 160 may calculate a coefficient based on the user's actions with particular types of content. The content may be associated with the online social network, a third-party system 170, or another suitable system. The content may include users, profile pages, posts, news stories, headlines, instant messages, chat room conversations, emails, advertisements, pictures, video, music, other suitable objects, or any combination thereof.

Social-networking system 160 may analyze a user's actions to determine whether one or more of the actions indicate an affinity for subject matter, content, other users, and so forth. As an example and not by way of limitation, if a user may make frequently posts content related to "coffee" or variants thereof, social-networking system 160 may determine the user has a high coefficient with respect to the concept "coffee". Particular actions or types of actions may be assigned a higher weight and/or rating than other actions, which may affect the overall calculated coefficient. As an example and not by way of limitation, if a first user emails a second user, the weight or the rating for the action may be higher than if the first user simply views the user-profile page for the second user.

[26] In particular embodiments, social-networking system 160 may calculate a coefficient based on the type of relationship between particular objects. Referencing the social graph 200, social-networking system 160 may analyze the number and/or type of edges 206 connecting particular user nodes 202 and concept nodes 204 when calculating a coefficient. As an example and not by way of limitation, user nodes 202 that are connected by a spouse-type edge (representing that the two users are married) may be assigned a higher coefficient than a user nodes 202 that are connected by a friend-type edge. In other words, depending upon the weights assigned to the actions and relationships for the particular user, the overall affinity may be determined to be higher for content about the user's spouse than for content about the user's friend. In particular embodiments, the relationships a user has with another object may affect the weights and/or the ratings of the user's actions with respect to calculating the coefficient for that object. As an example and not by way of limitation, if a user is tagged in first photo, but merely likes a second photo, social-networking system 160 may determine that the user has a higher coefficient with respect to the first photo than the second photo because having a tagged-in-type relationship with content may be assigned a higher weight and/or rating than having a like-type relationship with content. In particular embodiments, social-networking system 160 may calculate a coefficient for a first user based on the relationship one or more second users have with a particular object. In other words, the connections and coefficients other users have with an object may affect the first user's coefficient for the object. As an example and not by way of limitation, if a first user is connected to or has a high coefficient for one or more second users, and those second users are connected to or have a high coefficient for a particular object, social-

networking system 160 may determine that the first user should also have a relatively high coefficient for the particular object. In particular embodiments, the coefficient may be based on the degree of separation between particular objects. The lower coefficient may represent the decreasing likelihood that the first user will share an interest in content objects of the user that is indirectly connected to the first user in the social graph 200. As an example and not by way of limitation, social-graph entities that are closer in the social graph 200 (i.e., fewer degrees of separation) may have a higher coefficient than entities that are further apart in the social graph 200.

[27] In particular embodiments, social-networking system 160 may calculate a coefficient based on location information. Objects that are geographically closer to each other may be considered to be more related or of more interest to each other than more distant objects. In particular embodiments, the coefficient of a user towards a particular object may be based on the proximity of the object's location to a current location associated with the user (or the location of a client system 130 of the user). A first user may be more interested in other users or concepts that are closer to the first user. As an example and not by way of limitation, if a user is one mile from an airport and two miles from a gas station, social-networking system 160 may determine that the user has a higher coefficient for the airport than the gas station based on the proximity of the airport to the user.

[28] In particular embodiments, social-networking system 160 may perform particular actions with respect to a user based on coefficient information. Coefficients may be used to predict whether a user will perform a particular action based on the user's interest in the action. A coefficient may be used when generating or presenting any type of objects to a user, such as advertisements, search results, news stories, media, messages, notifications, or other suitable objects. The coefficient may also be utilized to rank and order such objects, as appropriate. In this way, social-networking system 160 may provide information that is relevant to user's interests and current circumstances, increasing the likelihood that they will find such information of interest. In particular embodiments, social-networking system 160 may generate content based on coefficient information. Content objects may be provided or selected based on coefficients specific to a user. As an example and not by way of limitation, the coefficient may be used to generate media for the user, where the user may be presented with media for which the user has a

high overall coefficient with respect to the media object. As another example and not by way of limitation, the coefficient may be used to generate advertisements for the user, where the user may be presented with advertisements for which the user has a high overall coefficient with respect to the advertised object. In particular embodiments, social-networking system 160 may generate search results based on coefficient information. Search results for a particular user may be scored or ranked based on the coefficient associated with the search results with respect to the querying user. As an example and not by way of limitation, search results corresponding to objects with higher coefficients may be ranked higher on a search-results page than results corresponding to objects having lower coefficients.

[29] In particular embodiments, social-networking system 160 may calculate a coefficient in response to a request for a coefficient from a particular system or process. To predict the likely actions a user may take (or may be the subject of) in a given situation, any process may request a calculated coefficient for a user. The request may also include a set of weights to use for various factors used to calculate the coefficient. This request may come from a process running on the online social network, from a third-party system 170 (e.g., via an API or other communication channel), or from another suitable system. In response to the request, social-networking system 160 may calculate the coefficient (or access the coefficient information if it has previously been calculated and stored). In particular embodiments, social-networking system 160 may measure an affinity with respect to a particular process. Different processes (both internal and external to the online social network) may request a coefficient for a particular object or set of objects. Social-networking system 160 may provide a measure of affinity that is relevant to the particular process that requested the measure of affinity. In this way, each process receives a measure of affinity that is tailored for the different context in which the process will use the measure of affinity.

[30] In connection with social-graph affinity and affinity coefficients, particular embodiments may utilize one or more systems, components, elements, functions, methods, operations, or steps disclosed in U.S. Patent Application No. 11/503093, filed 11 August 2006, U.S. Patent Application No. 12/977027, filed 22 December 2010, U.S. Patent Application No. 12/978265, filed 23 December 2010, and U.S. Patent Application No. 13/632869, filed 01 October 2012, each of which is incorporated by reference.

[31] A structured document such as a web page may include, for example, page layout information, scripts, page content such as text (e.g., ASCII or HTML), media data (e.g., graphics, photos, video clips), and executable code objects (e.g., a game executable within a browser window or frame). Structured documents may be implemented with languages and technologies such as Hypertext Markup Language (HTML), Extensible Markup Language (XML), Extensible Hypertext Markup Language (XHTML), JavaScript, WebGL, Cascading Style Sheet (CSS) including CSS animations and transitions, and, frequently, Java. A structured document may itself include references to multiple structured documents and contents. For example, a web page may include one or more inline references by incorporating Uniform Resource Locations (URLs) and/or script code (e.g., JavaScript, PHP, AJAX) that in response to a user event (e.g., a mouse click, a mouse hover-over), causes an application displaying the web page in a graphical user interface to dynamically retrieve content specified by an URL and the script code.

[32] A structured document such as a web page may include an image using an HTML `<img>` tag. Meanwhile, an `<img>` tag may also include an alternate text using the `alt` attribute of the `<img>` tag. For example, an image of Golden Gate Bridge with a corresponding URL “www.example.com/picture.jpg” and an alternate text “Picture of Golden Gate Bridge” may be constructed as `<img src=“www.example.com/picture.jpg” alt=“Picture of Golden Gate Bridge”>` in the web page. A client computing device displaying the web page may display the alternate text “Picture of Golden Gate Bridge” if the image is not available for displaying (e.g., if a server hosting the image’s URL is not responding).

[33] A client computing device may display a web page with an image, while audibly reading out text content of the web page and the alternate text for the image (e.g., using a text-to-speech software program and a speaker of the client computing device). Reading out audibly alternate texts of images in a web page and other text content of the web page is useful for accessibility of a user who is visually impaired or visually disabled (e.g., a blind person). For example, a client computing device displaying the web page with the image of Golden Gate Bridge described above may audibly read out text content from the beginning of the web page. While reaching the image, the client computing device may audibly read out the alternate text “Picture of Golden Gate Bridge.” In this way, a blind person using the client computing device can know the content of the web page fully. Without the alternate text, a blind person using the

client computing device displaying the web page may only hear text content before (and after) the image in the web page, and an audible read-out “link”, indicating an existence of a URL link (of the image) between the text content.

[34] Ordinarily, an alternate text for an image in a web page is static. For example, a website hosting an image may create an alternate text of the image. The alternate text may be the same for the life time of the image. The web page with the image may directly include the image’s alternate text, regardless of other content of the web page or viewers of the web page. Particular embodiments describe methods for dynamically constructing an alternate text of an image included in a web page. Particular embodiments may dynamically constructing an alternate text of an image included in a web page based on contextual information, such as what other content is included in the web page, or who is a viewer of the web page.

[35] **FIGURE 3** illustrates an example method 300 for dynamically constructing an alternate text of an image included in a structured document. Particular embodiments may be implemented by a computing process (e.g., of an application) executed by one or more servers serving the structured document. Particular embodiments may be implemented by a computing process executed by one or more server computing devices of a social-networking system as described earlier.

[36] The method 300 may begin at step 310. In particular embodiments, at step 310, one or more servers of the social-networking system may receive from a client computing device a request for a structured document comprising an image. The client computing device may be a desktop computer, a laptop computer, a tablet computer, a smartphone, or any suitable client computing device that is configured to display the structured document (e.g., a web page). The client computing device may be associated with a particular user (e.g., a viewer of the structured document when it’s served by the servers). The particular user may be a user of the social-networking system. The image may comprise a photograph or any suitable image file in any suitable format (e.g., Graphics Interchange Format or GIF format, Joint Photographic Experts Group or JPEG format, Exchangeable image file format or Exif format). The image may be stored in a data store of the social-networking system or a third-party system.

[37] In particular embodiments, the image may correspond to a concept node of a social graph of the social-networking system. The concept node corresponding to the image may

also comprise additional information associated with the image. For example, the concept node may include an author (or a source) of the image. The concept node may include a location (e.g., a name of a place, a pair of geographical coordinates, a zip code, and so on) of the image. The concept node may include a time stamp of the image. Particular embodiments contemplate any suitable information that may be included in the concept node corresponding to the image. The social-networking system may store the concept node corresponding to the image in one or more data stores of the social-networking system.

[38] In addition, the social graph may comprise one or more edges connecting the concept node (corresponding to the image) to other user or concept nodes of the social graph. For example, the social graph may include an edge connecting the concept node to a user node, while the edge representing a user corresponding to the user node is tagged in the image corresponding to the concept node. The social graph may include an edge connecting the concept node to a user node, while the edge representing a user corresponding to the user node likes the image corresponding to the concept node. The social graph may include an edge connecting the concept node (corresponding to the image) to another concept node comprising a comment made on the image (e.g., by a user of the social-networking system). The social graph may include an edge connecting the concept node (corresponding to the image) to another concept node corresponding to an event that the image is associated with. The social graph may include an edge connecting the concept node (corresponding to the image) to another concept node corresponding to a photo album that the image belongs to. Particular embodiments contemplate any suitable edges that may connect to the concept node corresponding to the image in the social graph. The social-networking system may store one or more edges connecting to the concept node corresponding to the image in one or more data stores of the social-networking system.

[39] In particular embodiments, at step 320, the servers may access a data store for data associated with the image. For example, the servers may access one or more data stores storing the concept node corresponding to the image and edges connecting to the concept node (as described above) for data associated with the image such as an author, a location, a time stamp, one or more users tagged in the image, a number of “likes”, one or more comment made on the image, or an album including the image. In some embodiments, the servers may also

access the image's metadata for data associated with the image (e.g., a time stamp, a comment). The servers may also access one or more data stores of the social-networking system (or third-party systems) for other content (e.g., text content) of the structured document.

[40] In particular embodiments, at step 330, the servers may construct a text string corresponding to the image (e.g., an alternate text for the image). The text string is configured to be audibly read out by the client computing device. In particular embodiments, the servers may construct a text string corresponding to the image in a spoken manner of a natural language. In particular embodiments, the servers may construct the text string based at least in part on at least some of the data associated with the image.

[41] For example, the data associated with the image may include an author of the image (e.g., "John"), a location of the image (e.g., "Grand Canyon"), and 7 users tagged in the image (e.g., "A", "B", "C", "D", "E", "F", and "G"). Based on the data associated with the image, the servers may construct a text string corresponding to the image in a spoken manner in English such as "This is John's photo with A, B, C, D, E, F, and G. The photo was taken at Grand Canyon."

[42] In one embodiment, the text string constructed by the servers may also include one or more comments associated with the image. For example, data associated with an image of Arc de Triomphe in Paris may include an author ("Bill"), a user tagged in the image ("Mary"), a location "Arc de Triomphe", and a comment "Great view from Ave des Champs-Elysees!" The servers may include the comment in a text string corresponding to the image such as "This is Bill's photo with Mary. The photo was taken at Arc de Triomphe, and entitled 'Great view from Ave des Champs-Elysees!'."

[43] In particular embodiments, the data associated with the image may correspond to one or more nodes (user nodes or concept nodes) of the social graph. The servers may construct the text string corresponding to the image based on social-graph proximity between each of the nodes and a user node corresponding to the particular user in the social graph.

[44] In particular embodiments, the servers may include only a portion of the data associated with the image that correspond to one or more nodes (user nodes or concept nodes) in the social graph that are within a specified degree of separation from a user node corresponding to the particular user. For example, in the example Grand Canyon image above, users "D" and

“E” may be first-degree friends of the particular user, while other users (“A”, “B”, “C”, “F”, and “G”) may be separated from the particular user by two or more degrees in the social graph. The servers may only include first-degree friends of the particular user in the text string such as “This is John’s photo with D, E, and five other people. The photo was taken at Grand Canyon.” In this way, only information more relevant to the particular user (i.e., a viewer of the structured document) is included in the text string and configured to be read out audibly to the particular user by the client computing device.

[45] In particular embodiments, the servers may construct the text string corresponding to the image based on social-graph affinity between each of nodes from the data associated with the image and the particular user. For example, in the example Grand Canyon image above, the servers may rank the users “A”, “B”, “C”, “D”, “E”, “F”, and “G” based on their respective affinity coefficients with the particular user. The ranked order of those users may be “E”, “A”, “B”, “D”, “C”, “G”, and “F.” The servers may construct the text string to include top ranked users (e.g., top 3 ranked users) in the text string for the particular user such as “This is John’s photo with E, A, B, and four other people. The photo was taken at Grand Canyon.” In this way, only information more affine to the particular user is included in the text string and configured to be read out audibly to the particular user by the client computing device.

[46] In particular embodiments, the servers may construct the text string based on text content of the structured document. The servers may construct the text string based on a language for the text content of the structured document. For example, if some or all of the text content of the structured document is in Spanish, the servers may construct the text string in Spanish, such as “Esta es la foto de John con A, B, C, D, E, F y G. La foto fue tomada en el Grand Canyon.” for the example Grand Canyon image above.

[47] The servers may omit in the text string information that has been mentioned in the other content of the structured document. For example, the structured document may include a photo album (or an event) that includes the example Grand Canyon image above. If the location “Grand Canyon” of the album (thus the location of the image) has been described with the photo album (or event) in the structured document, the servers may construct the text string without the location information (e.g., “This is John’s photo with A, B, C, D, E, F, and G”). The servers may construct a null text string corresponding to the image (or skip constructing a text string

corresponding to the image), if data associated with the image has been described by text in other portion of the structured document.

[48] In particular embodiments, the servers may construct the text string based on a network state of the client computing device. For example, as the text string corresponding to the image may add to a total size of the structured document to be sent to the client computing device for display, it is desirable to reduce a size of the text string if the client computing device has a network connection that is constrained in bandwidth (e.g., a cellular connection). In particular embodiments, the servers may determine a network state of the client computing device (e.g., a cellular connection, a Wi-Fi connection, or an Ethernet connection). If the client computing device has a network connection that is constrained in bandwidth such as a cellular connection, the servers may construct a shorter version of the text string corresponding to the image included in the structured document.

[49] For example, the servers may construct a shorter version of the text string corresponding to the example Grand Canyon image above by including only some (or none) of the users tagged in the image (e.g., “This is John’s photo with D and G. The photo was taken at Grand Canyon.”, or “This is John’s photo taken at Grand Canyon.”). The servers may construct a shorter version of the text string by including only some of the users tagged in the image based on social-graph proximity between each of the tagged users and the particular user as described above.

[50] The servers may also construct a shorter version of the text string corresponding to the example Grand Canyon image above by omitting the location information of the image (e.g., “This is John’s photo with A, B, C, D, E, F, and G.”).

[51] In one embodiment, the servers may construct a null text string corresponding the image included in the structured document (or skip constructing a text string corresponding to the image) if the client computing device displaying the structured document has a network connection that is constrained in bandwidth.

[52] In particular embodiments, at step 340, the servers may send the structured document with the text string to the client computing device for presentation for the particular user. A web browser (or any suitable application configured to display structured documents or web pages) hosted by the client computing device may display the structured document, while a

text-to-speech program (or any suitable application) hosted by the client computing device may read out audibly (e.g., through a speaker of the client computing device) text content of the structured document, including the text string corresponding to the image. In one embodiment, the web browser (or another suitable application) may also display the text string adjacent to or overlaying the image (e.g., as a caption for the image) in the structured document. The web browser may display the text string adjacent to or overlaying the image in response to a user event (e.g., a mouse click event, a mouse hover-over event) by the particular user.

[53] Particular embodiments may repeat one or more steps of the method of FIGURE 3, where appropriate. Although this disclosure describes and illustrates particular steps of the method of FIGURE 3 as occurring in a particular order, this disclosure contemplates any suitable steps of the method of FIGURE 3 occurring in any suitable order. Moreover, although this disclosure describes and illustrates particular components, devices, or systems carrying out particular steps of the method of FIGURE 3, this disclosure contemplates any suitable combination of any suitable components, devices, or systems carrying out any suitable steps of the method of FIGURE 3.

[54] **FIGURE 4** illustrates an example computer system 400. In particular embodiments, one or more computer systems 400 perform one or more steps of one or more methods described or illustrated herein. In particular embodiments, one or more computer systems 400 provide functionality described or illustrated herein. In particular embodiments, software running on one or more computer systems 400 performs one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Particular embodiments include one or more portions of one or more computer systems 400. Herein, reference to a computer system may encompass a computing device, and vice versa, where appropriate. Moreover, reference to a computer system may encompass one or more computer systems, where appropriate.

[55] This disclosure contemplates any suitable number of computer systems 400. This disclosure contemplates computer system 400 taking any suitable physical form. As example and not by way of limitation, computer system 400 may be an embedded computer system, a system-on-chip (SOC), a single-board computer system (SBC) (such as, for example, a computer-on-module (COM) or system-on-module (SOM)), a desktop computer system, a laptop or notebook

computer system, an interactive kiosk, a mainframe, a mesh of computer systems, a mobile telephone, a personal digital assistant (PDA), a server, a tablet computer system, or a combination of two or more of these. Where appropriate, computer system 400 may include one or more computer systems 400; be unitary or distributed; span multiple locations; span multiple machines; span multiple data centers; or reside in a cloud, which may include one or more cloud components in one or more networks. Where appropriate, one or more computer systems 400 may perform without substantial spatial or temporal limitation one or more steps of one or more methods described or illustrated herein. As an example and not by way of limitation, one or more computer systems 400 may perform in real time or in batch mode one or more steps of one or more methods described or illustrated herein. One or more computer systems 400 may perform at different times or at different locations one or more steps of one or more methods described or illustrated herein, where appropriate.

[56] In particular embodiments, computer system 400 includes a processor 402, memory 404, storage 406, an input/output (I/O) interface 408, a communication interface 410, and a bus 412. Although this disclosure describes and illustrates a particular computer system having a particular number of particular components in a particular arrangement, this disclosure contemplates any suitable computer system having any suitable number of any suitable components in any suitable arrangement.

[57] In particular embodiments, processor 402 includes hardware for executing instructions, such as those making up a computer program. As an example and not by way of limitation, to execute instructions, processor 402 may retrieve (or fetch) the instructions from an internal register, an internal cache, memory 404, or storage 406; decode and execute them; and then write one or more results to an internal register, an internal cache, memory 404, or storage 406. In particular embodiments, processor 402 may include one or more internal caches for data, instructions, or addresses. This disclosure contemplates processor 402 including any suitable number of any suitable internal caches, where appropriate. As an example and not by way of limitation, processor 402 may include one or more instruction caches, one or more data caches, and one or more translation lookaside buffers (TLBs). Instructions in the instruction caches may be copies of instructions in memory 404 or storage 406, and the instruction caches may speed up retrieval of those instructions by processor 402. Data in the data caches may be copies of data in

memory 404 or storage 406 for instructions executing at processor 402 to operate on; the results of previous instructions executed at processor 402 for access by subsequent instructions executing at processor 402 or for writing to memory 404 or storage 406; or other suitable data. The data caches may speed up read or write operations by processor 402. The TLBs may speed up virtual-address translation for processor 402. In particular embodiments, processor 402 may include one or more internal registers for data, instructions, or addresses. This disclosure contemplates processor 402 including any suitable number of any suitable internal registers, where appropriate. Where appropriate, processor 402 may include one or more arithmetic logic units (ALUs); be a multi-core processor; or include one or more processors 402. Although this disclosure describes and illustrates a particular processor, this disclosure contemplates any suitable processor.

[58] In particular embodiments, memory 404 includes main memory for storing instructions for processor 402 to execute or data for processor 402 to operate on. As an example and not by way of limitation, computer system 400 may load instructions from storage 406 or another source (such as, for example, another computer system 400) to memory 404. Processor 402 may then load the instructions from memory 404 to an internal register or internal cache. To execute the instructions, processor 402 may retrieve the instructions from the internal register or internal cache and decode them. During or after execution of the instructions, processor 402 may write one or more results (which may be intermediate or final results) to the internal register or internal cache. Processor 402 may then write one or more of those results to memory 404. In particular embodiments, processor 402 executes only instructions in one or more internal registers or internal caches or in memory 404 (as opposed to storage 406 or elsewhere) and operates only on data in one or more internal registers or internal caches or in memory 404 (as opposed to storage 406 or elsewhere). One or more memory buses (which may each include an address bus and a data bus) may couple processor 402 to memory 404. Bus 412 may include one or more memory buses, as described below. In particular embodiments, one or more memory management units (MMUs) reside between processor 402 and memory 404 and facilitate accesses to memory 404 requested by processor 402. In particular embodiments, memory 404 includes random access memory (RAM). This RAM may be volatile memory, where appropriate. Where appropriate, this RAM may be dynamic RAM (DRAM) or static RAM (SRAM).

Moreover, where appropriate, this RAM may be single-ported or multi-ported RAM. This disclosure contemplates any suitable RAM. Memory 404 may include one or more memories 404, where appropriate. Although this disclosure describes and illustrates particular memory, this disclosure contemplates any suitable memory.

[59] In particular embodiments, storage 406 includes mass storage for data or instructions. As an example and not by way of limitation, storage 406 may include a hard disk drive (HDD), a floppy disk drive, flash memory, an optical disc, a magneto-optical disc, magnetic tape, or a Universal Serial Bus (USB) drive or a combination of two or more of these. Storage 406 may include removable or non-removable (or fixed) media, where appropriate. Storage 406 may be internal or external to computer system 400, where appropriate. In particular embodiments, storage 406 is non-volatile, solid-state memory. In particular embodiments, storage 406 includes read-only memory (ROM). Where appropriate, this ROM may be mask-programmed ROM, programmable ROM (PROM), erasable PROM (EPROM), electrically erasable PROM (EEPROM), electrically alterable ROM (EAROM), or flash memory or a combination of two or more of these. This disclosure contemplates mass storage 406 taking any suitable physical form. Storage 406 may include one or more storage control units facilitating communication between processor 402 and storage 406, where appropriate. Where appropriate, storage 406 may include one or more storages 406. Although this disclosure describes and illustrates particular storage, this disclosure contemplates any suitable storage.

[60] In particular embodiments, I/O interface 408 includes hardware, software, or both, providing one or more interfaces for communication between computer system 400 and one or more I/O devices. Computer system 400 may include one or more of these I/O devices, where appropriate. One or more of these I/O devices may enable communication between a person and computer system 400. As an example and not by way of limitation, an I/O device may include a keyboard, keypad, microphone, monitor, mouse, printer, scanner, speaker, still camera, stylus, tablet, touch screen, trackball, video camera, another suitable I/O device or a combination of two or more of these. An I/O device may include one or more sensors. This disclosure contemplates any suitable I/O devices and any suitable I/O interfaces 408 for them. Where appropriate, I/O interface 408 may include one or more device or software drivers enabling processor 402 to drive one or more of these I/O devices. I/O interface 408 may include one or more I/O interfaces

408, where appropriate. Although this disclosure describes and illustrates a particular I/O interface, this disclosure contemplates any suitable I/O interface.

[61] In particular embodiments, communication interface 410 includes hardware, software, or both providing one or more interfaces for communication (such as, for example, packet-based communication) between computer system 400 and one or more other computer systems 400 or one or more networks. As an example and not by way of limitation, communication interface 410 may include a network interface controller (NIC) or network adapter for communicating with an Ethernet or other wire-based network or a wireless NIC (WNIC) or wireless adapter for communicating with a wireless network, such as a WI-FI network. This disclosure contemplates any suitable network and any suitable communication interface 410 for it. As an example and not by way of limitation, computer system 400 may communicate with an ad hoc network, a personal area network (PAN), a local area network (LAN), a wide area network (WAN), a metropolitan area network (MAN), or one or more portions of the Internet or a combination of two or more of these. One or more portions of one or more of these networks may be wired or wireless. As an example, computer system 400 may communicate with a wireless PAN (WPAN) (such as, for example, a BLUETOOTH WPAN), a WI-FI network, a WI-MAX network, a cellular telephone network (such as, for example, a Global System for Mobile Communications (GSM) network), or other suitable wireless network or a combination of two or more of these. Computer system 400 may include any suitable communication interface 410 for any of these networks, where appropriate. Communication interface 410 may include one or more communication interfaces 410, where appropriate. Although this disclosure describes and illustrates a particular communication interface, this disclosure contemplates any suitable communication interface.

[62] In particular embodiments, bus 412 includes hardware, software, or both coupling components of computer system 400 to each other. As an example and not by way of limitation, bus 412 may include an Accelerated Graphics Port (AGP) or other graphics bus, an Enhanced Industry Standard Architecture (EISA) bus, a front-side bus (FSB), a HYPERTRANSPORT (HT) interconnect, an Industry Standard Architecture (ISA) bus, an INFINIBAND interconnect, a low-pin-count (LPC) bus, a memory bus, a Micro Channel Architecture (MCA) bus, a Peripheral Component Interconnect (PCI) bus, a PCI-Express (PCIe) bus, a serial advanced

technology attachment (SATA) bus, a Video Electronics Standards Association local (VLB) bus, or another suitable bus or a combination of two or more of these. Bus 412 may include one or more buses 412, where appropriate. Although this disclosure describes and illustrates a particular bus, this disclosure contemplates any suitable bus or interconnect.

[63] Herein, a computer-readable non-transitory storage medium or media may include one or more semiconductor-based or other integrated circuits (ICs) (such, as for example, field-programmable gate arrays (FPGAs) or application-specific ICs (ASICs)), hard disk drives (HDDs), hybrid hard drives (HHDs), optical discs, optical disc drives (ODDs), magneto-optical discs, magneto-optical drives, floppy diskettes, floppy disk drives (FDDs), magnetic tapes, solid-state drives (SSDs), RAM-drives, SECURE DIGITAL cards or drives, any other suitable computer-readable non-transitory storage media, or any suitable combination of two or more of these, where appropriate. A computer-readable non-transitory storage medium may be volatile, non-volatile, or a combination of volatile and non-volatile, where appropriate.

[64] Herein, “or” is inclusive and not exclusive, unless expressly indicated otherwise or indicated otherwise by context. Therefore, herein, “A or B” means “A, B, or both,” unless expressly indicated otherwise or indicated otherwise by context. Moreover, “and” is both joint and several, unless expressly indicated otherwise or indicated otherwise by context. Therefore, herein, “A and B” means “A and B, jointly or severally,” unless expressly indicated otherwise or indicated otherwise by context.

[65] The scope of this disclosure encompasses all changes, substitutions, variations, alterations, and modifications to the example embodiments described or illustrated herein that a person having ordinary skill in the art would comprehend. The scope of this disclosure is not limited to the example embodiments described or illustrated herein. Moreover, although this disclosure describes and illustrates respective embodiments herein as including particular components, elements, functions, operations, or steps, any of these embodiments may include any combination or permutation of any of the components, elements, functions, operations, or steps described or illustrated anywhere herein that a person having ordinary skill in the art would comprehend. Furthermore, reference in the appended claims to an apparatus or system or a component of an apparatus or system being adapted to, arranged to, capable of, configured to, enabled to, operable to, or operative to perform a particular function encompasses that apparatus,

system, component, whether or not it or that particular function is activated, turned on, or unlocked, as long as that apparatus, system, or component is so adapted, arranged, capable, configured, enabled, operable, or operative.

WHAT IS CLAIMED IS:

1. A method comprising:
 - by one or more server computing devices, receiving from a client computing device associated with a user a request for a structured document comprising an image;
 - by one or more server computing devices, accessing a data store for data associated with the image;
 - by one or more server computing devices, constructing based at least in part on at least some of the data associated with the image a text string corresponding to the image in the structured document, the text string being configured to be audibly read out by the client computing device; and
 - by one or more server computing devices, sending the structured document with the text string to the client computing device for presentation to the user.
2. The method of Claim 1, wherein the text string is constructed as an alternate text of a HyperText Markup Language (HTML) image tag corresponding to the image in the structured document.
3. The method of Claim 1, wherein the data associated with the image comprises a location of the image, an author of the image, or one or more users tagged in the image.
4. The method of Claim 1, wherein:
 - the data associated with the image corresponds to one or more nodes of a social graph, a social graph comprising a plurality of user nodes and concept nodes and edges connecting the nodes, each user node corresponding to a user of a social-networking system, each concept node corresponding to a concept of the social-networking system; and
 - the text string is constructed based on social-graph proximity between each of nodes and a user node corresponding to the user in the social graph.
5. The method of Claim 1, wherein the text string is constructed in a spoken manner of a natural language.

6. The method of Claim 1, wherein the text string is constructed based on text content of the structured document.

7. The method of Claim 1, wherein the text string is constructed based on a network state of the client computing device.

8. One or more computer-readable non-transitory storage media embodying software that is operable when executed to:

receive from a client computing device associated with a user a request for a structured document comprising an image;

access a data store for data associated with the image;

construct based at least in part on at least some of the data associated with the image a text string corresponding to the image in the structured document, the text string being configured to be audibly read out by the client computing device; and

send the structured document with the text string to the client computing device for presentation to the user.

9. The media of Claim 8, wherein the text string is constructed as an alternate text of a HyperText Markup Language (HTML) image tag corresponding to the image in the structured document.

10. The media of Claim 8, wherein the data associated with the image comprises a location of the image, an author of the image, or one or more users tagged in the image.

11. The media of Claim 8, wherein:

the data associated with the image corresponds to one or more nodes of a social graph, a social graph comprising a plurality of user nodes and concept nodes and edges connecting the nodes, each user node corresponding to a user of a social-networking system, each concept node corresponding to a concept of the social-networking system; and

the text string is constructed based on social-graph proximity between each of nodes and a user node corresponding to the user in the social graph.

12. The media of Claim 8, wherein the text string is constructed in a spoken manner of a natural language.

13. The media of Claim 8, wherein the text string is constructed based on text content of the structured document.

14. The media of Claim 8, wherein the text string is constructed based on a network state of the client computing device.

15. A system comprising:
one or more processors; and
a memory coupled to the processors comprising instructions executable by the processors, the processors being operable when executing the instructions to:
 receive from a client computing device associated with a user a request for a structured document comprising an image;
 access a data store for data associated with the image;
 construct based at least in part on at least some of the data associated with the image a text string corresponding to the image in the structured document, the text string being configured to be audibly read out by the client computing device; and
 send the structured document with the text string to the client computing device for presentation to the user.

16. The system of Claim 15, wherein the text string is constructed as an alternate text of a HyperText Markup Language (HTML) image tag corresponding to the image in the structured document.

17. The system of Claim 15, wherein the data associated with the image comprises a location of the image, an author of the image, or one or more users tagged in the image.

18. The system of Claim 15, wherein:

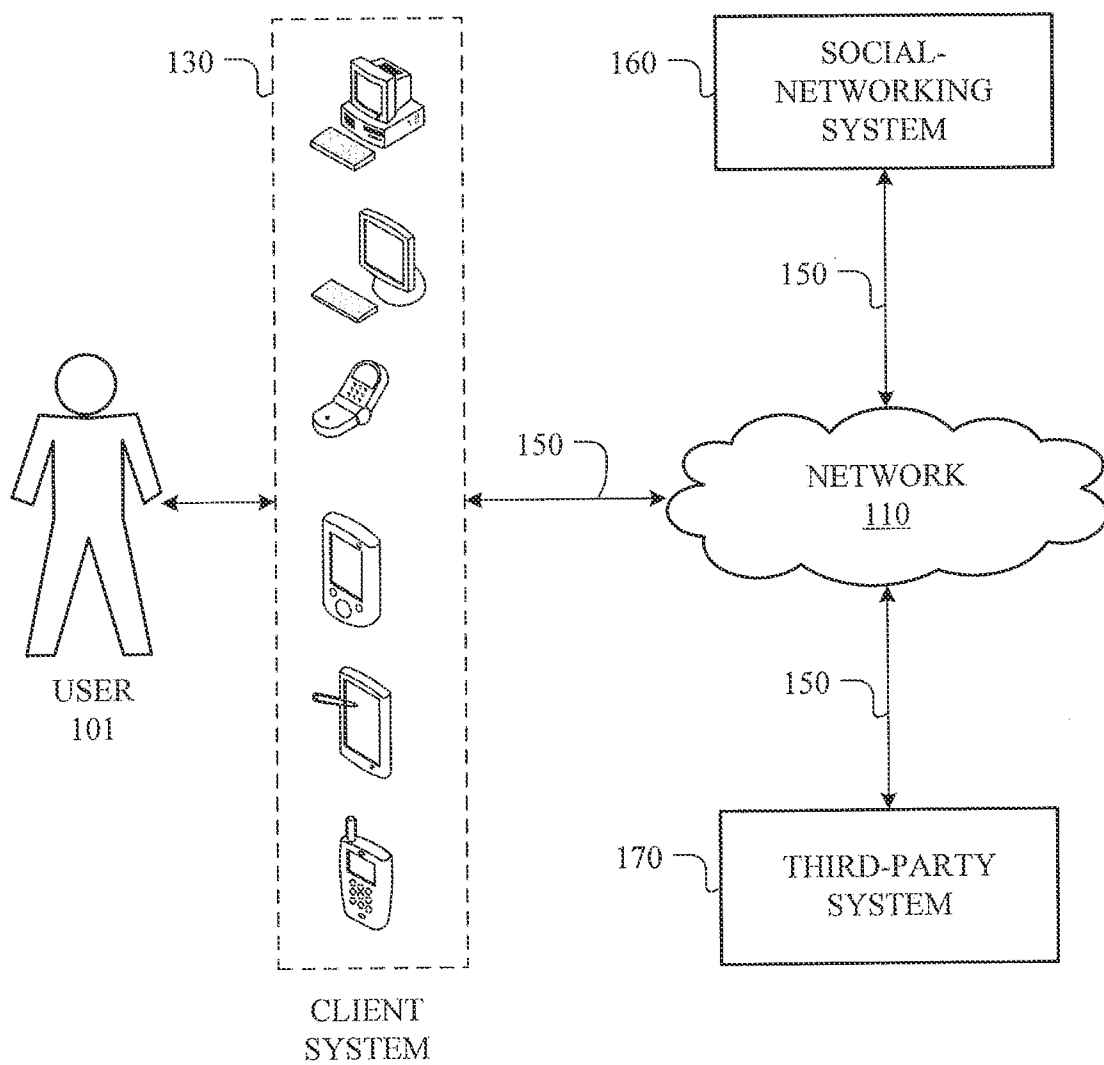
the data associated with the image corresponds to one or more nodes of a social graph, a social graph comprising a plurality of user nodes and concept nodes and edges connecting the nodes, each user node corresponding to a user of a social-networking system, each concept node corresponding to a concept of the social-networking system; and

the text string is constructed based on social-graph proximity between each of nodes and a user node corresponding to the user in the social graph.

19. The system of Claim 15, wherein the text string is constructed in a spoken manner of a natural language.

20. The system of Claim 15, wherein the text string is constructed based on text content of the structured document.

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100**FIGURE 1**

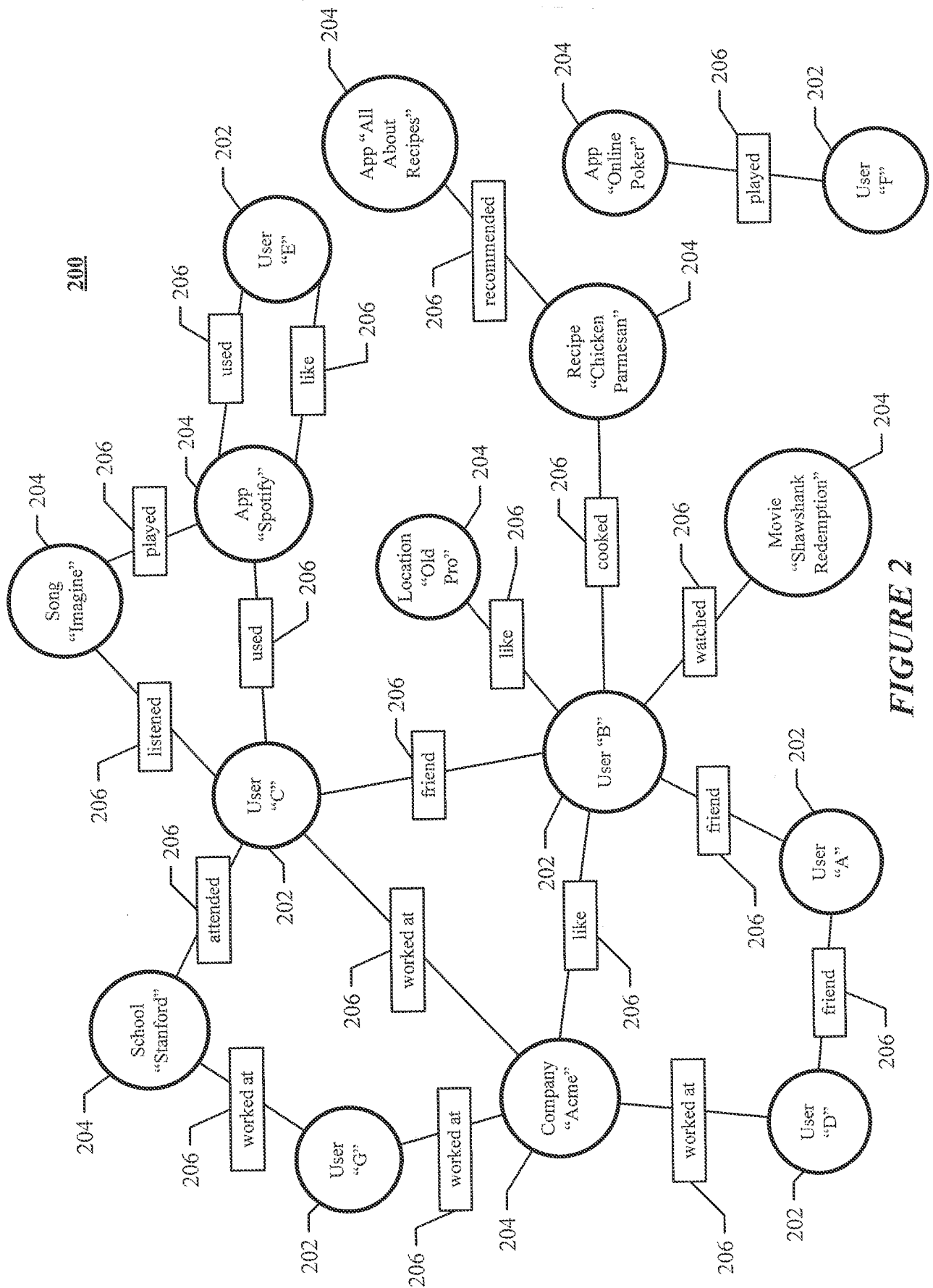
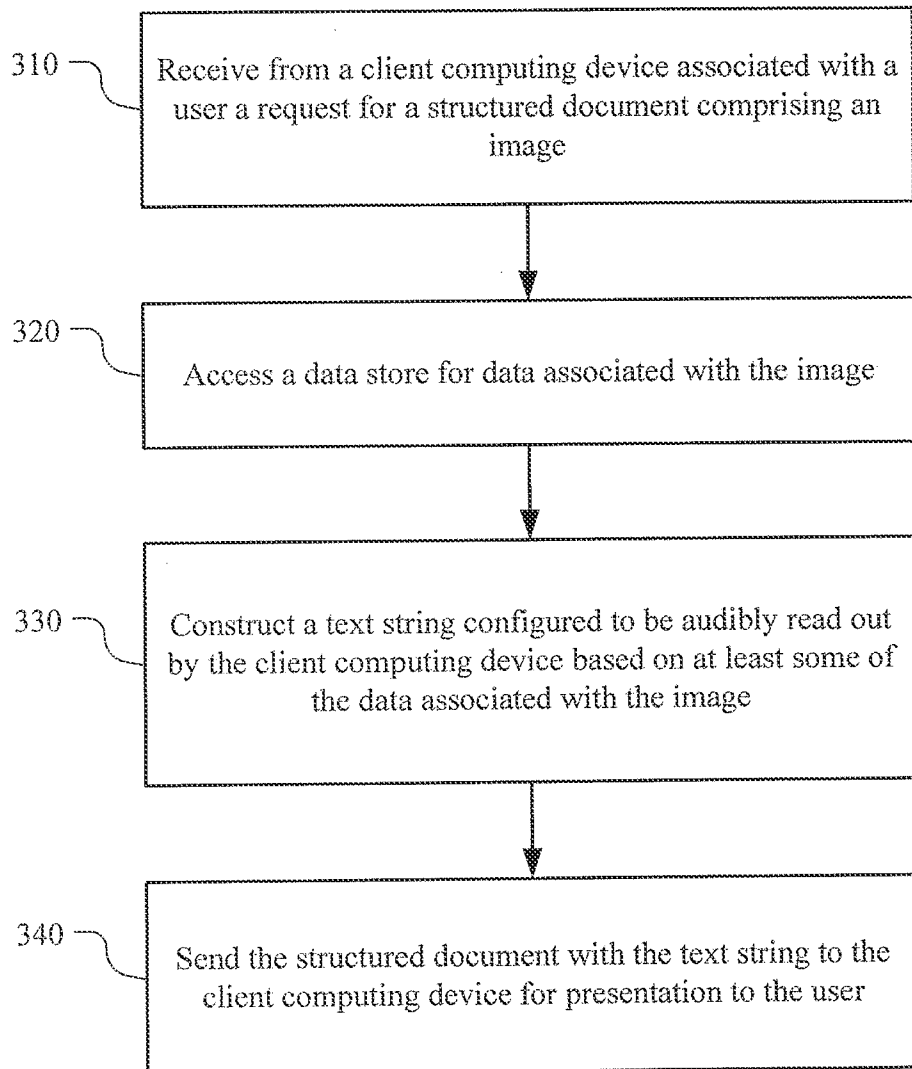
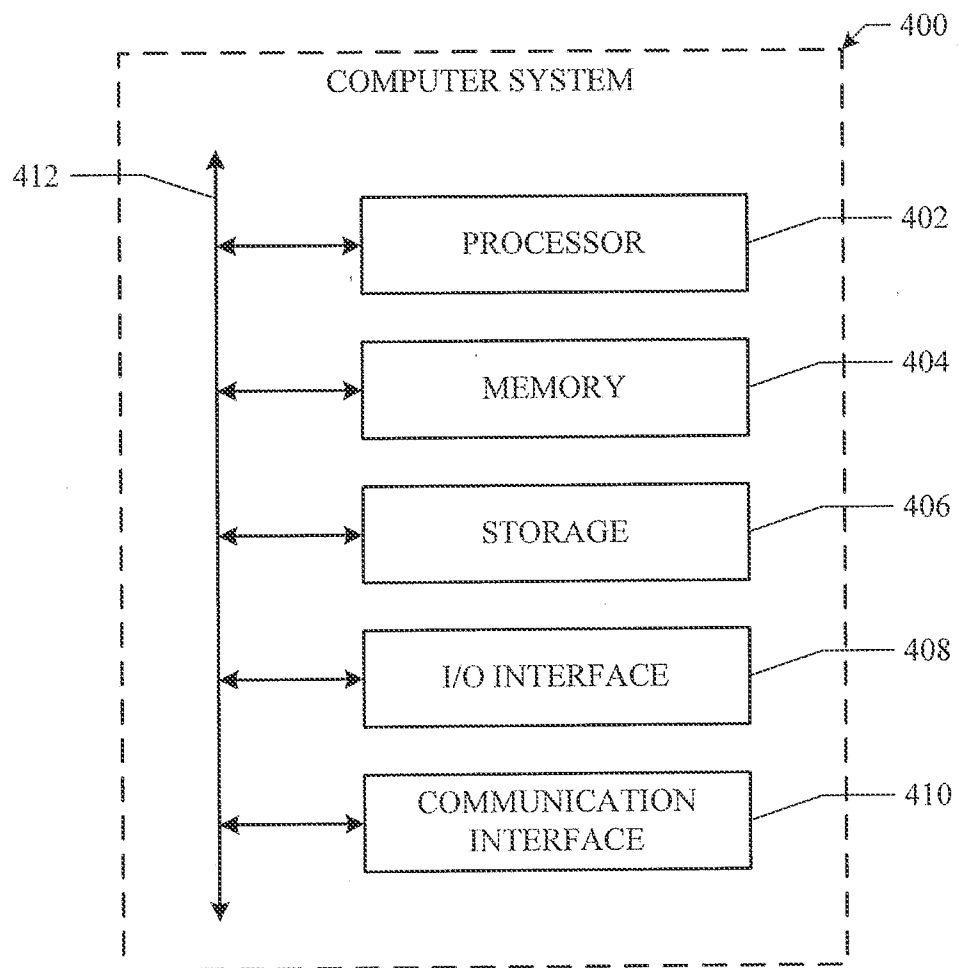


FIGURE 2

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300**FIGURE 3**

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**FIGURE 4**

A. CLASSIFICATION OF SUBJECT MATTER**G06F 17/21(2006.01)i, G06F 15/16(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F 17/21; G10L 13/00; G06F 17/00; G06F 17/30; G10L 13/08; G06F 17/27; G06F 15/16

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: web page, image, alternate, text string, audibly, social graph, proximity, and similar terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2012-0323930 A1 (KENNBERG, ALEKSANDR V. et al.) 20 December 2012 See paragraphs [0020], [0022], [0024]-[0026], [0030], and [0045]; and figures 1-3.	1-3,5-6,8-10,12-13 ,15-17,19-20
A		4,7,11,14,18
Y	US 2012-0221338 A1 (DOW, ELI M. et al.) 30 August 2012 See paragraphs [0018] and [0020]; and figures 1-2.	1-3,5-6,8-10,12-13 ,15-17,19-20
A	US 2012-0232907 A1 (IVEY, CHRISTOPHER LIAM) 13 September 2012 See paragraphs [0095]-[0098], [0100], [0118], and [0121]; and figures 1 and 5.	1-20
A	US 2011-0066424 A1 (KURZWEIL, RAYMOND C. et al.) 17 March 2011 See paragraphs [0162] and [0211]-[0214]; and figure 22.	1-20
A	US 2012-0130815 A1 (STEELBERG, RYAN et al.) 24 May 2012 See paragraph [0060] and figure 4A.	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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