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Methods, Apparatuses And Computer Program Products For Analyzing Public Social Content And Providing Social Commerce Content Items To Entities

METHODS, APPARATUSES AND COMPUTER PROGRAM PRODUCTS FOR ANALYZING PUBLIC SOCIAL CONTENT AND PROVIDING SOCIAL COMMERCE CONTENT ITEMS TO ENTITIES

TECHNOLOGICAL FIELD

[0001] Exemplary embodiments of this disclosure relate generally to methods, apparatuses and computer program products for analyzing social trends among users in online systems to identify social commerce content items.

BACKGROUND

[0002] Online systems, for example, social networking systems typically have access to vast amounts of online commerce data generated by people and entities. For example, each day millions of people, including influencers, may upload photos which include products, and may discuss products and engage with products within a social networking system. However, currently there may be lacking a concerted manner in which a social networking system may derive insights from trends to understand social commerce data to identify products that may be of interest for shopping, for example, in online stores/shops.

[0003] In view of the foregoing drawbacks, it may be beneficial to provide an efficient and reliable social network platform to derive meaningful information associated with social commerce related trends to identify interesting shoppable products for online users.

BRIEF SUMMARY

[0004] Exemplary embodiments are described for utilizing public user generated social content within a social network to determine trends and insights to enhance shopping experience within online shops. By analyzing determined popular and trending social data, for example via users' public online posts, exemplary embodiments may determine similar topics and similar products that are trending within the social network. In this regard, the exemplary embodiments may present the top trending similar products, as determined from the posts, to online shops. This may have the effect of enhancing user interaction with, and purchases of, the trending products via online shops as the users shopping may feel the products are relevant since the products are trending online.

[0005] In one example embodiment, a method for providing social commerce data to one or more network entities is provided. The method may include analyzing public social content generated by one or more users associated with a social network. The method may further include determining similarities among data items associated with the social content. The method may further include determining whether the data items associated with the social content relates to one or more products. The method may further include classifying one or more determined similar products into corresponding product groups. The method may further include determining trends and insight data associated with the similar products. The method may further include enabling provision of the trends and insight data associated with the similar products to the one or more network entities. In an example embodiment, the network entities may include one or more online shopping entities.

[0006] In another example embodiment, a computer program product for providing social commerce data to one or more network entities is provided. The computer program product includes at least one computer-readable storage medium having computer-executable program code instructions stored therein. The computer-executable program code instructions may include program code instructions configured to analyze public social content generated by one or more users associated with a social network. The computer program product may further include program code instructions configured to determine similarities among data items associated with the social content. The computer program product may further include program code instructions configured to determine whether the data items associated with the social content relates to one or more products. The computer program product may further include program code instructions configured to classify one or more determined similar products into corresponding product groups. The computer program product may further include program code instructions configured to determine trends and insight data associated with the similar products. The computer program product may further include program code instructions configured to enable provision of the trends and insight data associated with the similar products to the one or more network entities.

[0007] In yet another example embodiment, a system for providing social commerce data to one or more network entities is provided. The system may include a device including one or more processors and a memory including computer program code instructions. The memory and computer program code instructions are configured to, with at least one of the processors, cause the device to at least perform operations including analyzing public social content generated by

one or more users associated with a social network. The memory and computer program code are also configured to, with the processor, cause the device to determine similarities among data items associated with the social content. The memory and computer program code are also configured to, with the processor, cause the device to determine whether the data items associated with the social content relates to one or more products. The memory and computer program code are also configured to, with the processor, cause the device to classify one or more determined similar products into corresponding product groups. The memory and computer program code are also configured to, with the processor, cause the device to determine trends and insight data associated with the similar products. The memory and computer program code are also configured to, with the processor, cause the device to enable provision of the trends and insight data associated with the similar products to the one or more network entities.

[0008] Additional advantages will be set forth in part in the description which follows or may be learned by practice. The advantages will be realized and attained by means of the elements and combinations particularly pointed out in the appended claims. It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive, as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a diagram of an exemplary network environment associated with a social-networking system in accordance with an embodiment.

[0010] FIG. 2 is a diagram of an exemplary computer system in accordance with an embodiment.

[0011] FIG. 3 illustrates an exemplary social graph in accordance with an embodiment.

[0012] FIG. 4 is a diagram of a social commerce process in accordance with an embodiment.

[0013] FIGS. 5A, 5B, 5C and 5D are diagrams of user interfaces of client systems illustrating trending product related information in accordance with an embodiment.

[0014] FIGS. 6A and 6B are diagrams of user interfaces of client systems illustrating created product collections based on commerce trend insights and determined similar products in accordance with an embodiment.

[0015] FIG. 7 is a diagram illustrating trend data accessible via a social-networking system and/or a third-party system in accordance with an embodiment.

[0016] FIG. 8 is a diagram illustrating top trending shops for purchasing similar products identified from online user posts in accordance with an embodiment.

[0017] FIG. 9 is a diagram illustrating a user interface indicating top trending products in accordance with an embodiment.

[0018] FIG. 10 is a flow chart of an exemplary method for providing social commerce data to one or more network entities in accordance with an embodiment.

[0019] The figures depict various embodiments for purposes of illustration only. One skilled in the art will readily recognize from the following discussion that alternative embodiments of the structures and methods illustrated herein may be employed without departing from the principles described herein.

DETAILED DESCRIPTION

[0020] Some embodiments of the present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which some, but not all embodiments of the invention are shown. Indeed, various embodiments of the invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Like reference numerals refer to like elements throughout. As used herein, the terms "data," "content," "information" and similar terms may be used interchangeably to refer to data capable of being transmitted, received and/or stored in accordance with embodiments of the invention. Moreover, the term "exemplary", as used herein, is not provided to convey any qualitative assessment, but instead merely to convey an illustration of an example. Thus, use of any such terms should not be taken to limit the spirit and scope of embodiments of the invention.

[0038] As defined herein a "computer-readable storage medium," which refers to a non-transitory, physical or tangible storage medium (e.g., volatile or non-volatile memory device), may be differentiated from a "computer-readable transmission medium," which refers to an electromagnetic signal.

[0021] As defined herein, "trending" may refer to identifying trends based on public social network content (e.g., user-engagement, sharing of content, conversation (e.g., textual, audio) topics, images, videos, likes of public posts/pages) and may denote a degree of popularity (e.g., ranking) of content among users of a social-networking system.

[0022] It is to be understood that the methods and systems described herein are not limited to specific methods, specific components, or to particular implementations. It is also to be understood

that the terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting.

Exemplary System Architecture

[0023] FIG. 1 illustrates an example network environment 100 associated with a social-networking system 160. 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 FIG. 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 FIG. 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 client systems 130, social-networking systems 160, third-party systems 170, and networks 110.

[0024] 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, 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.

[0025] 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.

[0026] 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.

[0027] In particular embodiments, client system 130 may be an electronic device including hardware, software, or embedded logic components or a combination of two or more such components and capable of carrying out the appropriate functionalities implemented or supported by client system 130. As an example and not by way of limitation, a client system 130 may include a computer system such as a desktop computer, notebook or laptop computer, netbook, a tablet computer, e-book reader, GPS device, camera, personal digital assistant (PDA), handheld electronic device, cellular telephone, smartphone, augmented/virtual reality device, other suitable electronic device, or any suitable combination thereof. This disclosure contemplates any suitable client systems 130. A client system 130 may enable user 101 to access network 110. A client system 130 may enable its user 101 to communicate with other users 101 at other client systems 130.

[0028] In particular embodiments, social-networking system 160 may be a network-addressable computing system that can host 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. As an example and not by way of limitation, client system 130 may access social-networking system 160 using a web browser or a native application associated with social-networking system 160 (e.g., a mobile social-

networking application, a messaging application, another suitable application, or any combination thereof) either directly or via network 110. In particular embodiments, social-networking system 160 may include one or more servers 162. Each server 162 may be a unitary server or a distributed server spanning multiple computers or multiple datacenters. Servers 162 may be of various types, such as, for example and without limitation, web server, news server, mail server, message server, advertising server, file server, application server, exchange server, database server, proxy server, another server suitable for performing functions or processes described herein, or any combination thereof. In particular embodiments, each server 162 may include hardware, software, or embedded logic components or a combination of two or more such components for carrying out the appropriate functionalities implemented or supported by server 162. In particular embodiments, social-networking system 160 may include one or more data stores 164. Data stores 164 may be used to store various types of information. In particular embodiments, the information stored in data stores 164 may be organized according to specific data structures. In particular embodiments, each data store 164 may be a relational, columnar, correlation, or other suitable database. Although this disclosure describes or illustrates particular types of databases, this disclosure contemplates any suitable types of databases. Particular embodiments may provide interfaces that enable a client system 130, a social-networking system 160, or a third-party system 170 to manage, retrieve, modify, add, or delete, the information stored in data store 164.

[0029] In particular embodiments, social-networking system 160 may store one or more social graphs (e.g., social graph 300) in one or more data stores 164. In particular embodiments, a social graph may include multiple nodes—which may include multiple user nodes (each corresponding to a particular user 101) or multiple concept nodes (each corresponding to a particular concept)—and multiple edges connecting the nodes. Social-networking system 160 may provide users 101 of the online social network the ability to communicate and interact with other users 101. In particular embodiments, users 101 may join the online social network via social-networking system 160 and then add connections (e.g., relationships) to a number of other users 101 of social-networking system 160 to whom they want to be connected. Herein, the term “friend” may refer to any other user 101 of social-networking system 160 with whom a user 101 has formed a connection, association, or relationship via social-networking system 160.

[0030] In particular embodiments, social-networking system 160 may provide users 101 with the ability to take actions on various types of items or objects, supported by social-networking

system 160. As an example and not by way of limitation, the items and objects may include groups or social networks to which users of social-networking system 160 may belong, events or calendar entries in which a user might be interested, computer-based applications that a user may use, transactions that allow users to buy or sell items via the service, interactions with advertisements that a user may perform, or other suitable items or objects. A user may interact with anything that is capable of being represented in social-networking system 160 or by an external system of third-party system 170, which is separate from social-networking system 160 and coupled to social-networking system 160 via a network 110.

[0031] In particular embodiments, social-networking system 160 may be capable of linking a variety of entities. As an example and not by way of limitation, social-networking system 160 may enable users to interact with each other as well as receive content from third-party systems 170 or other entities, or to allow users to interact with these entities through an application programming interfaces (API) or other communication channels.

[0032] In particular embodiments, a third-party system 170 may include one or more types of servers, one or more data stores, one or more interfaces, including but not limited to APIs, one or more web services, one or more content sources, one or more networks, or any other suitable components, e.g., that servers may communicate with. A third-party system 170 may be operated by a different entity from an entity operating social-networking system 160. In particular embodiments, however, social-networking system 160 and third-party systems 170 may operate in conjunction with each other to provide social-networking services to users of social-networking system 160 or third-party systems 170. In this sense, social-networking system 160 may provide a platform, or backbone, which other systems, such as third-party systems 170, may use to provide social-networking services and functionality to users across the Internet.

[0033] In particular embodiments, a third-party system 170 may include a third-party content object provider. A third-party content object provider may include one or more sources of content objects, which may be communicated to a client system 130. As an example and not by way of limitation, content objects may include information regarding things or activities of interest to the user, such as, for example, movie show times, movie reviews, restaurant reviews, restaurant menus, product information and reviews, or other suitable information. As another example and not by way of limitation, content objects may include incentive content objects, such as coupons, discount tickets, gift certificates, or other suitable incentive objects.

[0034] In particular embodiments, social-networking system 160 also includes user-generated content objects, which may enhance a user's interactions with social-networking system 160. User-generated content may include any data a user (e.g., user 101) may add, upload, send, or "post" that is publicly (e.g., not private) available to social-networking system 160. As an example and not by way of limitation, a user may communicate public posts to social-networking system 160 from a client system 130. Public posts may include data such as status updates or other textual data, location information, photos, videos, audio, links, music or other similar data or media that is publicly available to social-networking-system 160. Content may also be added to social-networking system 160 by a third-party through a "communication channel," such as a newsfeed or stream.

[0035] In particular embodiments, social-networking system 160 may include a variety of servers, sub-systems, programs, modules, logs, and data stores. In particular embodiments, social-networking system 160 may include one or more of the following: a web server, action logger, API-request server, relevance-and-ranking engine, content-object classifier, notification controller, action log, third-party-content-object-exposure log, inference module, authorization/privacy server, search module, advertisement-targeting module, user-interface module, user-profile store, connection store, third-party content store, or location store. Social-networking system 160 may also include suitable components such as network interfaces, security mechanisms, load balancers, failover servers, management-and-network-operations consoles, other suitable components, or any suitable combination thereof. In particular embodiments, social-networking system 160 may include one or more user-profile stores for storing user profiles. A user profile may include, for example, biographic information, demographic information, behavioral information, social information, or other types of descriptive information, such as work experience, educational history, hobbies or preferences, interests, affinities, or location. Interest information may include interests related to one or more categories. Categories may be general or specific. As an example and not by way of limitation, if a user "likes" an article about a brand of shoes the category may be the brand, or the general category of "shoes" or "clothing." A connection store may be used for storing connection information about users. The connection information may indicate users who have similar or common work experience, group memberships, hobbies, educational history, or are in any way related or share common attributes. The connection information may also include user-defined connections between different users and content (both internal and external). A web server may

be used for linking social-networking system 160 to one or more client systems 130 or one or more third-party systems 170 via network 110. The web server may include a mail server or other messaging functionality for receiving and routing messages between social-networking system 160 and one or more client systems 130. An API-request server may allow a third-party system 170 to access information from social-networking system 160 by calling one or more APIs. An action logger may be used to receive communications from a web server about a user's actions on or off social-networking system 160. In conjunction with the action log, a third-party-content-object log may be maintained of user exposures to third-party-content objects. A notification controller may provide information regarding content objects to a client system 130. Information may be pushed to a client system 130 as notifications, or information may be pulled from client system 130 responsive to a request received from client system 130. Authorization servers may be used to enforce one or more privacy settings of the users of social-networking system 160. A privacy setting of a user determines how particular information associated with a user can be shared. The authorization server may allow users 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 system 170), such as, for example, by setting appropriate privacy settings. Third-party-content-object stores may be used to store content objects received from third parties, such as a third-party system 170. Location stores may be used for storing location information received from client systems 130 associated with users. Advertisement-pricing modules may combine social information, the current time, location information, or other suitable information to provide relevant advertisements, in the form of notifications, to a user.

[0036] FIG. 2 illustrates an example computer system 200. In particular embodiments, one or more computer systems 200 perform one or more steps of one or more methods described or illustrated herein. In some example embodiments, the computer system 200 may be the server 162 of social-networking system 160. In other example embodiments, the computer system 200 may be the client system 130. In particular embodiments, one or more computer systems 200 provide functionality described or illustrated herein. In particular embodiments, software running on one or more computer systems 200 performs one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Particular exemplary embodiments may include one or more portions of one or more computer systems 200. 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.

[0037] This disclosure contemplates any suitable number of computer systems 200. This disclosure contemplates computer system 200 taking any suitable physical form. As example and not by way of limitation, computer system 200 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, an augmented/virtual reality device, or a combination of two or more of these. Where appropriate, computer system 200 may include one or more computer systems 200; 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 200 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 200 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 200 may perform at different times or at different locations one or more steps of one or more methods described or illustrated herein, where appropriate.

[0038] In particular embodiments, computer system 200 may include a processor 202, memory 204, storage 206, an input/output (I/O) interface 208, a communication interface 210, camera module 212, social commerce module 214, and a bus 216. 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.

[0039] In particular embodiments, processor 202 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 202 may retrieve (or fetch) the instructions from an internal register, an internal cache, memory 204, or storage 206; decode and execute them; and then write one or more results to an internal register, an internal cache, memory 204, or storage 206. In particular embodiments, processor 202 may include one or more internal caches for data, instructions, or addresses. This disclosure contemplates processor 202 including any suitable

number of any suitable internal caches, where appropriate. As an example and not by way of limitation, processor 202 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 204 or storage 206, and the instruction caches may speed up retrieval of those instructions by processor 202. Data in the data caches may be copies of data in memory 204 or storage 206 for instructions executing at processor 202 to operate on; the results of previous instructions executed at processor 202 for access by subsequent instructions executing at processor 202 or for writing to memory 204 or storage 206; or other suitable data. The data caches may speed up read or write operations by processor 202. The TLBs may speed up virtual-address translation for processor 202. In particular embodiments, processor 202 may include one or more internal registers for data, instructions, or addresses. This disclosure contemplates processor 202 including any suitable number of any suitable internal registers, where appropriate. Where appropriate, processor 202 may include one or more arithmetic logic units (ALUs); be a multi-core processor; or include one or more processors 202. Although this disclosure describes and illustrates a particular processor, this disclosure contemplates any suitable processor. In some example embodiments, the social commerce module 214 may analyze one or more public content items (e.g., text, images, videos, etc.) of one or more user public posts and/or interactions with pages (e.g., webpages, etc.) associated with social-networking systems 160 and/or third-party systems 170 and may determine one or more social commerce items (e.g., apparel, shoes, accessories, etc.) that may be trending, as described more fully below.

[0040] In particular embodiments, memory 204 includes main memory for storing instructions for processor 202 to execute or data for processor 202 to operate on. As an example and not by way of limitation, computer system 200 may load instructions from storage 206 or another source (such as, for example, another computer system 200) to memory 204. Processor 202 may then load the instructions from memory 204 to an internal register or internal cache. To execute the instructions, processor 202 may retrieve the instructions from the internal register or internal cache and decode them. During or after execution of the instructions, processor 202 may write one or more results (which may be intermediate or final results) to the internal register or internal cache. Processor 202 may then write one or more of those results to memory 204. In particular embodiments, processor 202 executes only instructions in one or more internal registers or internal caches or in memory 204 (as opposed to storage 206 or elsewhere) and

operates only on data in one or more internal registers or internal caches or in memory 204 (as opposed to storage 206 or elsewhere). One or more memory buses (which may each include an address bus and a data bus) may couple processor 202 to memory 204. Bus 216 may include one or more memory buses, as described below. In particular embodiments, one or more memory management units (MMUs) reside between processor 202 and memory 204 and facilitate accesses to memory 204 requested by processor 202. In particular embodiments, memory 204 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 204 may include one or more memories 204, where appropriate. Although this disclosure describes and illustrates particular memory, this disclosure contemplates any suitable memory.

[0041] In particular embodiments, storage 206 includes mass storage for data or instructions. As an example and not by way of limitation, storage 206 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 206 may include removable or non-removable (or fixed) media, where appropriate. Storage 206 may be internal or external to computer system 200, where appropriate. In particular embodiments, storage 206 is non-volatile, solid-state memory. In particular embodiments, storage 206 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 206 taking any suitable physical form. Storage 206 may include one or more storage control units facilitating communication between processor 202 and storage 206, where appropriate. Where appropriate, storage 206 may include one or more storages 206. Although this disclosure describes and illustrates particular storage, this disclosure contemplates any suitable storage.

[0042] In particular embodiments, I/O interface 208 includes hardware, software, or both, providing one or more interfaces for communication between computer system 200 and one or more I/O devices. Computer system 200 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 200. As an example and not by way of limitation, an I/O device may include a

keyboard, keypad, microphone, monitor, mouse, printer, scanner, speaker, camera module 212 (e.g., a still camera, a video camera), stylus, pointing device, tablet, touch screen, trackball, 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 208 for them. Where appropriate, I/O interface 208 may include one or more device or software drivers enabling processor 202 to drive one or more of these I/O devices. I/O interface 208 may include one or more I/O interfaces 208, where appropriate. Although this disclosure describes and illustrates a particular I/O interface, this disclosure contemplates any suitable I/O interface.

[0043] In particular embodiments, communication interface 210 includes hardware, software, or both providing one or more interfaces for communication (such as, for example, packet-based communication) between computer system 200 and one or more other computer systems 200 or one or more networks. As an example and not by way of limitation, communication interface 210 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 210 for it. As an example and not by way of limitation, computer system 200 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 200 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 200 may include any suitable communication interface 210 for any of these networks, where appropriate. Communication interface 210 may include one or more communication interfaces 210, where appropriate. Although this disclosure describes and illustrates a particular communication interface, this disclosure contemplates any suitable communication interface.

[0044] In particular embodiments, bus 216 includes hardware, software, or both coupling components of computer system 200 to each other. As an example and not by way of limitation,

bus 216 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 216 may include one or more buses 216, where appropriate. Although this disclosure describes and illustrates a particular bus, this disclosure contemplates any suitable bus or interconnect.

[0045] 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.

[0046] FIG. 3 illustrates an example social graph 300. In particular embodiments, social-networking system 160 may store one or more social graphs 300 in one or more data stores. In particular embodiments, social graph 300 may include multiple nodes—which may include multiple user nodes 302 or multiple concept nodes 304—and multiple edges 306 connecting the nodes. Example social graph 300 illustrated in FIG. 3 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 300 and related social-graph information for suitable applications. The nodes and edges of social graph 300 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 300.

[0047] In particular embodiments, a user node 302 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 302 corresponding to the user, and store the user node 302 in one or more data stores. Users and user nodes 302 described herein may, where appropriate, refer to registered users and user nodes 302 associated with registered users. In addition or as an alternative, users and user nodes 302 described herein may, where appropriate, refer to users that have not registered with social-networking system 160. In particular embodiments, a user node 302 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 302 may be associated with one or more data objects corresponding to information associated with a user. In particular embodiments, a user node 302 may correspond to one or more webpages.

[0048] In particular embodiments, a concept node 304 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; an object in an augmented/virtual reality environment; another suitable concept; or two or more such concepts. A concept node 304 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 304 may be associated with one or more data objects corresponding to information associated with concept node 304. In particular embodiments, a concept node 304 may correspond to one or more webpages.

[0049] In particular embodiments, a node in social graph 300 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 304. 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 302 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 304 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 304.

[0050] In particular embodiments, a concept node 304 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., "check-in"), 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., a check-in-type edge) between a user node 302 corresponding to the user and a concept node 304 corresponding to the third-party webpage or resource and store edge 306 in one or more data stores.

[0051] In particular embodiments, a pair of nodes in social graph 300 may be connected to each other by one or more edges 306. An edge 306 connecting a pair of nodes may represent a relationship between the pair of nodes. In particular embodiments, an edge 306 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 306 connecting the first user’s user node 302 to the second user’s user node 302 in social graph 300 and store edge 306 as social-graph information in one or more of data stores 164. In the example of FIG. 3, social graph 300 includes an edge 306 indicating a friend relation between user nodes 302 of user “A” and user “B” and an edge indicating a friend relation between user nodes 302 of user “C” and user “B.” Although this disclosure describes or illustrates particular edges 306 with particular attributes connecting particular user nodes 302, this disclosure contemplates any suitable edges 306 with any suitable attributes connecting user nodes 302. As an example and not by way of limitation, an edge 306 may represent a friendship, family relationship, business or employment relationship, fan relationship (including, e.g., liking, etc.), follower relationship, visitor relationship (including, e.g., accessing, viewing, checking-in, sharing, etc.), 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 300 by one or more edges 306.

[0052] In particular embodiments, an edge 306 between a user node 302 and a concept node 304 may represent a particular action or activity performed by a user associated with user node 302 toward a concept associated with a concept node 304. As an example and not by way of limitation, as illustrated in FIG. 3, a user may “like,” “attended,” “played,” “listened,” “cooked,” “worked at,” or “watched” a concept, each of which may correspond to an edge type or subtype. A concept-profile page corresponding to a concept node 304 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 (e.g., an online music application). In this case, social-networking system 160 may create a “listened” edge 306 and a “used” edge (as illustrated in FIG. 3) between user nodes 302 corresponding to the user and concept nodes

304 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 306 (as illustrated in FIG. 3) between concept nodes 304 corresponding to the song and the application to indicate that the particular song was played by the particular application. In this case, "played" edge 306 corresponds to an action performed by an external application (e.g., an online music application) on an external audio file (the song "Imagine"). Although this disclosure describes particular edges 306 with particular attributes connecting user nodes 302 and concept nodes 304, this disclosure contemplates any suitable edges 306 with any suitable attributes connecting user nodes 302 and concept nodes 304. Moreover, although this disclosure describes edges between a user node 302 and a concept node 304 representing a single relationship, this disclosure contemplates edges between a user node 302 and a concept node 304 representing one or more relationships. As an example and not by way of limitation, an edge 306 may represent both that a user likes and has used at a particular concept. Alternatively, another edge 306 may represent each type of relationship (or multiples of a single relationship) between a user node 302 and a concept node 304 (as illustrated in FIG. 3 between user node 302 for user "E" and concept node 304 for "Music Application").

[0053] In particular embodiments, social-networking system 160 may create an edge 306 between a user node 302 and a concept node 304 in social graph 300. 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 304 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 306 between user node 302 associated with the user and concept node 304, as illustrated by "like" edge 306 between the user and concept node 304. In particular embodiments, social-networking system 160 may store an edge 306 in one or more data stores. In particular embodiments, an edge 306 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 306 may be formed between user node 302 corresponding to the first user and concept nodes 304 corresponding to those concepts. Although this disclosure

describes forming particular edges 306 in particular manners, this disclosure contemplates forming any suitable edges 306 in any suitable manner.

[0054] 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.

[0055] 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 on 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 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.

[0056] 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.

[0057] 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, tagging or being tagged in images, 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, audio, pictures/images, 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 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.

Exemplary System Operation

[0058] Referring to FIG. 4, an exemplary embodiment of a process for identifying social commerce is provided. In the example of FIG. 4, at step 402, the social commerce module 214 (e.g., of server 162) may analyze social network input data such as, for example, one or more (e.g., all) user posts accessible to one or more social-networking systems 160 and/or one or more third-party systems 170. As described herein, the posts and/or user generated content are publicly accessible (e.g., not private) posts and publicly accessible user generated content to the social-networking systems 160 and/or the one or more third-party systems 170. The posts may include any social content (e.g., text, images, videos, audio, etc.) posted online by one or more users 101. At step 404, the social commerce module 214 may analyze the social content of the posts and implement one or more machine learning artificial intelligence (AI) models to determine similarity of data items (e.g., similar images, similar videos, similar text topics, etc.) associated with the posts. The social commerce module 214 may also determine whether the social content in the posts relates to commerce (e.g., apparel, accessories, shoes, equipment, etc.) and may implement/execute one or more of the artificial intelligence models to classify/predict one or more similar products. For example, the social commerce module 214 may cluster one or

more products into similar groups. At step 406, the social commerce module 214 may aggregate the social content of posts determined to be similar and the determined similar products (e.g., shoes, jackets, etc.) and may determine whether associated data is trending (e.g., analyzing the virality of the data). The social commerce module 214 may analyze commerce hashtags (e.g., brands within hashtags), canonical concepts and may determine product attributes as well as user engagement scores associated with posts.

[0059] At step 408, the social commerce module 214 may generate one or more social commerce graphs indicating current trending data in a graphical form based on strength of the trends and relationships between similar products and/or topics. In an example embodiment, the strength of the trend may be denoted based on a ranking of the trends, for example, with more popular or highly ranked trends being depicted graphically with larger circular size in the social commerce graph.

[0060] At step 410, the social commerce module 214 may generate output of insights and trends associated with determined similar products and similar content of posts based in part on analyzing trend/page rankings and/or similarity clustering. The output of the insights and trends may be provided by the social commerce module 214 to one or more network entities (e.g., online shops). For purposes of illustration and not of limitation, the social commerce module 214 may determine from posts what people are talking about (e.g., trending) related to some products (e.g., apparel, accessories) and may provide indications of the product (e.g., the apparel, accessories) to potential online shops for users to purchase. The posts regarding what people are talking about and the indications of the product are anonymized and aggregated and are not user specific (e.g., unable to be utilized regarding specific user personalization).

[0061] Referring to FIG. 5A, a user interface of a client system 130 is shown according to an exemplary embodiment. In the example of FIG. 5A, the social commerce module 214 provided trends and insight data to an online shop. A search of products provided by the online shop may be made in response to entering input via a search shop tab 9. Based in part on analyzing public user posts (e.g., the number of user saves and shares) accessible within a social-networking system 160 and/or third-party system 170, the social commerce module 214 determined that, at a particular time of day, face masks 1 are the number one trending product, yellow leggings 3 was the number two trending product, a cosmetic pen 5 was the number three trending product and a black outfit 7 was the number four trending product. A user may utilize a pointing device of a

client system 130 to select one of the trending products from the user interface to automatically initiate an associated search via the search shop tab 9.

[0062] Referring to FIG. 5B, a user interface of a client system 130 is shown indicating that the social commerce module 214 provided trends and insight data to the online shop indicating face masks, leather jackets and cosmetics as trending items. A user 101 of the client system 130 may utilize a pointing device to select one of the trending items to search, via search shop tab 9, for potential purchase.

[0063] FIG. 5C illustrates another user interface of a client system 130 indicating black boots 2 and a watch 4 as trending items based on the social commerce module 214 identifying posts that were liked by one or more users 101 such as influencers (e.g., Jane Doe, a fictitious person). The influencer(s) may have millions of users 101 as followers.

[0064] FIG. 5D illustrates another user interface of a client system 130 indicating that a lip balm 6 is trending on a given day based on the social commerce module 214 identifying a post(s) that is liked by a user 101 such as an influencer Janice Doe, a fictitious person that may have millions of users 101 as followers.

[0065] In the example embodiments of FIGS. 5A, 5B, 5C and 5D, by the social commerce module 214 providing trending products to the online shop, the users 101 may be more likely to explore and search relevant products in the online shop since the social data may be evidence to the users 101 that if products are trending they should check/search in the online shop.

[0066] Referring to FIGS. 6A and 6B, diagrams of user interfaces of client systems illustrating automated creation of product collections based on commerce trends and insights provided for linked related products is provided. In the example embodiments of FIGS. 6A and 6B, the social commerce module 214 may analyze data from user posts and determine trends and insights and identify similar products in the manner described above and may arrange similar products in corresponding curated collections. For example, as shown in FIG. 6A, the social commerce module 214 determined similar winter products (e.g., 24 products such as winter hats, sweaters, etc.) from analyzed posts and arranged and presented the products in an editor's pick collection denoted for example as "Editors' Winter Favorites." In a similar manner, the social commerce module 214 created a collection of winter coats and jackets in an editors' pick collection 10 denoted as "Beat the Chill." In the example embodiment of FIG. 6B, the social commerce module 214 similarly created a collection of winter boots in an editors' pick collection

12 denoted as “Winter Boot Guide” as well as a collection of women’s streetwear in an editors’ pick collection 14 denoted as “Women’s Streetwear Edit.”

[0067] In the example embodiments of FIGS. 6A and 6B, the social commerce module 214 may provide the collections (e.g., collections 8, 10, 12, 14) to one or more online shops that are accessible to users 101 via the user interfaces of the users 101 client systems 130.

[0068] Referring to FIG. 7, an exemplary embodiment of a diagram illustrating trend data accessible via social-networking system 160 and/or third-party system 170 is provided. In the example embodiment of FIG. 7, the social commerce module 214 evaluated trending posts 11 on a given day (e.g., December 13) about what users 101 were talking about regarding Christmas sweaters. In the example of FIG. 7, trending posts 11 may be based on text data. The social commerce module 214 also evaluated trending influencers posts 15 indicating images of Christmas sweaters on the same day (e.g., December 13). For purposes of illustration and not of limitation, the social commerce module 214 identified an image of a Christmas sweater posted by one of the influencers (e.g., a user 101), Amy Doe a fictitious person, having 3.2 million followers (e.g., users 101). The social commerce module 214 also determined that there were 250 likes by users of Christmas sweaters and 49,729 views by users of Christmas sweaters over the last 24 hours and that 69% of users comments were positive (an example of sentiment), as indicated in FIG. 7.

[0069] Referring to FIG. 8, a diagram of a user interface illustrating top trending shops for purchasing similar products identified from posts is provided. In the example of FIG. 8, the social commerce module 214 identified the top trending shops for Christmas Sweaters which were determined as trending from posts 11 and influencers posts 15 described above. The social commerce module 214 determined that the top trending shop is Acme and that other (ranked) shops selling related products such as Christmas sweaters are Acme Shop, Acme Wear, Acme Depot, Acme Clothes and Acme Store. For the top trending shop, i.e., Acme, the social commerce module 214 presents data in the user interface 17 indicating the number of shop followers (e.g., 234,029), number of products (e.g. Christmas sweaters) sold (e.g., 2,602) and number of product detail page (PDP) views (e.g., 28,052) as well as the types of buyers (e.g., male, female, others).

[0070] Referring to FIG. 9, an exemplary embodiment of a diagram illustrating another user interface indicating trending products is provided. In response to receiving an indication to search “Christmas Sweaters” from the search tab 19, the social commerce module 214 may

present data via an user interface 16 indicating top trending Christmas sweaters 18, which may be linked to trending posts such as, for example, posts 11 and influencers' posts 15 described above. Upon receiving an indication of a selection of a top trending Christmas sweater 24, the social commerce module 214 may present additional item information 20 associated with the selected top Christmas sweater 24 via the user interface 16.

[0071] The social commerce module 214 also presents product information, via the user interface 16, associated with products 22 (e.g., Christmas wreaths, other sweaters, cardigans, etc.) relating to the top trending Christmas sweaters 18 via the user interface 16. Users 101 may select, via a pointing device of client system 130, one or more of these other products 22 to view additional details and/or purchase in the online shop.

[0072] FIG. 10 illustrates an example flowchart illustrating operations for a social commerce process of an online system according to an exemplary embodiment. At operation 1002, a social-networking system 160 (e.g., social commerce module 214 of computer system 200) may analyze public social content generated by one or more users (e.g., users 101) associated with the social-networking system 160 (e.g., a social network). The public social content generated by the users may be one or more posts and/or interaction/engagement with content associated with the social networking system.

[0073] At operation 1004, the social-networking system 160 may determine similarities among data items associated with the social content. The data items may include, but are not limited to text data, images, videos, audio data or another suitable data generated or interacted with by users (e.g., users 101) of the social-networking system 160. At operation 1006, the social networking system 160 may determine whether the data items associated with the social content relates to one or more products (e.g., apparel, shoes, cosmetics, accessories, equipment, etc.).

[0074] At operation 1008, the social-networking system 160 may classify one or more determined similar products (e.g., Christmas sweaters, lipstick, etc.) into corresponding product groups. At operation 1010, the social-networking system 160 may determine trends and insight data associated with the similar products. For example, the trends and insight data may denote the top trending products (e.g., the top trending sweaters, shoes, jackets, etc.) of the similar products. At operation 1012, the social-networking system 160 may enable provision (e.g., transmission) of the trends and insight data associated with the similar products to one or more network entities. The network entities may include one or more online shopping entities providing products for purchase online.

Alternative Embodiments

[0075] The foregoing description of the embodiments has been presented for the purpose of illustration; it is not intended to be exhaustive or to limit the patent rights to the precise forms disclosed. Persons skilled in the relevant art can appreciate that many modifications and variations are possible in light of the above disclosure.

[0076] Some portions of this description describe the embodiments in terms of algorithms and symbolic representations of operations on information. These algorithmic descriptions and representations are commonly used by those skilled in the data processing arts to convey the substance of their work effectively to others skilled in the art. These operations, while described functionally, computationally, or logically, are understood to be implemented by computer programs or equivalent electrical circuits, microcode, or the like. Furthermore, it has also proven convenient at times, to refer to these arrangements of operations as modules, without loss of generality. The described operations and their associated modules may be embodied in software, firmware, hardware, or any combinations thereof.

[0077] Any of the steps, operations, or processes described herein may be performed or implemented with one or more hardware or software modules, alone or in combination with other devices. In one embodiment, a software module is implemented with a computer program product comprising a computer-readable medium containing computer program code, which can be executed by a computer processor for performing any or all of the steps, operations, or processes described.

[0078] Embodiments also may relate to an apparatus for performing the operations herein. This apparatus may be specially constructed for the required purposes, and/or it may comprise a computing device selectively activated or reconfigured by a computer program stored in the computer. Such a computer program may be stored in a non-transitory, tangible computer readable storage medium, or any type of media suitable for storing electronic instructions, which may be coupled to a computer system bus. Furthermore, any computing systems referred to in the specification may include a single processor or may be architectures employing multiple processor designs for increased computing capability.

[0079] Embodiments also may relate to a product that is produced by a computing process described herein. Such a product may comprise information resulting from a computing process, where the information is stored on a non-transitory, tangible computer readable storage medium

and may include any embodiment of a computer program product or other data combination described herein.

[0080] Finally, the language used in the specification has been principally selected for readability and instructional purposes, and it may not have been selected to delineate or circumscribe the inventive subject matter. It is therefore intended that the scope of the patent rights be limited not by this detailed description, but rather by any claims that issue on an application based hereon. Accordingly, the disclosure of the embodiments is intended to be illustrative, but not limiting, of the scope of the patent rights, which is set forth in the following claims.

WHAT IS CLAIMED:

1. A system comprising:

a device comprising one or more processors; and

at least one memory storing instructions, that when executed by the one or more processors, cause the device to:

analyze public social content generated by one or more users associated with a social network;

determine similarities among data items associated with the social content;

determine whether the data items associated with the social content relates to one or more products;

classify one or more determined similar products into corresponding product groups;

determine trends and insight data associated with the similar products; and

enable provision of the trends and insight data associated with the similar products to one or more network entities.

2. The system of claim 1, wherein the network entities comprise one or more online shopping entities.

3. The system of claim 1, wherein the data items comprise text data, images, videos or audio data.

4. The system of claim 1, wherein the public social content generated by the users comprises one or more user posts of information or interaction with content associated with the social network.

5. The system of claim 1, wherein when the one or more processors further execute the instructions, the device is configured to:

enable the provision by enabling provision of one or more generated user interfaces comprising the trends and insight data.

6. The system of claim 3, wherein when the one or more processors further execute the instructions, the device is configured to:

determine, based on analyzing the images or the videos, at least one of the similar products of interest to at least a subset of the users; and

determine a popularity or ranking of a trend associated with the at least one similar product associated with the images or the videos.

7. The system of claim 3, wherein when the one or more processors further execute the instructions, the device is configured to:

determine, based on analyzing the text data, one or more topics being communicated by at least a subset of the users; and

determine a popularity or ranking of a trend associated with at least one of the similar products associated with the text data.

8. The system of claim 1, wherein when the one or more processors further execute the instructions, the device is configured to:

automatically generate, based on the data items associated with the social content, one or more curated collections associated with the corresponding product groups; and

enable provision of the curated collections to the one or more network entities.

ABSTRACT OF THE DISCLOSURE

An online system for providing social commerce data to one or more network entities is disclosed. The online system may analyze public social content generated by one or more users associated with the online system such as, for example a social-networking system. The online system may determine similarities among data items associated with the social content. The online system may determine whether the data items associated with the social content relates to one or more products. The online system may classify one or more determined similar products into corresponding product groups. The online system may determine trends and insight data associated with the similar products. The online system may enable provision of the trends and insight data associated with the similar products to the one or more network entities.

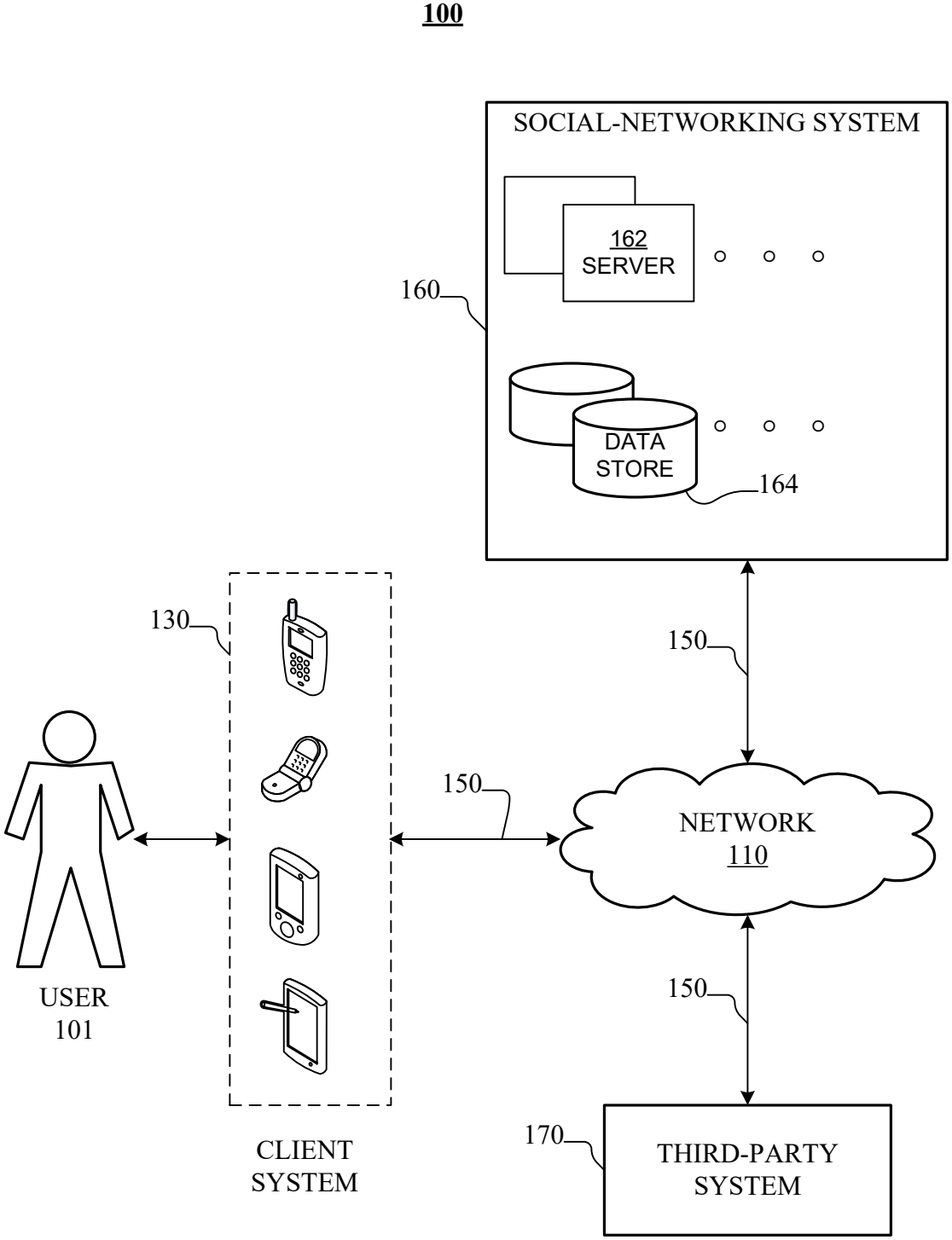
100
SOCIAL-NETWORKING SYSTEM
162
SERVER
160
DATA
STORE
164
130
150
150
NETWORK
110
USER
101
150
170
CLIENT
SYSTEM
THIRD-PARTY
SYSTEM

FIG. 1

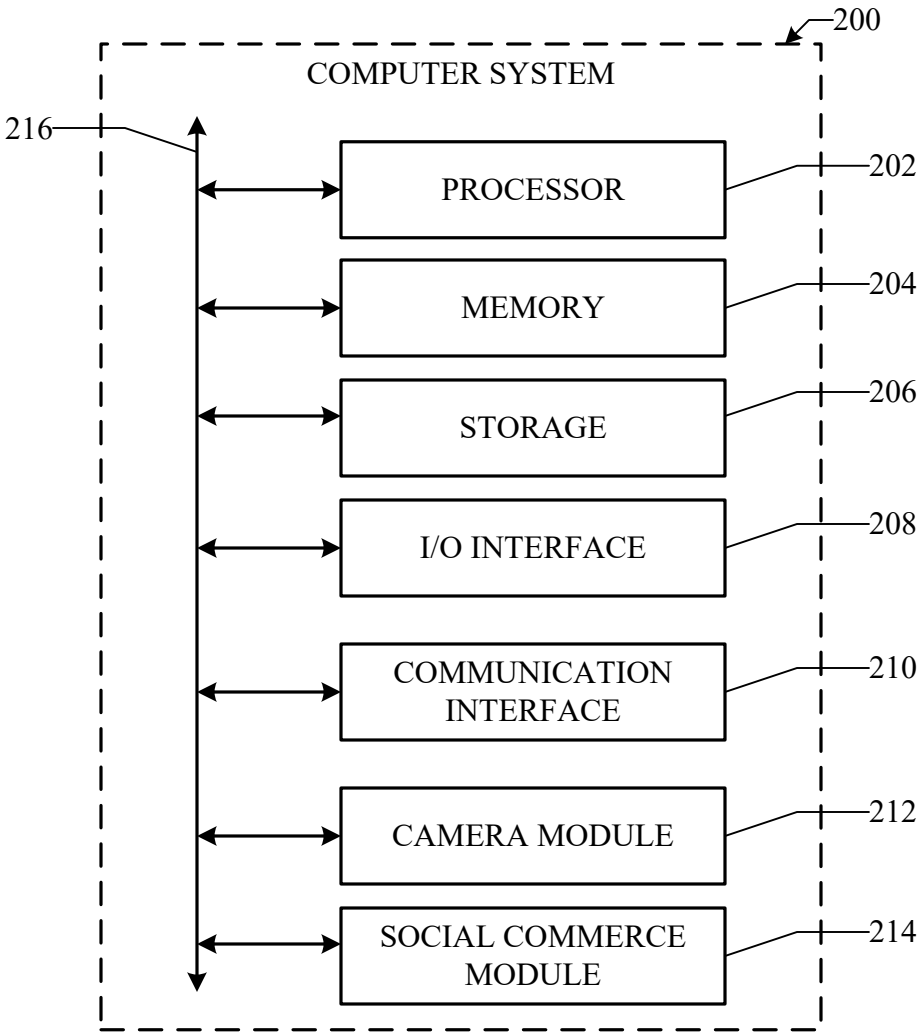
200
COMPUTER SYSTEM
216
PROCESSOR
202
MEMORY
204
STORAGE
206
I/O INTERFACE
208
COMMUNICATION INTERFACE
210
CAMERA MODULE
212
SOCIAL COMMERCE MODULE
214

FIG. 2

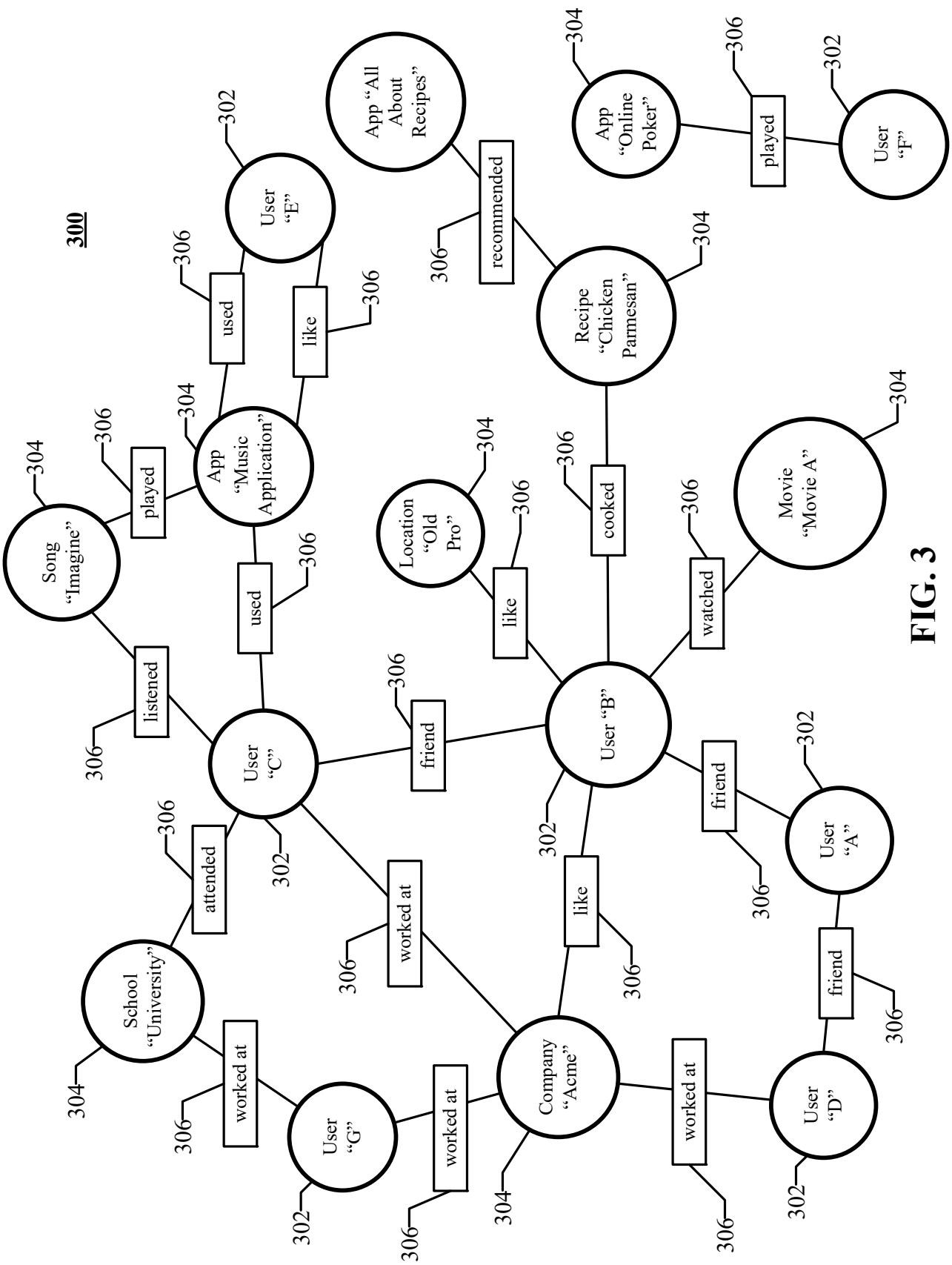
300
User "C"
User "B"
User "A"
User "D"
User "E"
User "F"
User "G"
App "Music Application"
App "All About Recipes"
App "Online Poker"
Song "Imagine"
Location "Old Pro"
Recipe "Chicken Parmesan"
Movie "Movie A"
School "University"
Company "Acme"
listened
played
used
like
recommended
cooked
watched
attended
worked at
friend
302
304
306

FIG. 3

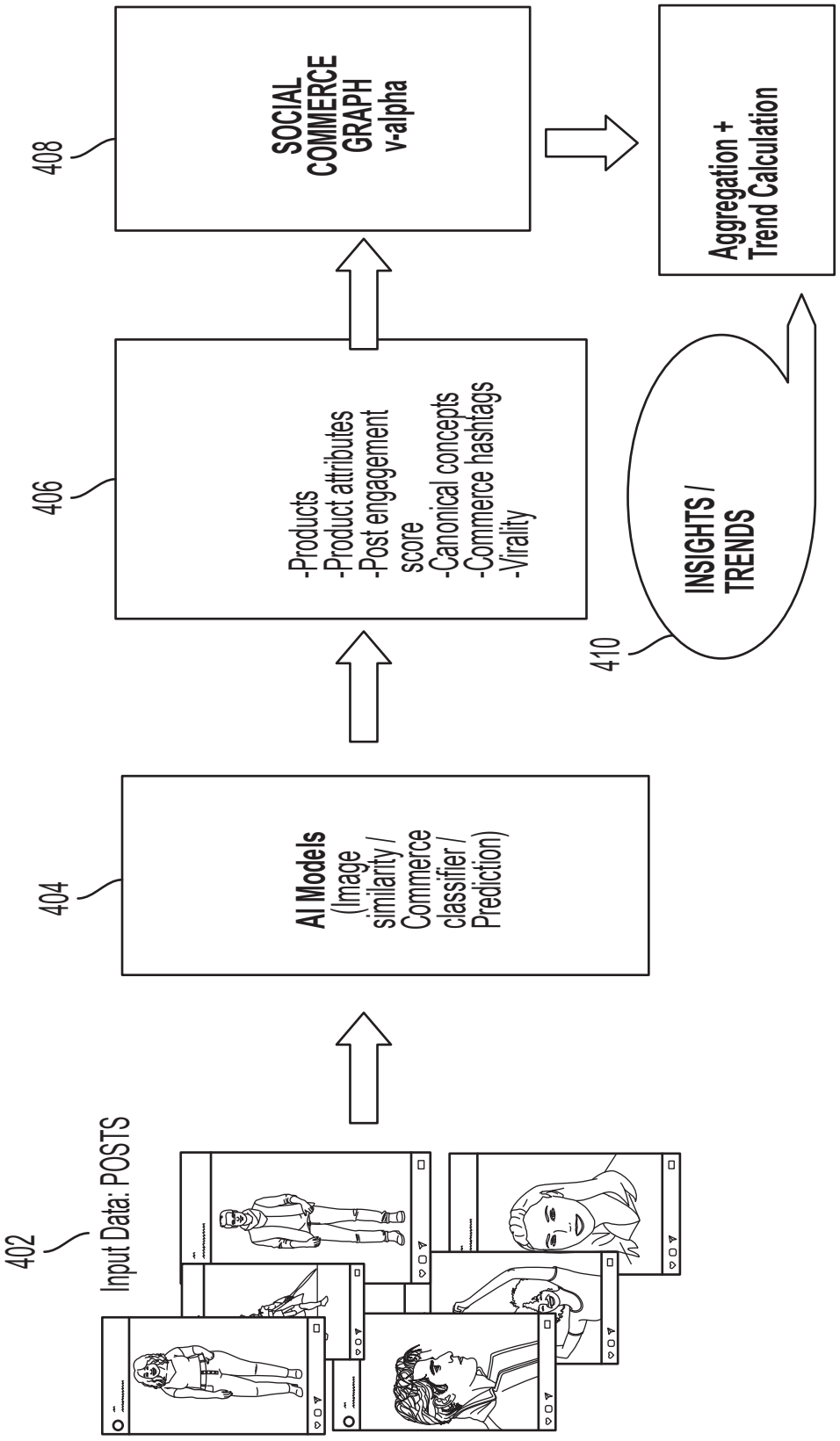
402
Input Data: POSTS
404
AI Models
(Image similarity / Commerce classifier / Prediction)
406
-Products
-Product attributes
-Post engagement score
-Canonical concepts
-Commerce hashtags
-Virality
408
SOCIAL COMMERCE GRAPH v-alpha
410
INSIGHTS / TRENDS
Aggregation + Trend Calculation

FIG. 4

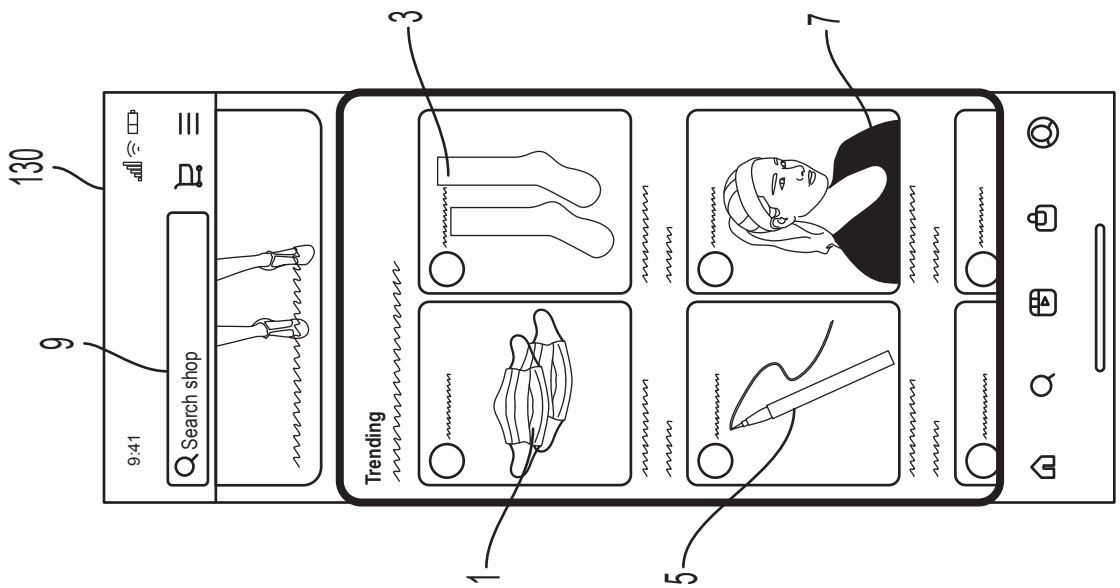
130
9
9:41
Search shop
Trending
1
3
5
7

FIG. 5A

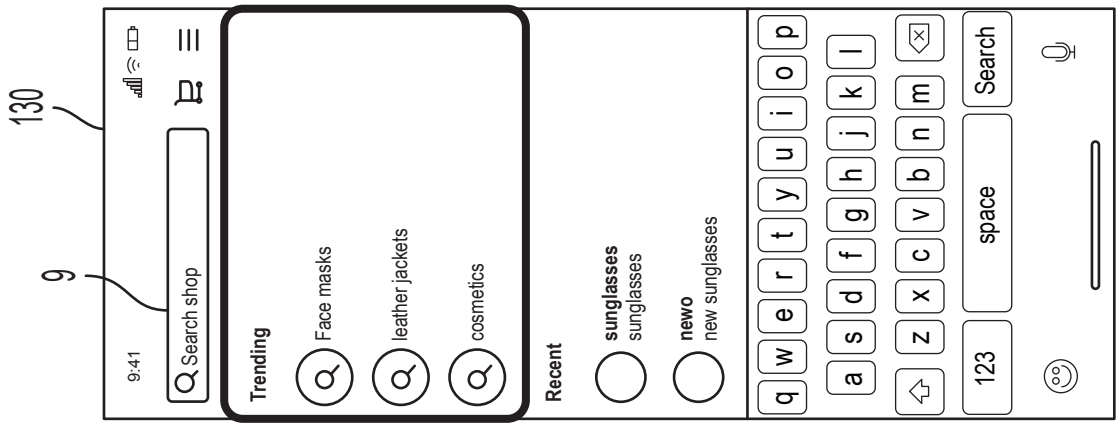
130
9
9:41
Search shop
Trending
Face masks
leather jackets
cosmetics
Recent
sunglasses
sunglasses
newo
new sunglasses
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
space
Search

FIG. 5B

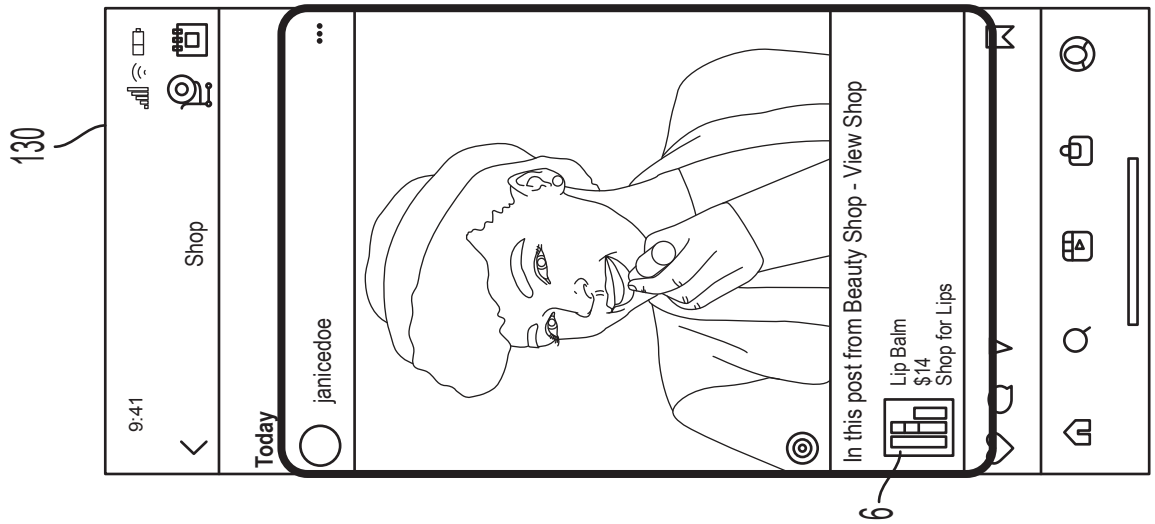
130
9:41
Shop
Today
janicedoe
In this post from Beauty Shop - View Shop
Lip Balm
$14
Shop for Lips
6

FIG. 5D

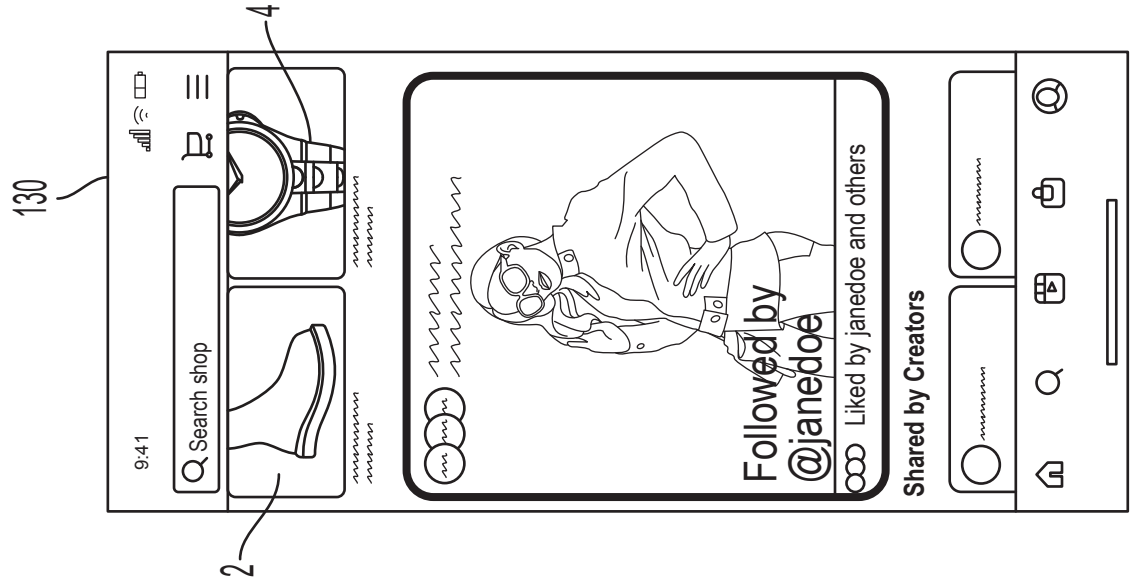
130
9:41
Search shop
Followed by
@janedoe
Liked by janedoe and others
Shared by Creators
2
4

FIG. 5C

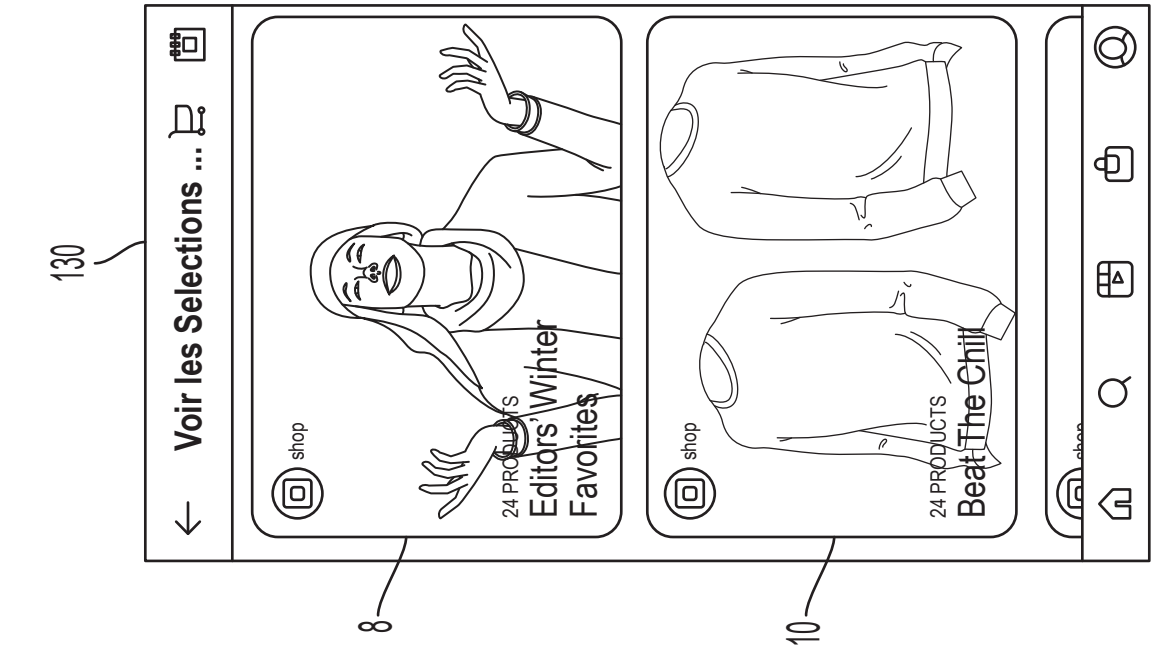
130
Voir les Selections ...
shop
24 PRODUCTS
Editors' Winter Favorites
8
shop
24 PRODUCTS
Beat The Chill
10

FIG. 6A

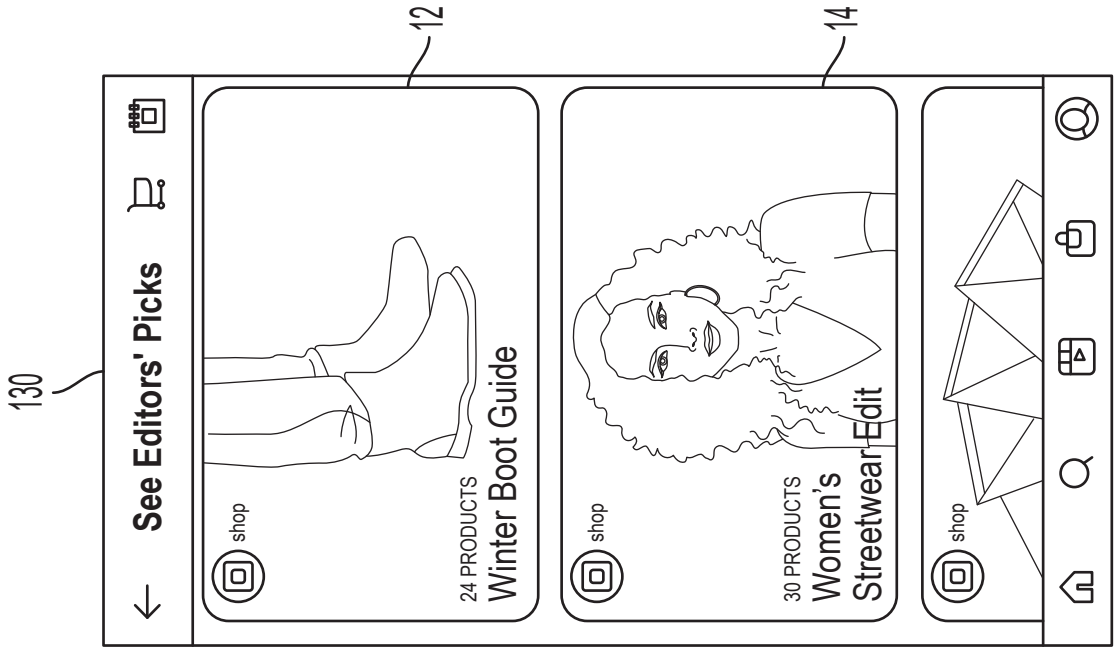
130
See Editors' Picks
12
shop
24 PRODUCTS
Winter Boot Guide
14
shop
30 PRODUCTS
Women's Streetwear Edit
shop

FIG. 6B

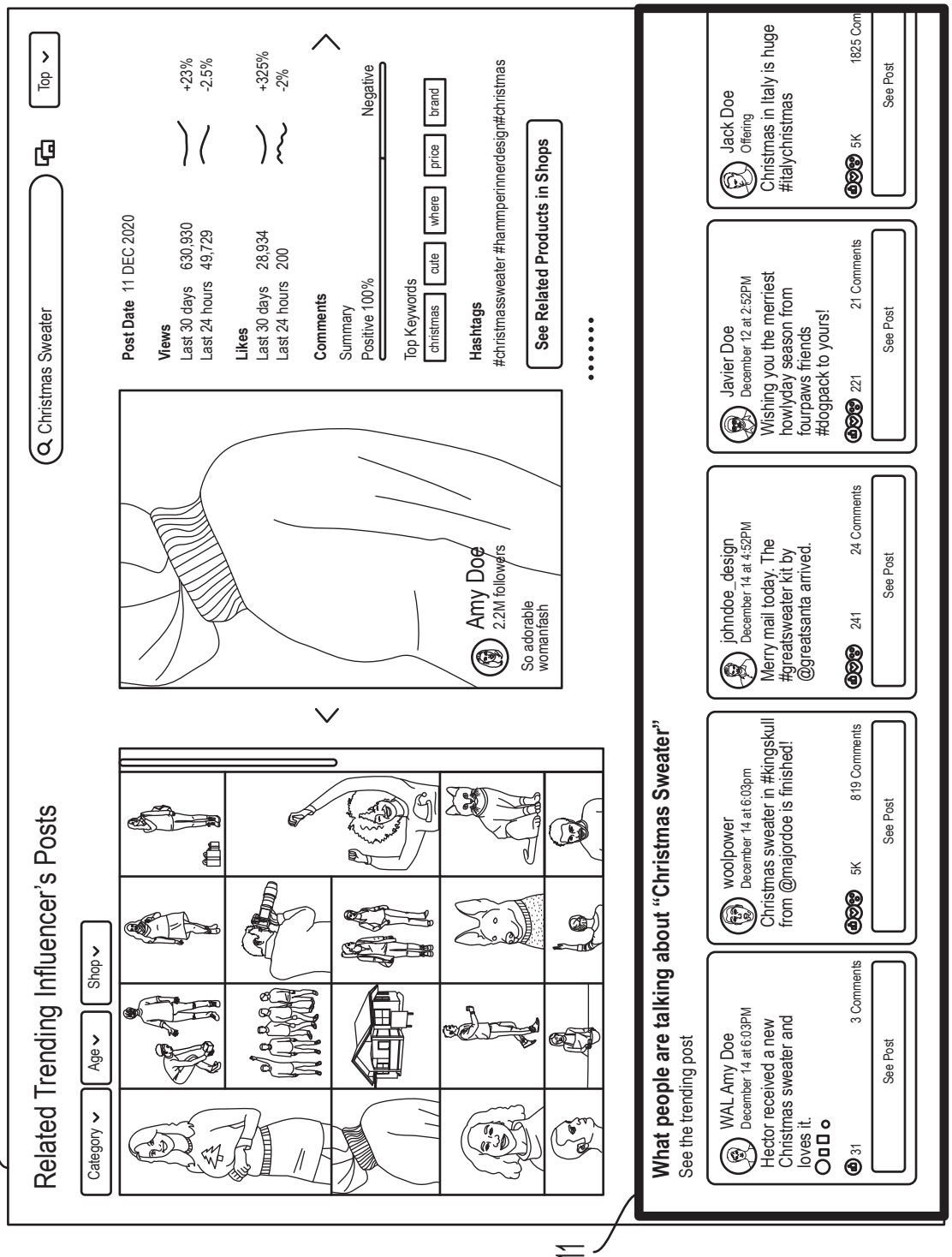
15
Related Trending Influencer's Posts
Category
Age
Shop
Christmas Sweater
Top
Post Date 11 DEC 2020
Views
Last 30 days 630,930 +23%
Last 24 hours 49,729 -2.5%
Likes
Last 30 days 28,934 +325%
Last 24 hours 200 -2%
Comments
Summary
Positive 100% Negative
Top Keywords
christmas cute where price brand
Hashtags
#christmassweater #hammperinnerdesign#christmas
See Related Products in Shops
Amy Doe
2.2M followers
So adorable womanfash
11
What people are talking about "Christmas Sweater"
See the trending post
WAL Amy Doe
December 14 at 6:03PM
Hector received a new Christmas sweater and loves it.
31
3 Comments
See Post
woolpower
December 14 at 6:03pm
Christmas sweater in #kingskull from @majordoe is finished!
5K
819 Comments
See Post
johndoe_design
December 14 at 4:52PM
Merry mail today. The #greatsweater kit by @greatsanta arrived.
241
24 Comments
See Post
Javier Doe
December 12 at 2:52PM
Wishing you the merriest howlyday season from fourpaws friends #dogpack to yours!
221
21 Comments
See Post
Jack Doe
Offering
Christmas in Italy is huge #italychristmas
5K
1825 Com
See Post

FIG. 7

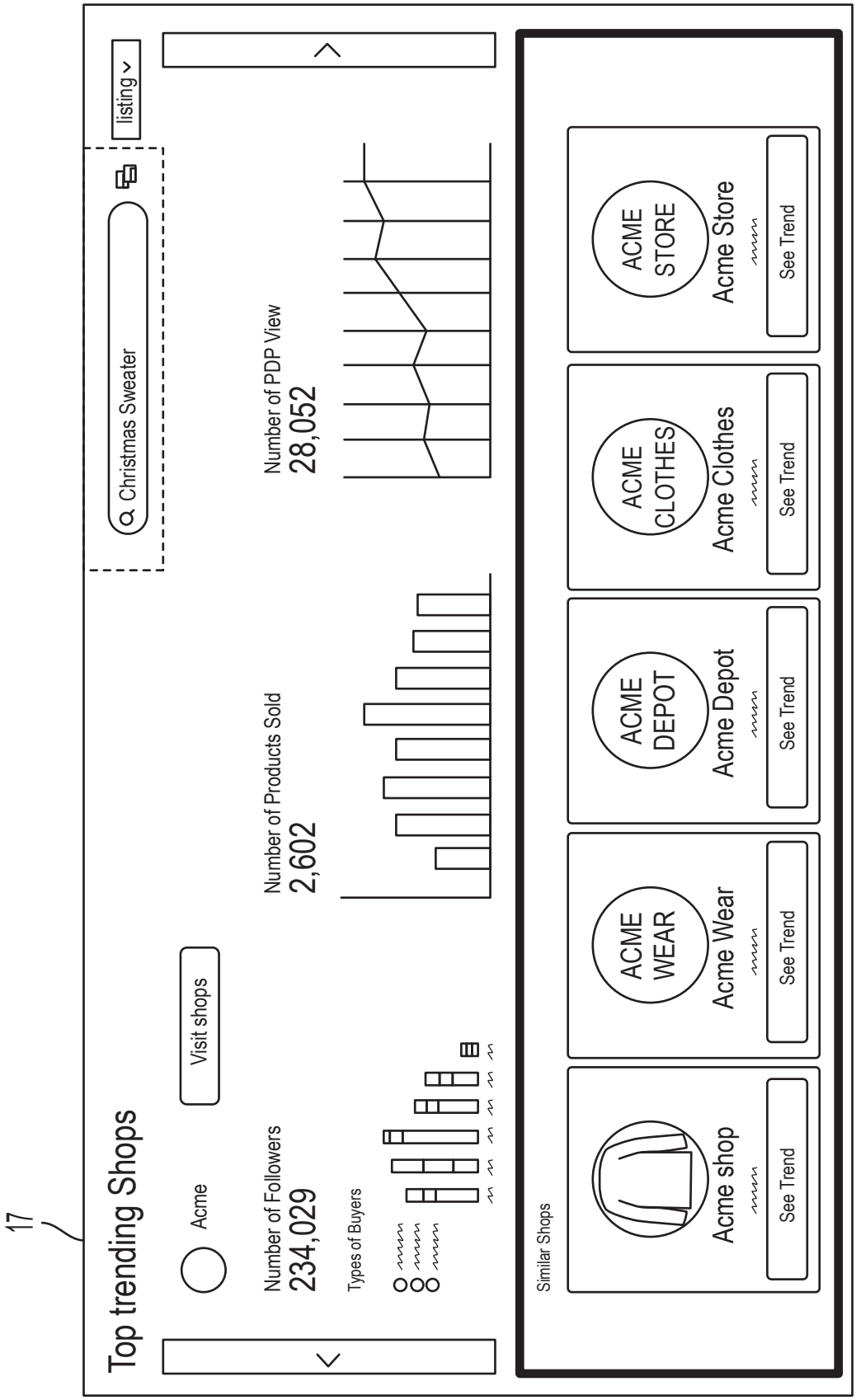
17
Top trending Shops
Acme
Visit shops
Number of Followers
234,029
Types of Buyers
Christmas Sweater
listing
Number of Products Sold
2,602
Number of PDP View
28,052
Similar Shops
Acme shop
See Trend
ACME WEAR
Acme Wear
See Trend
ACME DEPOT
Acme Depot
See Trend
ACME CLOTHES
Acme Clothes
See Trend
ACME STORE
Acme Store
See Trend

FIG. 8

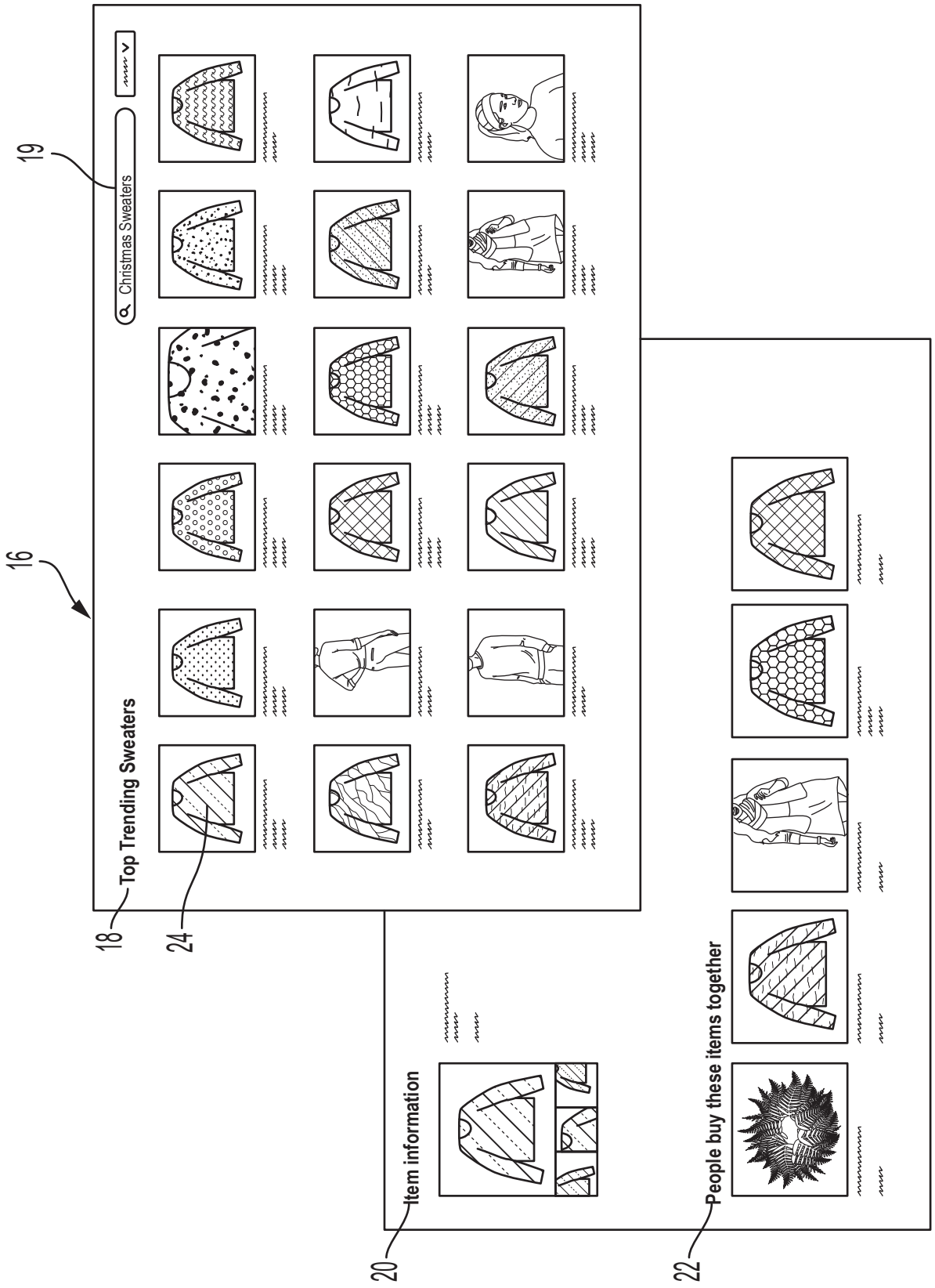
16
19
Christmas Sweaters
Top Trending Sweaters
18
24
Item information
20
People buy these items together
22

FIG. 9

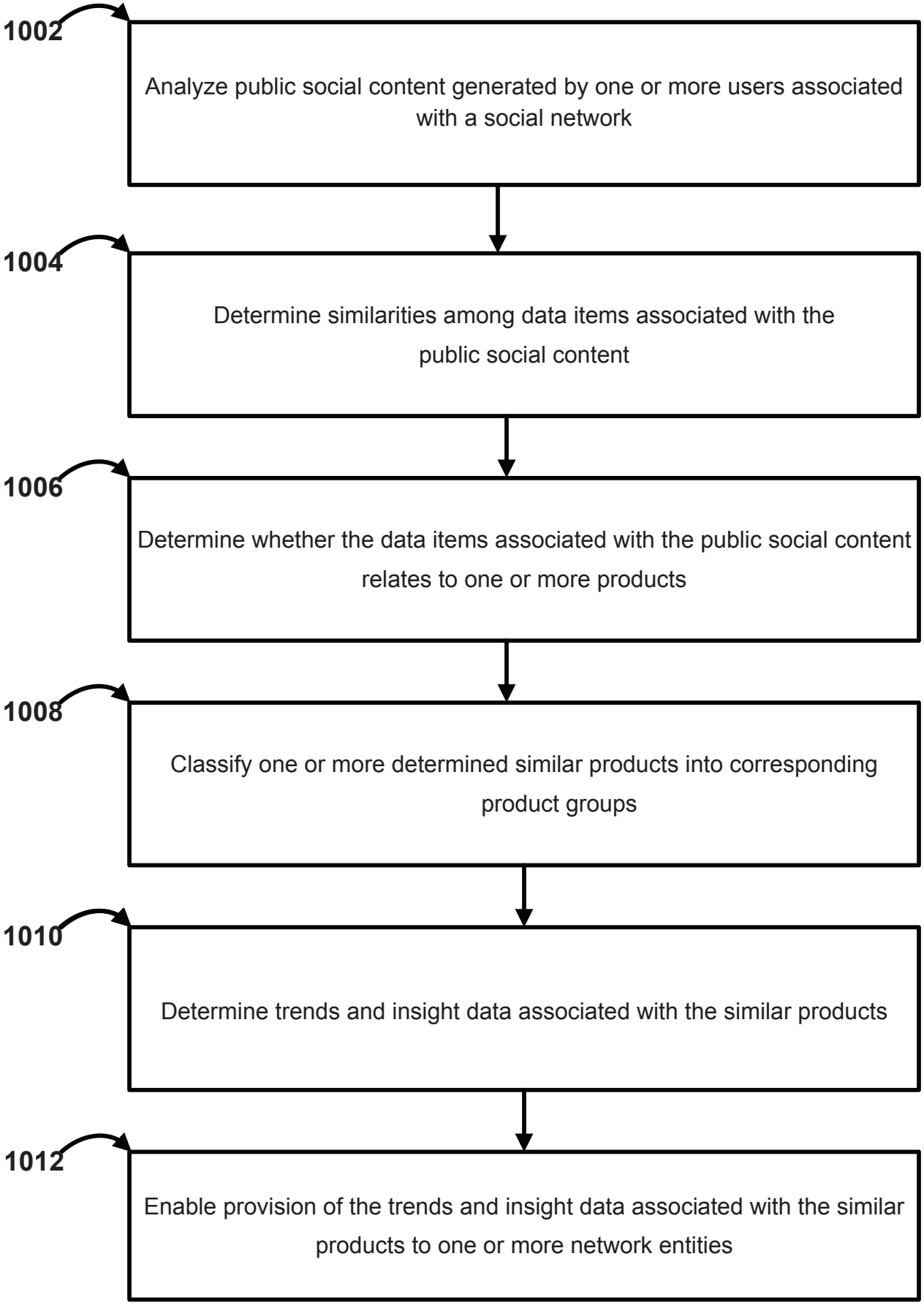
1002
Analyze public social content generated by one or more users associated with a social network
1004
Determine similarities among data items associated with the public social content
1006
Determine whether the data items associated with the public social content relates to one or more products
1008
Classify one or more determined similar products into corresponding product groups
1010
Determine trends and insight data associated with the similar products
1012
Enable provision of the trends and insight data associated with the similar products to one or more network entities

FIG. 10