METHOD AND SYSTEM FOR PRODUCT RECOMMENDATION BASED ON USER INTERACTION

TECHNICAL FIELD

[0001] The present disclosure relates generally to product recommendation systems. In particular, the present disclosure relates to a method and system for product recommendation based on user interaction and product attributes.

BACKGROUND

[0002] Background description includes information that may be useful in understanding the present disclosure. It is not an admission that any of the information provided herein is prior art or relevant to the present disclosure, or that any publication specifically or implicitly referenced is prior art.

[0003] Reviews for products offered on an e-commerce website are intended to serve as a good indicator of quality of a product. Reviews are often used to assess whether a product suits the tastes, preferences and requirements of users. However, they are not always reflective of the product's true quality. In some instances, a customer may leave a bad review for reasons unrelated to the product, such as when leaving a negative review for late delivery of the product. In such cases, the review does not provide any information on the product.

[0004] Further, reviewers are also not without biases, which may affect the sincerity of their reviews. Existing product review sections in e-commerce websites are also susceptible to review bombing, where reviews are intentionally manipulated to raise or reduce a product's ratings. Online reviews are also often only provided by customer having strong opinions (either due to extremely good or bad experiences), which do not necessarily present an accurate distribution of reviews for the product. Additionally, E-commerce websites do not allow users with similar tastes and preferences to interact with each other, thereby limiting users' access to genuine feedback from like-minded individuals.

[0005] Furthermore, users often manually read through reviews and product descriptions to assess suitability of the product for their use cases, which is often time-consuming and inconvenient. While chatbots alleviate the problem to some extent, existing chatbots are limited in the variety of information they can handle,

and often handover the conversation to when the user makes a query that the chatbots are unable to handle.

[0006] Therefore, there is a need for a method and system for recommending products based on user interaction and product attributes.

OBJECTS OF THE PRESENT DISCLOSURE

[0007] An object of the present disclosure is to provide a method and a system for recommending products based on user interactions.

[0008] Another object of the present disclosure is to dynamically generate and assign instant communication interfaces to users for mutual interaction.

[0009] Another object of the present disclosure is to assign instant communication interfaces by clustering product attributes, and tastes and preferences of users.

[0010] Another object of the present disclosure is to provide an autonomous agent that generates responses to queries on product attributes raised in the instant communication interface.

[0011] Yet another object of the present disclosure is to provide an autonomous agent that invokes Application Programming Interfaces based on user interaction in the instant communication interface.

[0012] The other objects and advantages of the present disclosure will be apparent from the following description when read in conjunction with the accompanying drawings, which are incorporated for illustration of the preferred embodiments of the present disclosure and are not intended to limit the scope thereof.

SUMMARY

[0013] Aspects of the present disclosure generally to product recommendation systems. In particular, the present disclosure relates to a method and system for product recommendation based on user interaction and product attributes.

[0014] In an aspect, a system for recommending products based on user interaction may include, one or more processors, and a memory coupled to the one or more processors, wherein the memory may include processor-executable instructions, which on execution, cause the one or more processors to create a

plurality of instant communication interfaces that allow corresponding computing devices of a plurality of users to exchange one or more messages therebetween. The one or more processors assign instant communication interfaces to the users based on user attributes thereof and product attributes of the products. The one or more processors generate one or more recommendatory messages for each instant communication interface based on the messages exchanged through the instant communication interfaces and the at least one product category associated with the corresponding instant communication interfaces, thereby providing product recommendations based on interaction between the plurality of users and the one or more product attributes through the one or more recommendatory messages.

[0015] In another aspect, a method is disclosed for recommending products based on user interaction.

[0016] Various objects, features, aspects, and advantages of the inventive subject matter will become more apparent from the following detailed description of preferred embodiments, along with the accompanying drawing figures in which like numerals represent like components.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The accompanying drawings are included to provide a further understanding of the present disclosure and are incorporated in and constitute a part of this specification. The drawings illustrate exemplary embodiments of the present disclosure and, together with the description, serve to explain the principles of the present disclosure.

[0018] FIG. 1 illustrates a block diagram representation of a network architecture implementing a system for recommending products based on user interaction, according to embodiments of the present disclosure.

[0019] FIG. 2 illustrates a detailed block diagram representation of the system, according to embodiments of the present disclosure.

[0020] FIGs. 3A-B illustrate exemplary representation of clustering products and users for assigning instant communication interfaces, according to embodiments of the present disclosure.

[0021] FIG. 4 illustrates a flow chart depicting a method for recommending products based on user interaction, according to embodiments of the present disclosure.

[0022] FIG. 5 illustrates a hardware platform for the implementation of the disclosed system according to embodiments of the present disclosure.

[0023] The foregoing shall be more apparent from the following more detailed description of the present disclosure.

DETAILED DESCRIPTION

[0024] In the following description, for the purposes of explanation, various specific details are set forth in order to provide a thorough understanding of the embodiments of the present disclosure. It will be apparent, however, that embodiments of the present disclosure may be practiced without these specific details. Several features described hereafter can each be used independently of one another or with any combination of other features. An individual feature may not address all of the problems discussed above or might address only some of the problems discussed above. Some of the problems discussed above might not be fully addressed by any of the features described herein.

[0025] The ensuing description provides exemplary embodiments only, and is not intended to limit the scope, applicability, or configuration of the disclosure. Rather, the ensuing description of the exemplary embodiments will provide those skilled in the art with an enabling description for implementing an exemplary embodiment. It should be understood that, various changes may be made in the function and arrangement of elements without departing from the scope of the present disclosure as set forth.

[0026] Specific details are given in the following description to provide a thorough understanding of the embodiments. However, it will be understood by one of ordinary skill in the art that the embodiments may be practiced without these specific details. For example, circuits, systems, networks, processes, and other components may be shown as components in block diagram form in order not to obscure the embodiments in unnecessary detail. In other instances, well-known circuits, processes, algorithms, structures, and techniques may be shown without unnecessary detail in order to avoid obscuring the embodiments.

[0027] Also, it is noted that individual embodiments may be described as a process which is depicted as a flowchart, a flow diagram, a data flow diagram, a structure diagram, or a block diagram. Although a flowchart may describe the operations as a sequential process, many of the operations can be performed in

parallel or concurrently. In addition, the order of the operations may be re-arranged. A process is terminated when its operations are completed but could have additional steps not included in a figure. A process may correspond to a method, a function, a procedure, a subroutine, a subprogram, etc. When a process corresponds to a function, its termination can correspond to a return of the function to the calling function or the main function.

[0028] The word “exemplary” and/or “demonstrative” is used herein to mean serving as an example, instance, or illustration. For the avoidance of doubt, the subject matter disclosed herein is not limited by such examples. In addition, any aspect or design described herein as “exemplary” and/or “demonstrative” is not necessarily to be construed as preferred or advantageous over other aspects or designs, nor is it meant to preclude equivalent exemplary structures and techniques known to those of ordinary skill in the art. Furthermore, to the extent that the terms “includes,” “has,” “contains,” and other similar words are used in either the detailed description or the claims, such terms are intended to be inclusive—in a manner similar to the term “comprising” as an open transition word—without precluding any additional or other elements.

[0029] As used herein, “connect”, “configure”, “couple” and its cognate terms, such as “connects”, “connected”, “configured”, and “coupled” may include a physical connection (such as a wired/wireless connection), a logical connection (such as through logical gates of semiconducting device), other suitable connections, or a combination of such connections, as may be obvious to a skilled person.

[0030] As used herein, “send”, “transfer”, “transmit”, and their cognate terms like “sending”, “sent”, “transferring”, “transmitting”, “transferred”, “transmitted”, etc. include sending or transporting data or information from one unit or component to another unit or component, wherein the content may or may not be modified before or after sending, transferring, transmitting.

[0031] Reference throughout this specification to “one embodiment” or “an embodiment” or “an instance” or “one instance” means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present disclosure. Thus, the appearances of the phrases “in one embodiment” or “in an embodiment” in various places throughout this specification are not necessarily all referring to the

same embodiment. Furthermore, the particular features, structures, or characteristics may be combined in any suitable manner in one or more embodiments.

[0032] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the present disclosure. As used herein, the singular forms “a,” “an,” and “the” are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms “comprises” and/or “comprising,” when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof. As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed products.

[0033] Embodiments of the present disclosure relate generally to product recommendation systems. In particular, the present disclosure relates to a method and system for product recommendation based on user interaction and product attributes.

[0034] FIG. 1 illustrates an exemplary block diagram representation of a network architecture 100 implementing a proposed system 110 for recommending products based on user interaction, according to embodiments of the present disclosure. The network architecture 100 may include the system 110 implemented on an electronic device (not shown).

[0035] The system 110 may be implemented by way of a single device or a combination of multiple devices that may be operatively connected or networked together. In some embodiments, the system 110 may be implemented on a centralized server. The centralized server may include, but is not limited to, a stand-alone server, a remote server, a cloud computing server, a dedicated server, a rack server, a server blade, a server rack, a bank of servers, a server farm, hardware supporting a part of a cloud service or system, a home server, hardware running a virtualized server, one or more processors executing code to function as a server, one or more machines performing server-side functionality as described herein, at least a portion of any of the above, some combination thereof, and the like.

[0036] In other embodiments, the system 110 may be implemented in/ associated with the electronic device. The electronic device may be at least one of, an electrical, an electronic, an electromechanical, and a computing device. The electronic device 108 may include, but is not limited to, a mobile device, a smart-phone, a Personal Digital Assistant (PDA), a tablet computer, a phablet computer, a wearable computing device, a Virtual Reality/Augmented Reality (VR/AR) device, a laptop, a desktop, a server, and the like. The system 110 may be implemented in hardware or a suitable combination of hardware and software. The system 110 or the centralized server may be associated with entities (not shown). The entities may include, but are not limited to, an e-commerce company, a merchant organization, a travel company, an airline company, a hotel booking company, a company, an outlet, a manufacturing unit, an enterprise, a facility, an organization, an educational institution, a secured facility, a warehouse facility, a supply chain facility, and the like. The system 110 when associated with the electronic device 108 or the centralized server 118 may include a touch panel, a soft keypad, a hard keypad (including buttons), and the like but not limited thereto, through which the user 102 operates said system 110.

[0037] In some embodiments, the system 110 may be communicatively coupled with computing devices 104-1, 104-2, …..., 104-N (individually referred to as the computing device 104, and collectively referred to as the computing devices 104), which are associated with one or more user 102-1, 102-2, …..., 102-N (individually referred to as the user 102, and collectively referred to as the users 102). In such examples, the user 102 may include any entity including, but not limited to, end-users, software testers, enterprise customers, end users, content providers, web developers, system integrators, database administrators, and the like, who may operate the system 110.

[0038] The system 110 may be connected to the computing devices 104 via a communication network 106. The communication network 106 may be a wired communication network or a wireless communication network. The wireless communication network may be any wireless communication network capable of transferring data between entities of that network such as, but are not limited to, a Bluetooth, a Zigbee, a Near Field Communication (NFC), a Wireless-Fidelity (Wi-Fi) network, a Light Fidelity (Li-FI) network, a carrier network including a circuit-switched network, a packet switched network, a Public Switched

Telephone Network (PSTN), a Content Delivery Network (CDN) network, an Internet, intranets, Local Area Networks (LANs), Wide Area Networks (WANs), mobile communication networks including a Second Generation (2G), a Third Generation (3G), a Fourth Generation (4G), a Fifth Generation (5G), a Sixth Generation (6G), a Long-Term Evolution (LTE) network, a New Radio (NR), a Narrow-Band (NB), an Internet of Things (IoT) network, a Global System for Mobile Communications (GSM) network and a Universal Mobile Telecommunications System (UMTS) network, combinations thereof, and the like.

[0039] Further, the system 110 may include a processor 112, an Input/Output (I/O) interface 114, and a memory 116. The Input/Output (I/O) interface 114 of the system 110 may be used to receive user inputs, from the computing devices 104 associated with the users 102. Further, the system 110 may also include other units such as a display unit, an input unit, an output unit, and the like, however the same are not shown in FIG. 1, for the purpose of clarity. Also, in FIG. 1 only a few units are shown, however, the system 110 or the network architecture 100 may include multiple such units or the system 110/ network architecture 100 may include any such numbers of the units as required to implement the features of the present disclosure. The system 110 may be a hardware device including the processor 112 executing machine-readable program instructions to translation models in a computing environment.

[0040] Execution of the machine-readable program instructions by the processor 112 may enable the system 110 to perform its intended functions. The "hardware" may include a combination of discrete components, an integrated circuit, an application-specific integrated circuit, a field programmable gate array, a digital signal processor, or other suitable hardware. The "software" may include one or more objects, agents, threads, lines of code, routines, subroutines, separate software applications, two or more lines of code, or other suitable software structures operating in one or more software applications or on one or more processors. The processor 112 may include, for example, but is not limited to, microprocessors, microcomputers, microcontrollers, digital signal processors, central processing units, state machines, logic circuits, and any devices that manipulate data or signals based on operational instructions, and the like. Among other capabilities, the processor 112 may fetch and execute computer-readable

instructions in the memory 116 operationally coupled with the system 110 for performing tasks such as data processing, input/output processing, feature extraction, and/or any other functions. Any reference to a task in the present disclosure may refer to an operation being or that may be performed on data.

[0041] In the example that follows, assume that a user 102 of the system 110 desires to use the system 110 for recommending products to the users 102 based on interaction therebetween. The system 110 may be implemented in any one or combination of including, but not limited to, an electronic commerce (e-commerce) platform, a marketplace, a merchant platform, a hyperlocal platform, a super-mart platform, a media platform, a digital service platform, a social networking platform, a travel/services booking platform, a messaging platform, a bot processing platform, a virtual assistance platform, an Artificial Intelligence (AI) based platform, a blockchain marketplace, and the like. In such embodiments, the products 304 (shown in FIG. 3A) may include, but not be limited to, physical products, digital products, services, and the like, provided by the system 110. Further, in such embodiments, the products 304 may be categorized or clustered into one or more product categories 302.

[0042] In some embodiments, the product categories 302 may correspond to topics indicative of the preferences of one or more of the users 102. In an example where the system 110 corresponds to an e-commerce platform offering a plurality of products 304, the product categories 302 may be determined by clustering the plurality of products 304 based on one or more attributes thereof.

[0043] In some embodiments, the system 110 using the one or more processors 112, may create a plurality of instant communication interfaces 306 that allow corresponding computing devices 104 of a plurality of users 102 to exchange one or more messages therebetween. In some embodiments, the instant communication interfaces may be indicative of a system for enabling communication between the users 102. In an example, the instant communication interface 306 may be a chat room. In some embodiments, the instant communication interface 306 may provide for including, but not limited to, text-based instant messaging, synchronous conferencing, asynchronous conferencing, video conferencing, and the like.

[0044] In some embodiments, the instant communication interface 306 may be implemented in a client-server model, where the client corresponds to the

computing devices 104 associated with the users 102, and the server corresponds to the system 110. In some embodiments, the client-server model may have a subscriber-publisher design pattern. In other embodiments, the client-server model may have a request-response pattern. In such embodiments, the messages may be exchanged via Application Programming Interface (API) calls.

[0045] In the aforementioned embodiments, the system 110 may receive messages from the computing devices 104 of the users 102, and transmit the messages to the intended recipients. In some embodiments, the messages may be exchanged as any one or combination of including, but not limited to, electrical signals, digital signals, analog signals, radio signals, and the like. In some embodiments, the messages transmitted in the messages may be any one or more of including, but not limited to, natural language texts, images, audio, videos, data structures, and the like.

[0046] In other embodiments, the instant communication interface 306 may be a wired or wireless connection, such as through the communication network 106, between one or more of the users 102 to enable exchange of signals therebetween, the signals containing the intended messages.

[0047] In some embodiments, each instant communication interface 306 from the plurality of instant communication interfaces may correspond to at least one product category 302 determined from one or more product attributes of a plurality of products 304. In some embodiments, the product attributes may include, but not be limited to, product specifications, product reviews, seller reviews, seller identity data, tentative delivery time, quantity available, price, sales promotion data, discounts and offers available on the products, and the like.

[0048] In some embodiments, the instant communication interfaces 306 may be created in real-time based on the product categories 302 determined for the plurality of products 304. In some embodiments, the instant communication interfaces 306 may be dynamically created based on the one or more user attributes. In some embodiments, the system 110 may identify trends and patterns in the user attributes of the plurality of users 102, and dynamically create the instant communication interfaces 306 therewith.

[0049] In some embodiments, the system 110 may assign one or more instant communication interfaces from of the plurality of instant communication interfaces 306 to each of the plurality of users 102 based on one or more user

attributes of the users 102, and the one or more product attributes of the plurality of products 304 associated with each of the at least one product category 302. In some embodiments, the one or more user attributes may include one or more fixed attributes and one or more dynamic attributes. The fixed attributes may be indicative of including, but not limited to, date of birth, height, weight, gender, and the like. In some embodiments, the dynamic attributes may be indicative of including, but not limited to, user behaviour inferred from search history, distribution of searches based on the product categories 302, influence of seasonal trend information, location of accessing the system 110, tastes, interests, and preferences, and the like.

[0050] In some embodiments, to assign the plurality of instant communication interfaces 302 to the plurality of users 102, system 110 may generate one or more clusters 308 (shown in FIG. 3) of users of the plurality of users 102 based on the one or more user attributes. In some embodiments, the users 102 may be clustered using unsupervised learning techniques, but not limited thereto, based on the user attributes. In some embodiments, the clustering may be performed in real-time. In such embodiments, real-time clustering of the users 102 may allow the system 110 to recognize trends in user activity, and allocate the users to the instant communication interfaces 306 based on the recognized trends. In some embodiments, the system 110 may cluster the users 102 based on one or more of the user attributes thereof. In some examples, the system 110 may cluster the users 102 based on the location and the product category search history thereof in real-time. In such examples, the system 110, through real-time clustering, may be able to identify seasonal or periodic trends in user behaviour, such as increased purchases of sweets during festivals, and appropriately allocate the instant communication interfaces 306 to the users 102 such that users 102 within the same location searching for similar products may interact with each other to obtain genuine reviews on the products. The system 110 may assign one or more of the instant communication interfaces 302 corresponding to each of the one or more clusters 308.

[0051] In some embodiments, the system 110 may generate one or more recommendatory messages for each instant communication interface 306 based on the one or more messages exchanged through the plurality of instant communication interfaces 306 and the at least one product category 302

associated with the corresponding instant communication interfaces 306. In some embodiments, the recommendatory message may be indicative of a signal transmitted from the system to the plurality of users 102 interacting through the instant communication interface 306, the signal having one or more recommendations or product suggestions for the user 102. In some examples, the recommendatory messages may be indicative of answer to queries requested by the users 102. In other examples, the recommendatory messages may be indicative of sales pitches or product recommendations, but not limited thereto, generated based on the messages exchanged by the users 102 through the instant communication interface 306. In such embodiments, the system 110 provides product recommendations based on interaction between the plurality of users 102 and the one or more product attributes through the one or more recommendatory messages.

[0052] In some embodiments, wherein the one or more processors 202 generate the one or more recommendatory messages using an Artificial Intelligence (AI) engine 208 (shown in FIG. 2) corresponding to each of the plurality of instant communication interfaces 306, wherein the AI engine 202 may be trained to generate the one or more recommendatory messages based on the one or more product attributes of the plurality of products 304, the one or more messages exchanged in the corresponding instant communication interface 306, and the one or more user attributes.

[0053] In some embodiments, wherein the AI engine 202 may be a next-token prediction model that may be finetuned to generate the one or more recommendatory messages based on the one or more messages exchanged through the plurality of instant communication interfaces 306 such that the AI engine 202 predicts the tokens of the one or more recommendatory messages based on the sentiment of the plurality of users 102 in the one or more messages. In some embodiments, the AI engine 202 may be finetuned with a curated sales dataset such that the AI engine 202 includes product recommendations to the users in the recommendatory messages. In such embodiments, the recommendatory messages may include sales pitches, description of related products, offers and discounts for the plurality of users, and the like.

[0054] In some embodiments, system 110 may be configured to invoke one or more APIs associated with a plurality of external servers based on the one or more

messages exchanged in the plurality of instant communication interface 306. In some embodiments, the API calls may allow the system 110 to interact with and cause external systems to execute a function. In some examples, the system 110 may be configured to retrieve information associated with the products from the external servers. The system 110, thereby, may provide the users 102 with real-time information on the products. By invoking APIs, the system 110 may also be provided with functionalities of an autonomous agents. In some examples, the system 110 may invoke APIs associated with servers for sending reminders to the users 102 when a product becomes available. In other examples, the system 110 may invoke APIs associated with an order placement server to place an order for a product for the users 102, based on a delivery location and quantity information provided by the users 102 in the messages exchanged in the instant communication interface 306.

[0055] FIG. 2 illustrates an exemplary detailed block diagram representation 200 of the system 110, according to embodiments of the present disclosure.

[0001] In some embodiments, the system 110 may include the processor 112, the memory 116, and the interface 114. In some embodiments, the system 110 may include one or more processing engine(s) 202. In some embodiments, the processing engine(s) 202 may be implemented as a combination of hardware and programming (for example, programmable instructions) to implement one or more functionalities of the processing engine(s) 202. In examples described herein, such combinations of hardware and programming may be implemented in several different ways. For example, the programming for the processing engine(s) 202 may be processor-executable instructions stored on a non-transitory machine-readable storage medium and the hardware for the processing engine(s) 202 may include a processing resource (for example, one or more processors), to execute such instructions.

[0056] In some embodiments, the processing engines 202 may include a communication interface engine 204, a clustering engine 206, the AI engine 208, an execution engine 210, and other engines 212.

[0057] In some embodiments, the communication interface engine 204 may be configured to establish the instant communication interfaces 306 between the users 102, and the system 110.

[0058] In some embodiments, the clustering engine 206 may be configured to cluster the products 304 into one or more product categories 302 based on the one or more product categories. Further, the clustering engine 206 may cluster the users 102 into the one or more user clusters 308 based on the one or more user attributes. Thereafter, the clustering engine 206 may assign the users 102 with a corresponding instant communication interface 306 based on the user attributes and the product categories 302.

[0059] In some embodiments, the AI engine 202 may be configured to process messages exchanged in the instant communication interfaces 306 and generate the one or more recommendatory messages. In some embodiments, the AI engine 202 may be a large language model. In other embodiments, the AI engine 202 may be a large multimodal model trained. The AI engine 202 may be finetuned to process the messages exchanged through the instant communication interfaces 306, and generate output based therefrom. In some embodiments, the AI engine 202 may be finetuned to provide the natural language processing task, including, but not limited to, extractive question-answering tasks. In some embodiments, the AI engine 202 may be finetuned with product attributes such that question-answering functionality may be provided with next-token prediction. In other embodiments, the product attributes may be stored in vector databases to allow the AI engine 202 to retrieve the request data therefrom.

[0060] In other embodiments, the AI engine 202 may be configured to generate sales pitches or product recommendations to the users 102 based on the messages and the user attributes thereof. In some embodiments, the AI engine 202 may be configured to generate contextually relevant sales pitches or product recommendations for the users 102 in the instant communication interfaces 306. In some embodiments, the AI engine 202 may be prompt-engineered to generate the one or more recommendatory messages that may be contextually relevant, and optimized to facility transaction between the users 102 and the system 110.

[0061] In other embodiments, the AI engine 202 may be indicative of a rule-based expert system configured to execute one or more predefined sales rules to generate the recommendatory messages. In some examples, the AI engine 202 may determine a sentiment score based on the messages exchanged in the instant communication interface 306, and execute the one or more predefined sales rules therewith to generate contextually relevant recommendatory messages.

[0062] In some embodiments, the execution engine 210 may be configured to invoke one or more API calls based on the messages exchanged in the instant communication interface 306, for interacting with external servers.

Exemplary scenario

[0063] In an example shown in FIG. 3A, the system 110 may correspond to an e-commerce platform 300A. In such examples, the e-commerce platform 300A may offer products 304-1, 304-2, 304-3, and 304-4 for sale through the system 110. The system 110 may cluster the products 304-1, 304-2 into a first product category 302-1, and the products 304-3, 304-4 into a second product category 302-2. In some examples, each product 304 may belong to more than one category. Users 102-1, 102-2, 102-3, and 102-4 may interact with the e-commerce platform 300A, and may indicate behaviour to purchase products belonging to either of the product categories 302. The system 110 may further cluster the users 102-1, 102-2, and users 102-3, 102-3 into first user cluster 308-1 and second user cluster 308-2, respectively, based on their user attributes, and the product categories 302 they interact with. In such examples, the system 110 may cluster users having common tastes, interests, and preferences for the products 304 in the product categories 302 they interact with. The system 110 may assign instant communication interfaces 306-1, 306-2 to the users 102 belonging to the first and second user clusters 308-1, 308-2, respectively, thereby allowing said users 102 to exchange messages.

[0064] FIG. 3B illustrates an exemplary instant communication interface 300B, with user-1, user-2, the AI engine 202 represented by “Bot” exchanging messages therein. Further, the Bot may generate product recommendations to the users based on the messages exchanged.

[0065] FIG. 4 illustrates a flow chart depicting a method 400 for recommending products based on user interaction, according to embodiments of the present disclosure.

[0066] At step 402, the method 400 includes creating, by one or more processors such as the one or more processors 112 of FIGs. 1 and 2, a plurality of instant communication interfaces that allow corresponding computing devices of a plurality of users to exchange one or more messages therebetween, wherein each instant communication interface from the plurality of instant communication

interfaces corresponds to at least one product category determined from one or more product attributes of a plurality of products.

[0067] At step 404, the method 400 includes assigning, by the one or more processors, one or more instant communication interfaces from the plurality of instant communication interfaces to each of the plurality of users based on one or more user attributes thereof and the one or more product attributes of the plurality of products associated with each of the at least one product category. and

[0068] At step 406, the method 400 includes generating, by the one or more processors, one or more recommendatory messages based on the one or more messages exchanged through the plurality of instant communication interfaces and the at least one product category associated with the corresponding instant communication interfaces, thereby providing product recommendations based on interaction between the plurality of users and the one or more product attributes through the one or more recommendatory messages.

[0069] FIG. 5 illustrates a hardware platform 500 for implementation of the disclosed system 110, according to an example embodiment of the present disclosure. For the sake of brevity, the construction, and operational features of the system 110 which are explained in detail above are not explained in detail herein. Particularly, computing machines such as but not limited to internal/external server clusters, quantum computers, desktops, laptops, smartphones, tablets, and wearables which may be used to execute the system 110 or may include the structure of the hardware platform 500. As illustrated, the hardware platform 500 may include additional components not shown, and that some of the components described may be removed and/or modified. For example, a computer system with multiple GPUs may be located on external-cloud platforms, or internal corporate cloud computing clusters, or organizational computing resources, and the like.

[0070] The hardware platform 500 may be a computer system such as the system 110 that may be used with the embodiments described herein. The computer system may represent a computational platform that includes components that may be in a server or another computer system. The computer system may execute, by the processor 505 (e.g., a single or multiple processors) or other hardware processing circuit, the methods, functions, and other processes described herein. These methods, functions, and other processes may be

embodied as machine-readable instructions stored on a computer-readable medium, which may be non-transitory, such as hardware storage devices (e.g., RAM (random access memory), ROM (read-only memory), EPROM (erasable, programmable ROM), EEPROM (electrically erasable, programmable ROM), hard drives, and flash memory). The computer system may include the processor 505 that executes software instructions or code stored on a non-transitory computer-readable storage medium 510 to perform methods of the present disclosure. The software code includes, for example, instructions to gather data and documents and analyse documents.

[0071] The instructions on the computer-readable storage medium 510 are read and stored the instructions in storage 515 or in random access memory (RAM). The storage 515 may provide a space for keeping static data where at least some instructions could be stored for later execution. The stored instructions may be further compiled to generate other representations of the instructions and dynamically stored in the RAM such as RAM 520. The processor 505 may read instructions from the RAM 520 and perform actions as instructed.

[0072] The computer system may further include the output device 525 to provide at least some of the results of the execution as output including, but not limited to, visual information to users, such as external agents. The output device 525 may include a display on computing devices and virtual reality glasses. For example, the display may be a mobile phone screen or a laptop screen. GUIs and/or text may be presented as an output on the display screen. The computer system may further include an input device 530 to provide a user or another device with mechanisms for entering data and/or otherwise interacting with the computer system. The input device 530 may include, for example, a keyboard, a keypad, a mouse, or a touchscreen. Each of these output devices 525 and input device 530 may be joined by one or more additional peripherals. For example, the output device 525 may be used to display the results such as bot responses by the executable chatbot.

[0073] A network communicator 535 may be provided to connect the computer system to a network and in turn to other devices connected to the network including other clients, servers, data stores, and interfaces, for instance. A network communicator 535 may include, for example, a network adapter such as a LAN adapter or a wireless adapter. The computer system may include a data

sources interface 540 to access the data source 545. The data source 545 may be an information resource. As an example, a database of exceptions and rules may be provided as the data source 545. Moreover, knowledge repositories and curated data may be other examples of the data source 545.

[0074] While the foregoing describes various embodiments of the present disclosure, other and further embodiments of the present disclosure may be devised without departing from the basic scope thereof. The scope of the present disclosure is determined by the claims that follow. The present disclosure is not limited to the described embodiments, versions, or examples, which are included to enable a person having ordinary skill in the art to make and use the present disclosure when combined with information and knowledge available to the person having ordinary skill in the art.

ADVANTAGES OF THE PRESENT DISCLOSURE

[0075] The present disclosure provides a method and a system that allows users to retrieve product attributes using a chat interface.

[0076] The present disclosure provides a method and a system for that provide unbiased information on the products.

[0077] The present disclosure provides a method and a system that generates contextual sales-pitches in real-time.

[0078] The present disclosure provides a method and a system for obtaining reviews on products that are resilient to manipulation.

We Claim:

1. A system (110) for recommending products based on user interaction, comprising:

one or more processors (112);

a memory (114) coupled to the one or more processors (112), the memory (114) comprising one or more processor-executable instructions which, when executed, cause the one or more processors (112) to:

create a plurality of instant communication interfaces (306) that allow corresponding computing devices (104) of a plurality of users (102) to exchange one or more messages therebetween, wherein each instant communication interface (306) from the plurality of instant communication interfaces corresponds to at least one product category (302) determined from one or more product attributes of a plurality of products (304);

assign one or more instant communication interfaces from of the plurality of instant communication interfaces (306) to each of the plurality of users (102) based on one or more user attributes thereof and the one or more product attributes of the plurality of products (304) associated with each of the at least one product category (302); and

generate one or more recommendatory messages for each instant communication interface (306) based on the one or more messages exchanged through the plurality of instant communication interfaces (306) and the at least one product category (302) associated with the corresponding instant communication interfaces (306), thereby providing product recommendations based on interaction between the plurality of users (102) and the one or more product attributes through the one or more recommendatory messages.

2. The system (110) as claimed in claim 1, wherein to assign the plurality of instant communication interfaces (306) to the plurality of users (102), the one or more processors (202) are configured to:

generate one or more clusters (308) of users of the plurality of users (102) based on the one or more user attributes; and

assign one or more of the instant communication interfaces (302) corresponding to each of the one or more clusters (308).

3. The system (110) as claimed in claim 1, wherein the one or more processors (202) generate the one or more recommendatory messages using an Artificial Intelligence (AI) engine (208) corresponding to each of the plurality of instant communication interfaces (306), wherein the AI engine (202) is trained to generate the one or more recommendatory messages based on the one or more product attributes of the plurality of products (304), the one or more messages exchanged in the corresponding instant communication interface (306), and the one or more user attributes.
4. The system (110) as claimed in claim 3, wherein the AI engine (202) is a next-token prediction model that is finetuned to generate the one or more recommendatory messages based on the one or more messages exchanged through the plurality of instant communication interfaces (306) such that the AI engine (202) predicts the tokens of the one or more recommendatory messages based on the sentiment of the plurality of users (102) in the one or more messages.
5. The system (110) as claimed in claim 1, wherein the one or more processors (112) are configured to invoke one or more Application Programming Interfaces (APIs) associated with a plurality of external servers based on the one or more messages exchanged in the plurality of instant communication interface (306).
6. A method for recommending products based on user interaction, comprising:

creating, by one or more processors, a plurality of instant communication interfaces that allow corresponding computing devices of a plurality of users to exchange one or more messages therebetween, wherein each instant communication interface from the plurality of instant communication interfaces corresponds to at least one product category determined from one or more product attributes of a plurality of products;

assigning, by the one or more processors, one or more instant communication interfaces from the plurality of instant communication

interfaces to each of the plurality of users based on one or more user attributes thereof and the one or more product attributes of the plurality of products associated with each of the at least one product category; and

generating, by the one or more processors, one or more recommendatory messages based on the one or more messages exchanged through the plurality of instant communication interfaces and the at least one product category associated with the corresponding instant communication interfaces, thereby providing product recommendations based on interaction between the plurality of users and the one or more product attributes through the one or more recommendatory messages.

7. The method as claimed in claim 3, wherein for assigning the plurality of instant communication interfaces to the plurality of users, the method comprises:

generating, by the one or more processors, one or more cluster of users of the plurality of users based on the one or more user attributes; and

assigning, by the one or more processors, the instant communication interface corresponding to each of the one or more cluster of users.

8. The method as claimed in claim 6, wherein the method comprises generating, by the one or more processors, the one or more recommendatory messages using an Artificial Intelligence (AI) engine corresponding to each of the plurality of instant communication interfaces, wherein the AI engine is trained to generate the one or more recommendatory messages based on the one or more product attributes of the plurality of products, the one or more messages exchanged in the corresponding instant communication interface and the one or more user attributes.

9. The method as claimed in claim 8, wherein the AI engine is a next-token prediction model that is finetuned to generate the one or more recommendatory messages based on the one or more messages exchanged through the plurality of instant communication interfaces such that the AI engine predicts the tokens of the one or more recommendatory messages based on the sentiment of the plurality of users in the one or more messages.

10. The method as claimed in claim 6, wherein the method comprises invoking, by the one or more processors, one or more Application Programming Interfaces (APIs) associated with a plurality of external servers based on the one or more messages exchanged in the plurality of instant communication interface.

ABSTRACT

METHOD AND SYSTEM FOR PRODUCT RECOMMENDATION BASED ON USER INTERACTION

The present disclosure relates to a method (400) and a system (110) for recommending products based on user interaction. The system (110) creates a plurality of instant communication interfaces (306) that allow corresponding computing devices (104) of a plurality of users (102) to exchange one or more messages therebetween. The system (110) assigns instant communication interfaces (306) to the users (102) based on user attributes thereof and product attributes of the products (304). The system (110) generates one or more recommendatory messages for each instant communication interface (306) based on the messages exchanged through the instant communication interfaces (306) and the at least one product category (302) associated with the corresponding instant communication interfaces (306), thereby providing product recommendations based on interaction between the plurality of users (102) and the one or more product attributes through the one or more recommendatory messages.

FIG. 1 shall be the reference figures.