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(54) Title: SYSTEMS AND METHODS FOR PROVIDING INFORMATION BASED ON LOCATION

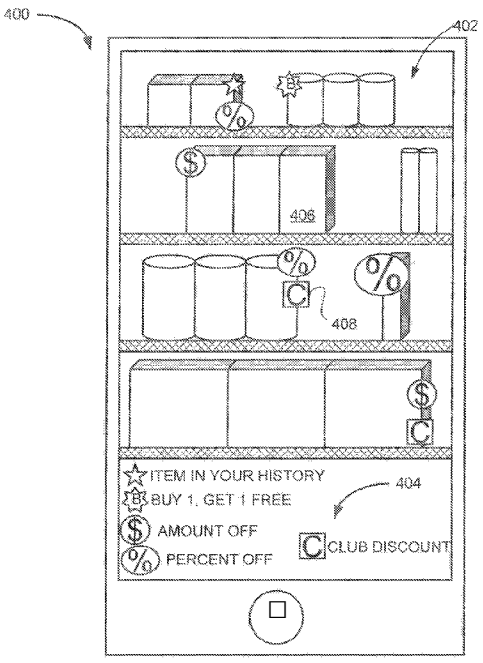

FIG. 4

(57) Abstract: Systems and methods for providing information based on a user's location are described. A system may include an inventory module to identify an instance of a product within a field of vision of a user. A search module may identify incentives to purchase the product. A location module may generate a pictorial representation of the field of vision where an image of the product is located within the pictorial representation based on the position of the product in the field of vision of the user. A mapping module may map an icon representing at least one of the one or more incentives to a location within the pictorial representation corresponding to the position of the product. A display module may provide a user interface including a display comprising the icon located within the pictorial representation at a location corresponding to the position of the image of the product.

MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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SYSTEMS AND METHODS FOR PROVIDING INFORMATION BASED ON LOCATION

CLAIM OF PRIORITY

[0001] This FCT application claims the benefit of the filing date of U.S. Patent Application Serial No. 13/329,168, filed December 16, 2011 entitled "SYSTEMS AND METHODS FOR PROVIDING INFORMATION BASED ON LOCATION," the entire contest of which is incorporated herein by reference.

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TECHNICAL FIELD

[0003] This patent document pertains generally to network communications, and more particularly, but not by way of limitation, to systems and methods for providing information based on location.

BACKGROUND

[0004] While shopping, customers may rely on coupons, club member discounts, temporary price cuts, or other discounts to save money on their purchases. In some instances it may be difficult for a customer to determine which discounts apply to which items on the store shelf

BRIEF DESCRIPTION OF DRAWINGS

[0005] Some embodiments are illustrated by way of example and not limitation In the figures of the accompanying drawings.

[0006] FIG. 1 is a network diagram depicting a client-server system within which one example embodiment may be deployed,

[0007] FIG. 2 is a block diagram of an example incentive system according to some embodiments.

[0008] FIG, 3 is a flow chart illustrating a method to provide information based on location, according to an example embodiment.

[0009] FIG. 4 is an example user interface generated according to an example embodiment

[0010] FIG. 5 is another example user interface generated according to an example embodiment.

[0011] FIG. 6 is a block diagram of machine in the example form of a computer system within which a set instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed.

DETAILED DESCRIPTION

[0012] In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of some example embodiments. It will be evident, however, to one skilled in the art that the present invention may be practiced without these specific details. As used herein, the term "or" is inclusive unless otherwise-noted.

[0013] As used herein, the term "item" is used to refer to an Individual instance of a good for sale. An item may be fungible or substantially identical to other items. For example, a can of vegetables having a certain size and a certain brand may be substantially identical to other cans of vegetables having the same contents, size, and brand. The term "product" is used to refer collectively to a plurality of items that are substantially identical. As such, each item corresponding to one product can be described using the same. description..

[0014] An Incentive system is provided herein to assist users to manage available incentives to purchase certain products by providing information based on the location of the user. An incentive may be a coupon, a discount, a *bulk* deal, a loyalty card reward, or some -other benefit that will accrue to the user upon purchasing a certain product or products.

[0015] Is a bricks-and-mortar store, items for sale are displayed on one or more shelves. As the customer walks ***among*** the shelves, the customer selects Items to purchase. Seme items may be associated with one or more incentives to purchase the product corresponding to the item. However, the incentives may not be posted on the shelves.

[0016] The systems and methods described herein provide an interface having a display thai includes a pictorial representation of the shelf In the store and icons that indicate that an incentive is available for a particular product

[96! 7] FIG. 1 is a network diagram depleting a client-server system 100, within which one example embodiment may he deployed, A networked system 102, in the example forms of a network-based marketplace or publication system, provides server-side functionality, via a network 104 (e.g., the Internet or Wide Area Network (WAN)} to one or more clients. FIG. I illustrates, for example, a web client 106 (e.g., a browser), -and s programmatic client 108 executing on respective client machines 110 and 112. The client machine 110.or 112 may-comprise a mobile device such as a mobile phone or other handheld device,

[0018j An Application Program Interface (AH) server 114 and a web server 116 are coupled to, and provide programmatic and web interlaces respectively to, one or more application servers 118, The application servers 1I8 host one or more marketplace applications 120 and incentive systems ***122.*** The application servers 11S are, in ten, shows to be coupled to one or more databases servers 124 that facilitate access to one or more databases 126,

[0019f The marketplace applications 120 may provide a number of marketplace functions and services to users that access the networked system 102 . The incentive systems 122 may likewise provide a number of incentive services and functions to users. The incentive systems 122 may provide the user with incentives to purchase particular products using an augmented reality display. While the marketplace applications 120 and the Incentive systems 122 are shows is. FIG, I both form part of the networked system 102, it will be appreciated that, in alternative embodiments, the incentive systems 122 may form part of an incentive service that is separate and distinct from the networked system 102.

|W20J Further,, while the system. 100 shown in FIG. 1 employs a client-server architecture, .the present invention is of course sot limited to such an architecture, and could equally well find application in a distributed, or peer-to-peer, architecture system, for example. The various marketplace applications 120 and the incentive systems 1.22 could also be implemented ss standalone software programs, which do not necessarily have networking capabilities.

[1021] The web clieni 106 accesses the various marketplace applications 120 and the incentive systems 122 via the web interface supported by the web ¬ server 116. Similarly, the programmatic cheat 108 accesses the various services and functions provided by the .marketplace applications 1.20 and incentive systems 1.22 via the programmatic interface provided by the API server 114. The programmatic client 108 may, for example, he an application for a mobile device to enable customers to access the augmented reality display provided by the incentive systems 122 on the networked system 102 in an off-line manner, and to perform batch-mode communications between the programmatic client 108 and the networked system 102.

{0022} FIG, 1 also illustrates a third party application 128, executing on. a third party server machine 130, as having programmatic access to the networked system. 102 via the programmatic interface provided by the *AP* server 114, for example, the third party application 128 may, utilizing infbrmation retrieved from the networked system 102, support one or more features or functions on.a website hosted by the third party. The third party website may, .for example, provide one or more promotional marketplace, or payment functions- thai are supported by the relevant applications of the networked system 102.

{0023} FIG. 2 is a block diagram of an example incentive system 200 according to some embodiments. The example incentive system 200 may be the incentive system 122. The incentive system 200 may be implemented in hard ware, software, or as a combination of hardware and sof ware.

f9()24] An inventory module 202 is -configured to identify ao instance of a product for sale positioned within a field of vision of a user based on an input received from the user. The instance of the product for sale is- an item for sale that conforms to the product description of the product. A product may be

identified by a UPC cods or SKU code, for example. For example, the product may be a branded 14-oz. can of diced tomatoes. The instance of the product (e.g., the item for sale) is the particular branded 14-oz. can of diced tomatoes positioned on the grocery store shelf.

[0025] A field of vision of the user is what the user sees within the store as the user is traversing the stores. The field of vision of the user may he a hypothetical field of vision or a captured field of vision. The field of -vision amy Include a depletion of a portion of shelves in the store, an. end-cap located at the end of an aisle in the store, a special promotional display, a portion of a rack or bin *in* the store, a portion of a display case, or some other structure within the store.

[0026] A hypothetical Held of vision may he determined based on what a typical user would see within the store. The hypothetical field of vision may be generated based on the layout of the store and positions within the store where the user might stand to view items for sale. In embodiments using a hypothetical field of vision, the instance of the product may be Identified based on an input that identifies the immediate position of the user within the store. For example, the nser may provide an input indicating the user's position in the store. The input may he a global positioning system (OPS) input, an alphanumeric input, or an image capture input, An input may include a series- of numbers and letters that identify a hypothetical field of vision.

[0027] To illustrate, the store may post a sign (i.e., a position marker) on or near a portion of shelving identified as a hypothetical field of vision. The sign may include a series one or more letters or numbers identifying the hypothetical field of vision from a plurality of hypothetical fields of vision within the store. In some instances, the sign may include a QR code. In some instances, the user may simply type the series of alphanumeric characters into the mobile device of the user. In other instances, the user may capture an image of the sign using a digital camera. The Inventory module 202 may then use optical character recognition. (OCR.) to process he image to Identify the serls s of alphanmnerie characters.

(0028) A captured field of vision may be captured by the user using, for example, a digital camera. The captured f eld of vision may include images of one or more items arranged on a shelf in a. store. The captured image may he

processed to recognize multiple different products corresponding to the items captured in the image. Some techniques that may be used singly or In combination to perform the recognition include, but are not limited to, color matching based on a distribution of colors in the image, edge- recognition, line recognition, whole image analysis based on scaling and rotations, and optical character recognition.

[6029] A search module 204 is configured to identify one or more incentives to incentivize the user to purchase a product identified by the inventory module 20-2. The search module 204 may access an incentive database (not shown) that stores records of incentives offered to shoppers. The search module 204 may further initiate a search of a network to- access further databases such as a database maintained by the retailer, a database maintained by a distributor, a database maintained by a manufacturer, or a public-ally available database available via, for example, the World Wide Web.

[0030] A location module 206 is configured to generate a pictorial representation of the field of vision of the user. An image of the product is located in the pietoriai representation based on the position of the product in the field of vision of the user relative to other objects within the field of vision of the user. The pietoriai representation may be generated along with data identifying the location of each image of a product within the pictorial representation. The data may indicate which pixels of the pictorial representation correspond to the image of the product in. pictorial representations where more than one product image is depicted, the data may indicate which -pixels of the pictorial representation correspond to each product image in the pictorial representation. In some instances, the data may further include an indication If a particular pixel or set of pixels corresponds to an edge, corner, or other specific portion of the image of the product,

[0031] A .mapping module 208 is configured to map an icon representing at least one of the one or more incentives to a location corresponding to position of an image of the product within the pietoriai representation, for example, the mapping module 208 may determine that a particular product depicted in. the pictorial representation is associated with a particular incentive available to a user purchasing the product. The map includes an icon to the pixels corresponding to the image of the product in the pictorial representation,

replacing the portion of the image of the product with pixels constituting the icon. The icon may be defined by shape, one or more -alphanumeric characters, smaller icons included in the icon, size, color. In a user interlace, when a uses-passes over an icon using a finger or pointer, the icon may he associated with a sound, a vibration, or other feedback signal An icon may have a predetermined placement on the product (e.g., in a top: tight corner) or may be placed by the mapping module 208. The mapping module 208 may place the icon based on a distribution of icons, a number of icons associated with the products, or the like,

P 032] The- icon mapped. to a product image may be selected from a plurality of available icons that can he mapped. For a particular incentive, an icon may be selected according to a number of factors such as, &type of the incentive, a provider of the incentive., a value of the incentive, a program associated with die incentive, a beneficiary of the incentive other than the user (e.g., a charity), or other characteristic of the incentive. A particular -product may be associated with one or more incentives or icons.

[0033] in some instances, the mapping module 208 may be configured to access a user history database 210, The user history database 210 may include one or more records about a purchase history of the user. The record may include an identification of previous purchases made by the user, ratings about the previous purchases submitted by the user, an. identification of another user or users known to the user, affiliations of the user, and additional user-specific information. The other user known to the user may be a spouse, roommate, family member, colleague, or friend of the user. The other user may be selected by the user from a plurality of other .users who are each known to the user. In some instances, the other user may represent a corporate entity.

[0034] Based on the records stored in the user history database 210, the mapping module 208 may map additional icons to the product images in the pictorial representation, The icons may indicate that a particular product has been previously purchased by the user or another user, has been designated as a "favorite" by the user or the other user, or has been added to a wish list by the user or the other user.

[0835} **A** display module 2.12 is configured to provide a user interface to a client device of the user. The user interface includes a display comprising the Icon located within the pictorial representation at a location corresponding to the

position of the image of the product. The user interface may be referred ω as an "augmented reality'-' display. An example of the user Interface is provided in FiG, 4.

|0036] The display module 212 may provide one or mors additional user interfaces based on selections received from the user. The additional user interfaces may provide information to the user about the product or incentives associated with the product The additional user Interfaces may provide Information accessed from the user history database 210.

j0037j FiG, 3 is a flow chart illnstratlng a method 300 to provide information based on location, according to an example embodiment The method 300 may be performed by the incentive system 200 or the incentive system 122.

[0038] In an operation 302,. field of vision information is received from a user. The field of vision information may include an image captured by the user using a digital earners (e.g., an image of the user's field of vision, an image of a sign identifying the user's field of vision, or an image of a QR code ^identifying the user's field of vision) or a series of alphanumeric characters input by the user. Based on tire field of vision information, pro duct information about products in the user's field of vision is accessed.. The products may be Identified according to a UPC or SKU code.

|0039] In an operation 304, a search is conducted for incentives corresponding to the products in the user's field of vision. The search is based on the product Information. The search may be specific to Incentives offered by the retailer.

[0840] in an operation 306, a.pictorial representation of the user's field of vision is generated. The pictorial representation may be an image captured by the user or may be an image generated independently of the user. The pictorial representation may Include additional data indicating the position of the products depicted in the pictorial representation.

[(MM 1] In an operation 30ft the incenti ves are mapped to the products in the pictorial representation. The incentives corresponding to each product may he represented by one or more icons added to the pictorial representation. Additional information associated with the product or user history associated

with the product may also bo mapped to the images of the products on the pictorial representation.

[0042] In an operation 310, an augmented reality display is provided. The augmented reality display includes the pictorial representation of the user's field of vision and one or more icons positioned over or adjacent io images of products within the pictorial representation.

[0043] FIG. 4 is an example user interface 400 generated according to an example embodiment. The example user interface 400 comprises the pictorial representation 402 of the user's field of vision and a legend -404. The user interlace 400 may receive input from a user via, for example, a touch screen.

[0044] The pictorial representation 402 includes, in the example depicted, a picture of a portion of store shelves supporting items for sale. The pictorial representation may be a drawing or a photograph of the field of vision. The pictorial representation 402 Includes product images such as product image 406 and icons such as icon 408, The icons may partially or completely overlap a product image corresponding to the product identified with an incentive. In. some embodiments, the Icon may be adjacent to, but not overlap the product image. The icons may vary in size, shape, color, or other identifying characteristics.

[0045] In some instances, the user may be provided an option to view the products in the field of vision as a list of the products. The list of the products may be sortable according to position within the field of view of the user. To illustrate, the list may list the products in the field of vision front left to right and from top to bottom.

[0046] The example user Interface 400 further includes a legend 404 that includes the icons used in the pictorial representation and a definition of the icon. The legend 404 may he optional and the user may be provided an option to hide or show the legend,

[0047] FIG.. 5 is another example user interface 500 generated according to an example embodiment. The example user interface 500 may be presented to the user upon receiving a selection of a product image in the pictorial representation 402, The example Interface includes a product image 502 along with the icons 504 assigned to the product image in the pictorial representation 402, Additional information, such as a product description or user history

information .may be displayed in.the example user interface 500,

£80481 A description of an automatic incentive 506 is displayed. The automatic incentive 506 accrues to the user automatically at checkout or upon scanning a club card or other loyalty program identifier at a point of service (POS) station in the store,

[0049] A description of a redeemable incentive 508 is also displayed. A redeemable incentive does not necessarily accrue automatically to the user. Instead the user may be required to present a coupon at checkout and/or perform some other action (e.g., purchase a particular number of items). A button 510, when selected, causes the user's device to download the coupon associated with redeemable incentive 508.

MODULES, COMPONENTS AND LOGIC

[0050] Certain embodiments are described herein as including logic or a number of components, modules, or mechanisms. Modules may constitute either software modules (e.g., code embodied (1) on a non-transitory machine-readable medium or (2) in a transmission signal) or hardware-implemented modules. A hardware -implemented module Is tangible unit capable of performing certain operations and may be configured er arranged in a certain manner, In example embodiments, one or more computer systems {e.g., a standalone, client or server computer system) or one or more processors may be. configured by software (e.g., an application or application portion) as a hardware-implemented module that operates to perform certain operations as described herein,

[0051] In various embodiments, a hardware -implemented module may be implemented mechanically or electronically. For example, a hardware-implemented module may comprise dedicated circuitry or logic that is permanently configured (e.g., as a special-purpose processor, such as a field programmable gate array (FPGA) or an appi.Ieation-speciilc integrated circuit (ASIC)) to perform certain operations, A hardware-implemented module may also comprise programmable logic or circuitry (e.g., as encompassed within a general-purpose processor or other programmable processor) that is temporarily configured by software to perform certain operations. It will be appreciated thai the decision to implement a hardware-implemented module mechanically, in

dedicated and permanently configured circrdtry, or in temporarily configured circuitry (e.g,, configured by software) may be drivers by cost and time considerations,

[0052] Accordingly, the term "hardware-implemented module" should be understood to encompass a tangible entity, be that an entity that is physically constructed, permanently configured (e,g,, hardwired) or temporarily or transitorily configured (e.g.,, programmed) to operate in a certain manner and/or to perform certain operations described herein,- Considering embodiments in which hardware-Implemented modules are temporarily configured (e.g., programmed), each of the hardware -Implemented modules need *not* he configured or instantiated at any one instance in time. For example, where the hardware-implemented modules comprise a.ge?iera!~parpose processor configured using software, the general-purpose processor may be configured ss respective different hardware-implemented modules at different times. Software may accordingly configure a processor, for example, to constitute a particular hardware-implemented module at one instance of time and to constitute a. different hardware-implemented module at a different Instance of time.

[0053] Hardware-implemented modules can. provide information to, and receive information from, other hardware --Implemented modules. Accordingly, the described hardware-implemented modules may be regarded as being communicatively coupled. Where multiple of such hardware-implemented modules exist contemporaneously, communications may be achieved through signal transmission (e,g,, over appropriate circuits and buses) mat connect the hardware-implemented modules. Its embodiments- in which multiple hardware-Implemented modules are configured or Instantiated at different times, communications between such hardware-implemented modules may be achieved, for example, through the storage and retrieval of Information in memory .structures to which the multiple hardware-Implemented modules have access. For example, orse hardware-implemented modp le may perform an operation, and store the output of that operation in a memory device to which it is communicatively coupled. A further hardware-implemented module may thers, at a later time, access the memory device to retrieve and process the stored output Hardware-imp!emented modules may also initiate communications with

input or output devices, and can operate on a resource ie.g., a collection of information).

(0854) The various operations of example methods described .herein may be performed, at least partially, by one or more processors that- are temporarily configured (e.g., by software) or permanently configured to perform the relevant operations. Whether temporarily or permanently eon figured, such processors may constitute processor-implemented modules that operate to perform one or more operations or functions. The modules referred to herein may*in some example embodiments, comprise processor-implemented modules,

f0855j Similarly, me methods described herein may be at least partially processor-implemented. For example, at least some of the operations of a method may be performed by one or processors or processor-rmpfemersted modules, The performance of .certain of the operations may be distributed among the one or more processors, not only residing within a single machine, but deployed across a number of machines. In some example embodiments, the processor or processors may be located in a single location (e.g., within.a home environment, an office environment or as a server farm), while in other embodiments the processors may be distributed across a number of locations-.

(0056} The one or more processors may also operate to support performance of the relevant operations in a "cloud competing" environment or as a "software as a service" (SaaS), For example, at least some of the operations may be performed by a group of computers (as examples of machines including processors), these operations being accessible via a network (e.g., the internet) and via one or more appropriate interfaces (e.g.. Application Program Interfaces (APIs).)

ELECTRONIC APPARATUS AND SYSTEM

[0057] Example embodiments may be implemented in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations of them、Example embodiments may be implemented using a computer program product, e.g., a computer program tangibly embodied in an information carrier, e.g., in a machine-readable medium for execution by, or to- control the operation

ofl dais processing apparatus, e.g., a programmable processor, ¾computer; or multiple computers.

[0058] A computer program can be written in any form of programming language, including compiled or interpreted languages, and it can be deployed in any form. Including as a stand-alone program or as a module, subroutine, or other unit suitable for .use in a computing environment A computer program can be deployed to be executed on one computsr or on multipie computers at one site or distributed across multiple sites and interconnected by a communication network.

[0059] In example embodiments, operations may be performed by one or .more programmable processors executing a computer program to perform functions by operating on input data and generating output Method operations can also be performed by, and apparatus of .example embodiments may be implemented as, special purpose logic circuitry, e.g.. a field programmable gate army (FPG.A) or an application-specific integrated circuit (ASIC).

[0060] The computing system can include clients and -servers. A client and server are. generally remote from each other and typically interact through a communication network. The relationship of client and server arises by virtue of computer programs running on the respective computers and having a client-server relationship to each other. In embodiments deploying a programmable computing system, it will be appreciated that dat both hardware and software architectures require consideration. Specifically, it will be appreciated that the choice of whether to Implement certain functionality In permanently configured hardware <e,g., an ASIC), *in* temporarily configured hardware (e.g., a combination of software and a programmable processor), or a combination of permanently and temporarily configured hardware may he a design choice. Below are set out hardware (e.g., machine) and software architectures that may be deployed. *in* various example embodiments,

EXAMPLE MACHINE ARCHITECTURE AND MACHINE-READABLE MEDIUM

[0061] FIG, 6 Is a block diagram of machine in the example form of a computer system 600 within which instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be

executed. In alternative embodiments, the machine operates as a standalone device or may be connected (e.g., networked) to other machines, in a networked deployment, the machine may operate in the capacity of a server or a client machine in server-client network environment, or as a peer machine in a peer-to-peer (or distributed) network environment The machine may be a personal computer (PC), a tablet PC, a set-top box (STB), a Personal Digital Assistant (PDA), a cellular telephone, a web appliance, a network rooter, switch or bridge, or any machine capable of executing instructions (sequential or otherwise) that specify actions to be taken by that machine. Further, while only a single machine is illustrated, the terra "machine" shall also be takes to include any collection of machines that individually or jointly execute a set (or multiple sets) of instructions to perform any one or more of the methodologies discussed herein,

[0062] The example computer system 600 includes a processor 602 (e.g., a central processing unit (CPU), a graphics processing unit (GPU) or both), a main memory 604 and a static memory 606, which communicate with each other via a bus 608. The computer system 600 may further include a video display unit 610 (e.g., a liquid crystal display (LCD) or a cathode ray tube (CRT)). The computer system. 600 also includes an alphanumeric input device 612 (e.g., a keyboard), a user interface (UI) navigation device 614 (e.g., a mouse), a disk drive unit 616, a signal generation device 618 (e.g., a speaker) and a network interface device 620,

MACHINE-READABLE MEDIUM

[0063] The disk drive unit 616 includes a machine-readable medium 622 on which is stored one or more sets of instructions and data structures (e.g., software) 624 embodying or utilized by any one or more of the methodologies or functions described herein. The instructions 624 may also reside, completely or at least partially, within the main memory 604 and/or within the processor 602 during execution thereof by the computer system 600, the main memory 604 and the processor 602 also constituting machine-readable media,

[0064] While the machine-readable medium 622 is shown in an example embodiment to be a single medium, the term "machine-readable medium" may include a single medium or multiple media (e.g., a centralized or distributed

database, and/or associated caches and servers) that store one or more Instructions or data structures. The term "machine-readable medium" shall also be taken to include any tangible medium that is capable of storing, encoding or carrying instructions for execution by the machine and that cause the machine to perform any one or more of the methodologies of the present invention, *or* that is capable of storing, encoding or carrying data structures utilised fay or associated with such Instructions. The term "machine-readable medium" shall accordingly be taken to include, but not be limited to, solid-state memories, aod optical and magnetic media. Specific examples of machine-readable media include non¬ volatile memory; including by way of example semiconductor memory devices, e.g.. Erasable Programmable Read-Only Memory (EPROMf, Electrically Erasable Programmable Read-Only Memory **(EEPROM)**, and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROM and DVD-ROM disks.

TRANSMISSION MEDIUM

[0065] The instructions 624 may farmer be transmitted or received over a communications; network 626 using a transmission mediumr. The Instructions 624 may be transmitted using the network interface device 620 and any one of a number of well-known transfer protocols (e,g,, HTTP). Examples of comnunication networks include a.local area network ("LAN"), a wide area network ("WAN"), the Internet, mobile telephone networks, Plain Old Telephone (POTS) networks, and wireless data networks (e.g., WiFi and WiMax networks).. The term "transmission medium" shall be taken to include any intangible medium that is capable of storing, encoding or carrying instructions for execution by the machine, and includes digital or analog communications signals or other intangible media to facilitate communication of such software.

[0066] In the following detailed description of example embodiments of the Invention, reference is made to the accompanying drawings which form a past hereof, and which is shown by way of illustration only, specific embodiments in which the invention may be practiced, it Is to be understood that other embodiments may be utilized and structural changes may be made without departing from the scope of (be present Invention. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a

.restrictive sense. The accompanying drawings thai form a part hereof, show by way of illustration, and not of limitation, specific embodiments in which the subject -matter maybe practiced. The embodiments illustrated are described in sufficient detail to enable those skilled *in* the art to practice .the teachings disclosed herein, Other embodiments may be utilized and derived therefrom, such that structural and logical substitutions and changes may he made without departing from the scope of this disclosure. This Detailed Description, therefore. Is not to be taken *in* &limiting sense, and the scope of various embodiments is defined only by the appended claims, along with the full range of equivalents to which such claims are entitled.

{0067} Such embodiments of the inventive subject matter may he referred to herein, individually and/or collectively, by the term "invention" merely for convenience and without intending to voluntarily limit the scope of this application to any single invention or inventive concept if more than one is in fact disclosed. Thus, although specific embodiments have been illustrated and described herein, it should be appreciated that any arrangement calculated to achieve the same purpose may be substituted for the specific embodiments shown. This disclosure is intended to cover any and all adaptations or variations of various embodiments. Combinations of the above embodiments, and other embodiments not. specifically described herein, will he apparent to those of skill in the art upon reviewing the above description.

CLAIMS

What is claimed is;

1. A system comprising:

an inventory module configured to identify art instasice of a product for sale positioned within a field of vision of a user based on an *imi* received from the user;

&search module configured to identify one or more incentives to purchase the product;

a location module to generate a pictorial representation of the field of vision that positions an Image of the product within the pictorial representation based on a position of the-product in the field of vision of the user relative to other objects within the field of vision of the .user;

a mapping module configured to map, using one or more processors, an icon representing at least one of the one or more Incentives to a location within the pictorial representation corresponding to the position of the product; and

a display module configured to provide a user interface to a client device of the user, the cser interface Including a display comprising the Icon located within the pictorial representation at a location corresponding to the position of the image of the product.

2. The -system of claim. 1, wherein the pictorial representation is .generated based on a second image captured by a camera of the client device,

3. The system of claim 2, wherein the user interface is generated based on the second image.

4. The system of claim 2, wherein: the second image includes a position marker positioned within the field of vision of the user.

5. The system of claim 2 »wherein the pictorial representation comprises the second image.

6. The system of claim 2, wherein the image of the product comprises a portion of the second image.

7. The system of claim 1, wherein the location module identifies the location of the user based on a selection reeeived from the user,

8. The system of claim 7, wherein the selection comprises a second image of a QR code captured by the client device.

9. The system of claim I, wherein the search module is further configured to identify one or mote additional incentives based on a captured QR code.

10. The system of claim 1, wherein the rrsapping module is further configured to map a second icon to the position of the product based on a purchase .history of the nser,

11. The system of claim TO, wherein the display module is further configured to receive a selection of the second icon from the user and, in response to the selection, provide a second user interface indicating more information about the purchase history of the user,

12, The system of claim 1, wherein the mapping module is ferthet configured to map a second icon to the position of the product based on a purchase history of a second user associated with the user.

13, The system of claim 12, wherein the display module is further configured to receive a selection of the second icon from the user and, in response to the selection, provide a second user interface indicating more information about the purchase history of the second user,

14. The system of claim 1, wherein the display module is further configured to receive a selection of the icon from the user and, in response to the selection, provide a second user interface indicating more information about the incentive corresponding to the selected icon.

15. The system of claim 1, wherein the display module is further configured to receive a selection of the location of the product within the pictorial representation from the user and, in response to the selection, provide a second user interface indicating more informatics about the incentive corresponding to the selected icon.

16. The system of claim 1, wherein the inventory module Is further configured to Identify an Instance of a second product for sale positioned within the field of vision of the user based on the input received from the user, and wherein the location module Is configured to generate the pictorial representation of the second product for sale where a second image of the second product Is located in the pictorial representation based on the position of the second product in the field of vision of the user relative to the first product and the other objects within the field of vision of the user.

17. The system of claim 16, wherein the search module is configured to Identify one or more second incentives corresponding to the second product, wherein the mapping module Is configured to snap a second icon representing the one or more second Incentives to a second location within the pictorial representation corresponding to position of the product, and wherein the display further comprises the second image and the second icon.

18. The system of claim 1, wherein aa Incentive of the one or more incentives Is selected from rite group consisting of: a discount, a loyalty reward, and a gift,

19. The system of claim 1, wherein the product Is identified based on a UPC or SKU.

20. The system of claim 1, wherein the user Interface further includes an option to display the product and the one or more incentives as a portion of a list.

21. A method comprising:

identifying an instance of a product for sale positioned within a field of vision of a user based on an *input* received from the user;

identifying one or snore incentives to purchase ths product;

generating a pictorial representation of ths field of vision that positions an image of the product within the pictorial representation based on a position of the product in the .field of vision of the user relative to other objects within the field of vis.k¾ of the user;

mapping, using one-or more processors, an icon representing si least one of the one or more incentives to a location within the pictorial representation corresponding to the position of the product; and

providing a «ser interface to a client .device of the user, the user interface including a display comprising the icon located within the .pictorial representation at a location corresponding to the position of the image of the product

22. **A** non-transitory compnter-readable medium having instructions embodied thereon, the instructions executable by one or more computers to perform operations comprising:

identifying an instance of a product for sale positioned within a Held of vision of a user based on an input received *Scon* the user;

identifying one or more incentives to purchase the product;

generating a pictorial representation of the field of vision where an image of the product is located within the pictorial representation based on the position of the product in the field of vision of the user relative to other objects within the field of vision of the user;

mapping, using one or more processors, an icon representing at least one of the one or more incenti ves to a location within the pictorial representation corresponding to the position of the product; and.

providing a user interface to a client device of the user, the user interface including a display comprising the icon located within the pictorial representation at a location corresponding to the position of the image of the product

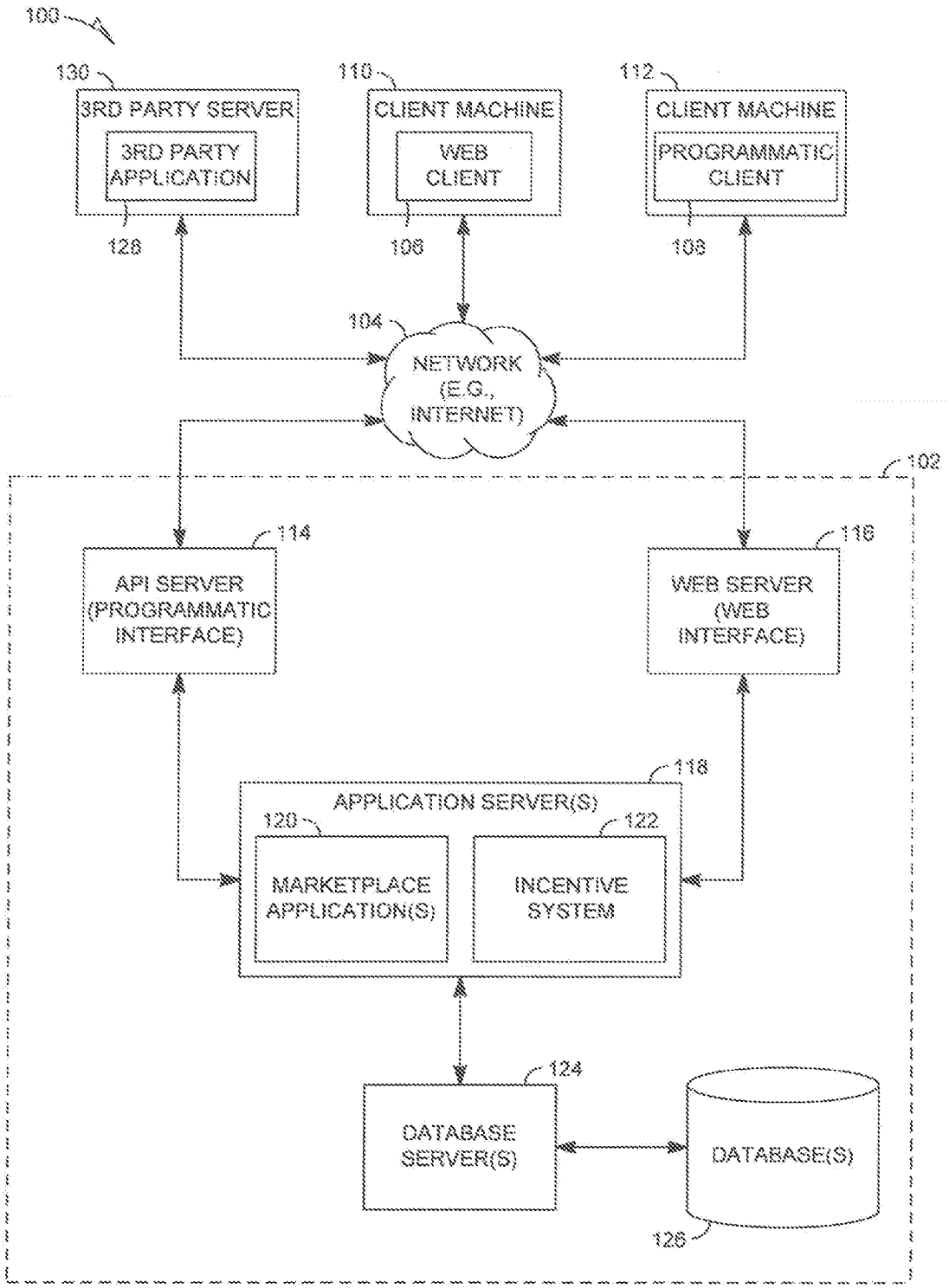
100
130
3RD PARTY SERVER
3RD PARTY APPLICATION
128
110
CLIENT MACHINE
WEB CLIENT
106
112
CLIENT MACHINE
PROGRAMMATIC CLIENT
108
104
NETWORK (E.G., INTERNET)
102
114
API SERVER (PROGRAMMATIC INTERFACE)
116
WEB SERVER (WEB INTERFACE)
118
APPLICATION SERVER(S)
120
MARKETPLACE APPLICATION(S)
122
INCENTIVE SYSTEM
124
DATABASE SERVER(S)
DATABASE(S)
126

FIG. 1

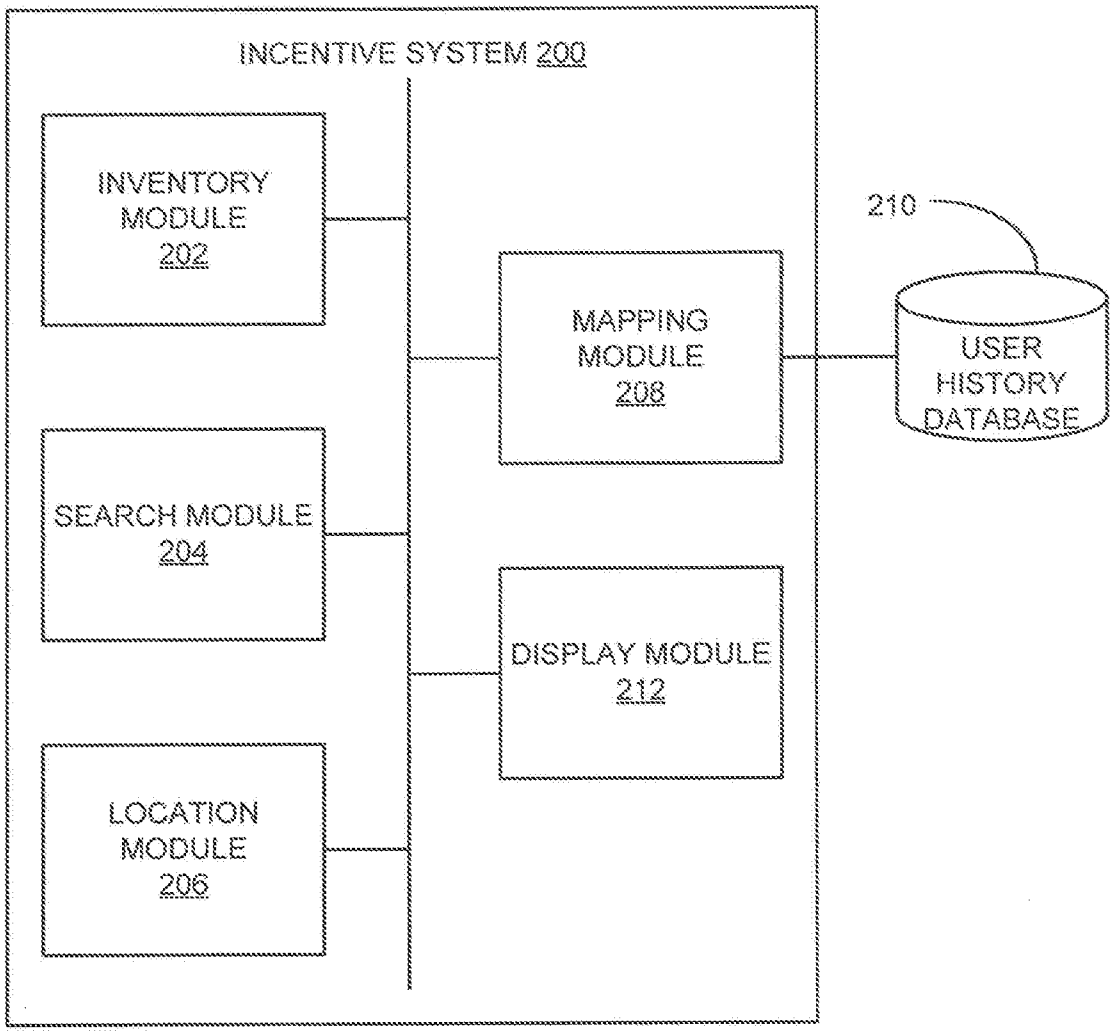
INCENTIVE SYSTEM 200
INVENTORY MODULE 202
SEARCH MODULE 204
LOCATION MODULE 206
MAPPING MODULE 208
DISPLAY MODULE 212
210
USER HISTORY DATABASE

FIG. 2

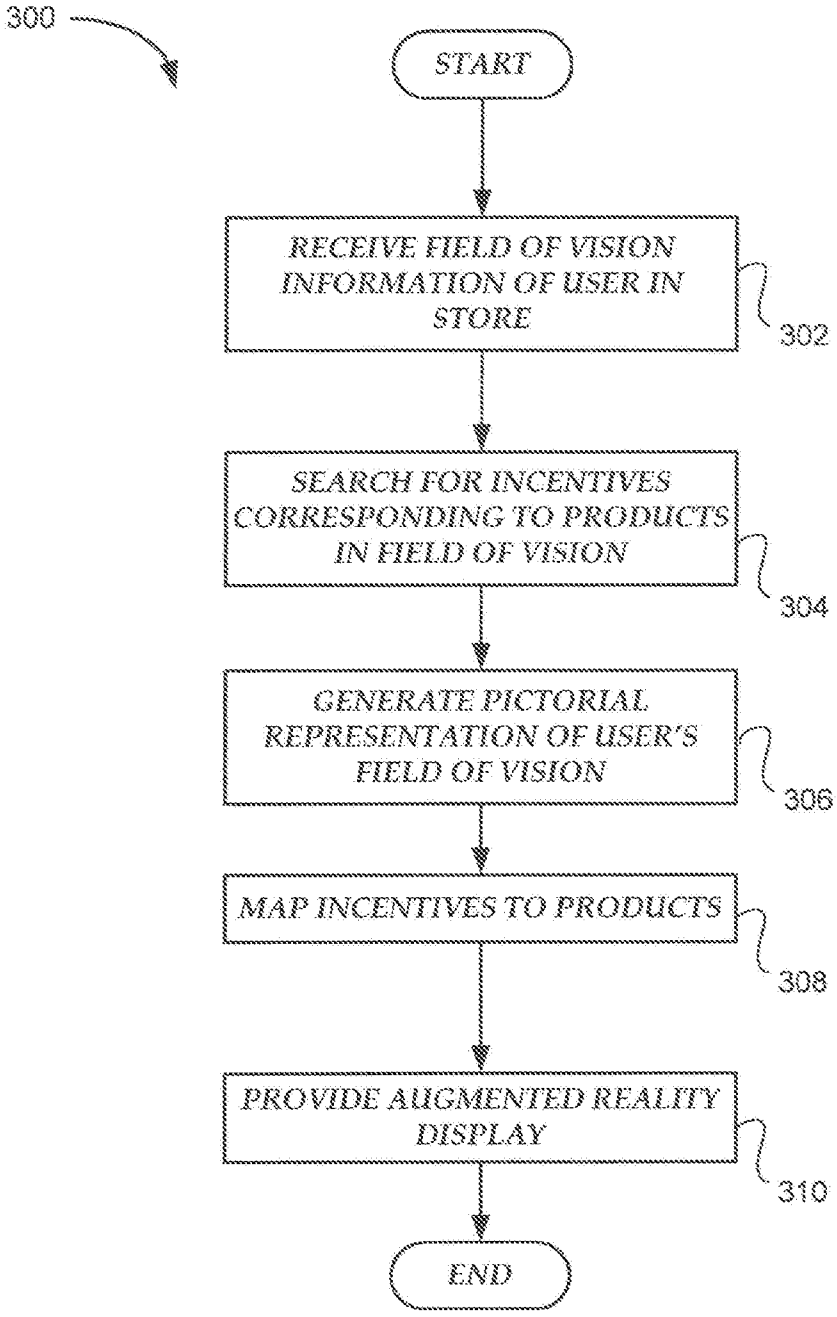
300
START
RECEIVE FIELD OF VISION INFORMATION OF USER IN STORE
302
SEARCH FOR INCENTIVES CORRESPONDING TO PRODUCTS IN FIELD OF VISION
304
GENERATE PICTORIAL REPRESENTATION OF USER'S FIELD OF VISION
306
MAP INCENTIVES TO PRODUCTS
308
PROVIDE AUGMENTED REALITY DISPLAY
310
END

FIG. 3

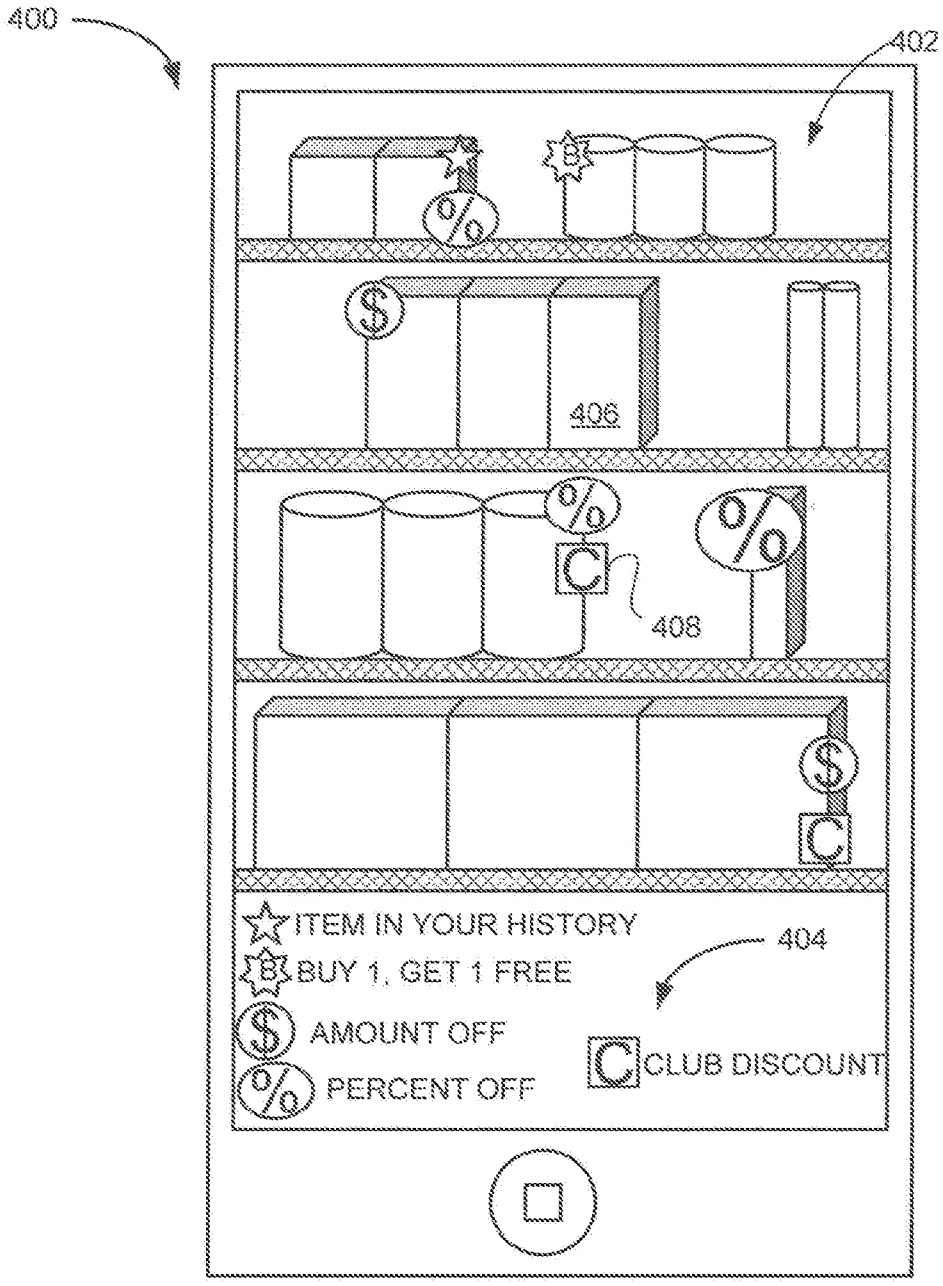
400
402
406
408
404
ITEM IN YOUR HISTORY
BUY 1, GET 1 FREE
AMOUNT OFF
PERCENT OFF
CLUB DISCOUNT

FIG. 4

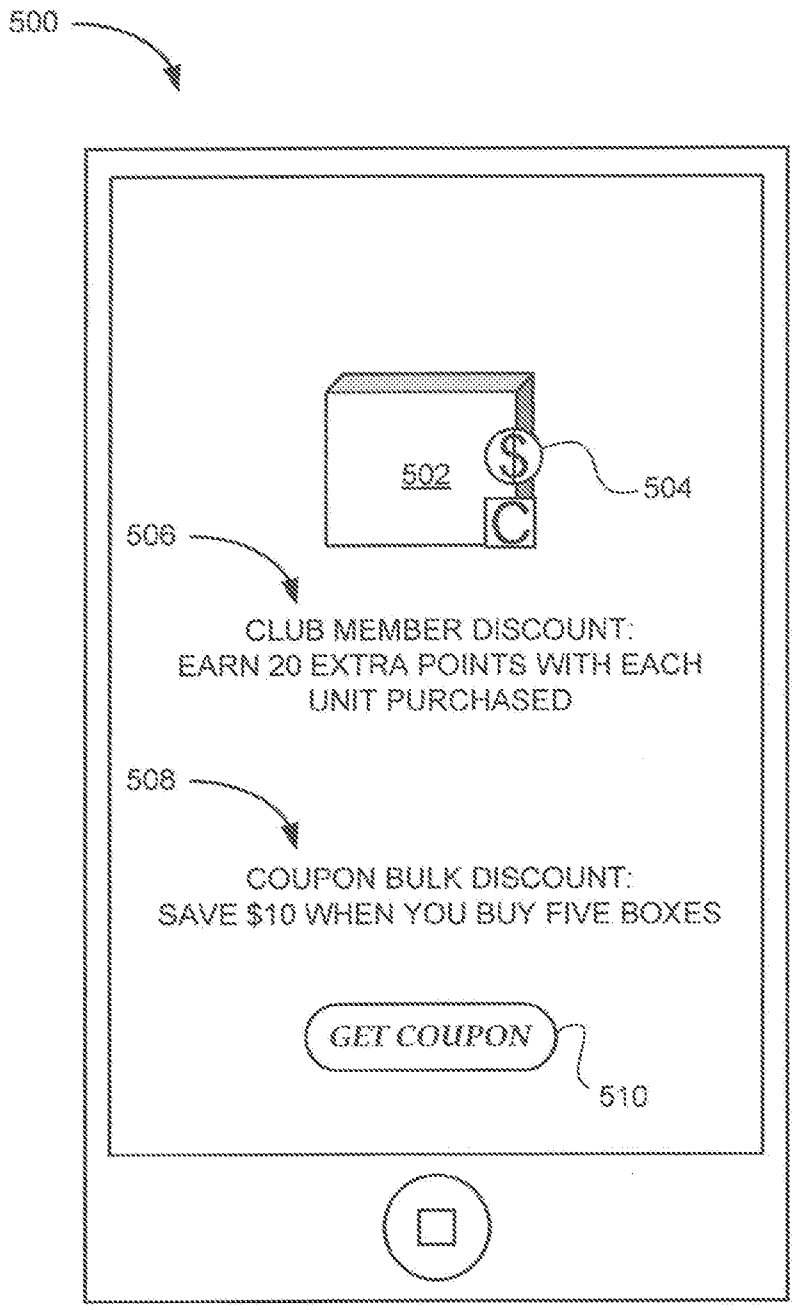
500
502
$
C
504
506
CLUB MEMBER DISCOUNT:
EARN 20 EXTRA POINTS WITH EACH
UNIT PURCHASED
508
COUPON BULK DISCOUNT:
SAVE $10 WHEN YOU BUY FIVE BOXES
GET COUPON
510

FIG. 5

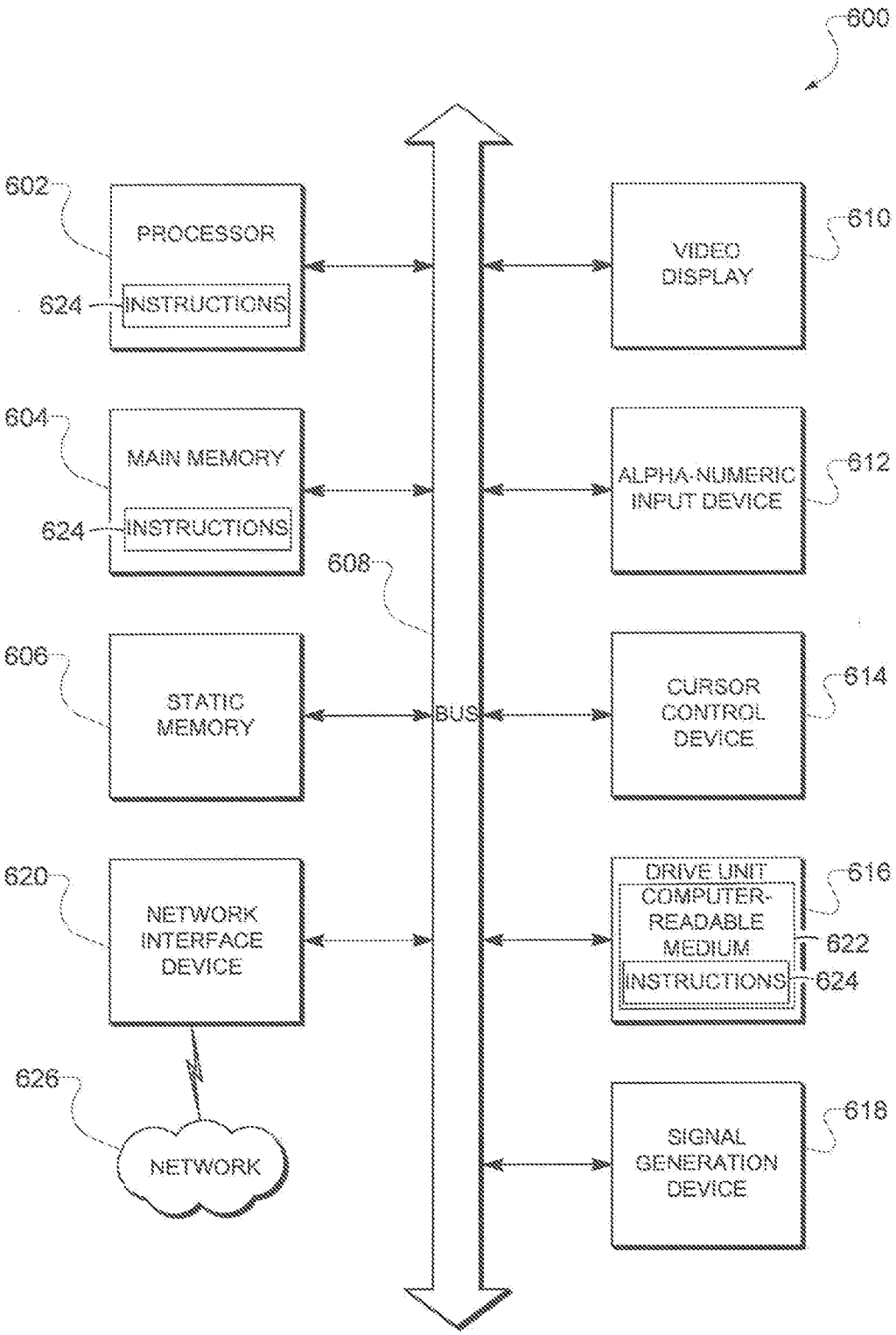
600
602
PROCESSOR
624
INSTRUCTIONS
604
MAIN MEMORY
624
INSTRUCTIONS
606
STATIC MEMORY
620
NETWORK INTERFACE DEVICE
626
NETWORK
608
BUS
VIDEO DISPLAY
610
ALPHA-NUMERIC INPUT DEVICE
612
CURSOR CONTROL DEVICE
614
DRIVE UNIT
COMPUTER-READABLE MEDIUM
INSTRUCTIONS
616
622
624
SIGNAL GENERATION DEVICE
618

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 12/69281

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06Q 30/00 (2013.01)
USPC - 705/26.9
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)
USPC: 705/26.9

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 705/1.1, 26.1, 26.9, 27.1, 27.2, 28, 29 (keyword limited - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase; GOOGLE; GoogleScholar; GooglePatents
Search Terms: selling, sale, field of view, field of vision, display, incentive, bonus, reward, prize, discount, coupon, purchase history, image, picture, pictorial, icon, capture, search, query, mark, QR, map, location, position

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0293968 A1 (Brice et al.) 28 December 2006 (28.12.2006), entire document, especially; abstract, para. [0041], [0044], [0046], [0076], [0087]-[0090], [0099], [0111]-[0113]	1 - 22
Y	US 2005/0102181 A1 (Scroggie et al.) 12 May 2005 (12.05.2005), entire document, especially; abstract, para. [0004]-[0006], [0045], [0082]-[0087], [0100]-[0103]	1 - 22
A	US 2006/0099964 A1 (Barrese et al.) 11 May 2006 (11.05.2006) entire document	1-22

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"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

Date of the actual completion of the international search	Date of mailing of the international search report
17 January 2013 (17.01.2013)	15 FEB 2013

Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774