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METHOD, SYSTEM, AND COMPUTER PROGRAM PRODUCT FOR AUTOMATICALLY GENERATING A RECOMMENDED ORDER

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**TITLE: METHOD, SYSTEM, AND COMPUTER PROGRAM PRODUCT FOR
AUTOMATICALLY GENERATING A RECOMMENDED ORDER**

VISA

Prasun Ghosh

TECHNICAL FIELD

[0001] The disclosure is generally related to generating recommended orders and, in some non-limiting embodiments or aspects, to a method, system, and computer program product for automatically generating a recommended order.

BACKGROUND

[0002] In today's busy world, many households do not have time to shop at a grocery store for balanced and seasonal fresh foods based on their specific needs, at least in part because of inefficiencies associated with existing grocery ordering processes. Certain processes require users to consider the grocery needs of the household and manually generate a grocery list to be fulfilled. Such processes require the user to review the current stock of groceries available in the household to identify the needs thereof, and as such, human errors may occur (e.g., forgetting to identify certain needs). Additionally, the user may be unaware of the fresh (e.g., perishable) foods, including but not limited to as seasonal foods, available at the grocery store. Moreover, it may be difficult for a user to accurately identify foods that provide the appropriate (e.g., recommended, balanced, and/or the like) amount of certain nutrients for consumption. Further, it may be difficult for grocery stores to purchase the appropriate amount of perishable items because they may be unaware of planned purchases by users (e.g., customers) in the vicinity of the store prior to the expiration date of such perishable items.

SUMMARY

[0003] Accordingly, it is an object of the presently disclosed subject matter to provide methods, systems, and computer program products for automatically generating a recommended order.

[0004] According to some non-limiting embodiments or aspects, a computer-implemented method includes: receiving, with at least one processor, transaction data associated with a plurality of transactions of a user, the transaction data including line-item data associated with at least one item for each transaction of the plurality of transactions; receiving, with at least one processor, merchant inventory data associated with at least one merchant; generating, with at

least one processor, a recommended order for the user based on the transaction data and the merchant inventory data, where the recommended order includes a plurality of items from the at least one merchant; and communicating, with at least one processor, the recommended order to a user device associated with the user.

[0005] In some non-limiting embodiments or aspects, the plurality of transactions may include at least one transaction between the user and a first merchant and at least one transaction between a user and a second merchant different from the first merchant. The merchant inventory data may be associated with the first merchant, and the recommended order may include a plurality of items from the first merchant. At least one item of the plurality of items may include a perishable grocery item. The method may include receiving, with at least one processor, an approval message configured to cause processing of the recommended order. The method may include receiving, with at least one processor, an edited order including at least one item or amount of an item different from the recommended order, where the edited order is configured to cause processing of the edited order. The method may include receiving, with at least one processor, user inventory data associated with the user, where the user inventory data is generated by a smart appliance associated with the user, where the recommended order is based on the user inventory data. The user inventory data may be received by the smart appliance: analyzing a plurality of items contained in the smart appliance; determining at least one item to be added to the recommended order based on the analysis of the plurality of items; and communicating the at least one item to be added to the recommended order as the user inventory data. The user inventory data may be received by the smart appliance: analyzing a plurality of items contained in the smart appliance; generating a list of the plurality of items contained in the smart appliance; and communicating the list as the user inventory data. The method may include receiving, with at least one processor, at least one user settings message, where the user settings message includes at least one order preference associated with the user. The order preference may include at least one of a user allergy, a user item preference, a user order frequency preference, a user budget preference, and a user delivery preference.

[0006] In some non-limiting embodiments or aspects, generating the recommended order may include: analyzing the transaction data to determine a historical consumption pattern of the user associated with at least one item of the plurality of items; and including the at least one item of the plurality of items on the recommended order based on the historical consumption pattern. Generating the recommended order may include: analyzing the transaction data to determine an expected expiration date associated with at least one item of the plurality of items; and including the at least one item of the plurality of items on the recommended order based on the expected expiration date. The method may include generating, with at least one processor, a plurality of recommended orders, each recommended order associated with at least one user; and communicating, with at least one processor, a re-order request based on the plurality of recommended orders. The re-order request may be communicated from a merchant device of the at least one merchant to a supplier device of a supplier associated with the at least one merchant. Generating the recommended order may include analyzing the transaction data using at least one machine learning algorithm. The line-item data may include a unique item identifier. The recommended order may be communicated to the user device via at least one of a text message, an email message, and a notification to a mobile application. At least one item of the plurality of items may include a seasonal grocery item. The at least one merchant may include a grocery store.

[0007] According to some non-limiting embodiments or aspects, a system may include: at least one processor programmed or configured to perform any of the techniques disclosed herein.

[0008] According to some non-limiting embodiments or aspects, a computer program product may include at least one non-transitory computer-readable medium including one or more instructions that, when executed by at least one processor, cause the at least one processor to perform any of the techniques disclosed herein.

[0009] Further embodiments or aspects are set forth in the following numbered clauses:

[0010] Clause 1: A computer-implemented method, comprising: receiving, with at least one processor, transaction data associated with a plurality of transactions of a user, the transaction data comprising line-item data associated with at least one item for each transaction of the plurality of transactions; receiving, with at least one processor, merchant inventory data associated with at least one merchant; generating, with at least one processor, a recommended order for the user based on the transaction data and the merchant inventory data, wherein the recommended order comprises a plurality of items from the at least one merchant; and communicating, with at least one processor, the recommended order to a user device associated with the user.

[0011] Clause 2: The method of clause 1, wherein the plurality of transactions comprise at least one transaction between the user and a first merchant and at least one transaction between a user and a second merchant different from the first merchant.

[0012] Clause 3: The method of clause 1 or 2, wherein the merchant inventory data is associated with the first merchant, and the recommended order comprises a plurality of items from the first merchant.

[0013] Clause 4: The method of any of clauses 1-3, wherein at least one item of the plurality of items comprises a perishable grocery item.

[0014] Clause 5: The method of any of clauses 1-4, further comprising: receiving, with at least one processor, an approval message configured to cause processing of the recommended order.

[0015] Clause 6: The method of any of clauses 1-5, further comprising: receiving, with at least one processor, an edited order including at least one item or amount of an item different from the recommended order, wherein the edited order is configured to cause processing of the edited order.

[0016] Clause 7: The method of any of clauses 1-6, further comprising: receiving, with at least one processor, user inventory data associated with the user, wherein the user inventory data is generated by a smart appliance associated with the user, wherein the recommended order is based on the user inventory data.

[0017] Clause 8: The method of any of clauses 1-7, wherein the smart appliance is configured to: analyze a plurality of items contained in the smart appliance; determine at least one item to be added to the recommended order based on the analysis of the plurality of items; generate the user inventory data based on the at least one item to be added to the recommended order; and communicate the user inventory data.

[0018] Clause 9: The method of any of clauses 1-8, the smart appliance is configured to: analyze a plurality of items contained in the smart appliance; generate a list of the plurality of items contained in the smart appliance, wherein the user inventory data comprises the list; and communicate the user inventory data.

[0019] Clause 10: The method of any of clauses 1-9, further comprising: receiving, with at least one processor, at least one user settings message, wherein the user settings message comprises at least one order preference associated with the user.

[0020] Clause 11: The method of any of clauses 1-10, wherein the order preference comprises at least one of a user allergy, a user item preference, a user order frequency preference, a user budget preference, or a user delivery preference.

[0021] Clause 12: The method of any of clauses 1-11, wherein generating the recommended order comprises: analyzing the transaction data to determine a historical consumption pattern of the user associated with at least one item of the plurality of items; and including the at least one item of the plurality of items on the recommended order based on the historical consumption pattern.

[0022] Clause 13: The method of any of clauses 1-12, wherein generating the recommended order comprises: analyzing the transaction data to determine an expected expiration date associated with at least one item of the plurality of items; and including the at least one item of the plurality of items on the recommended order based on the expected expiration date.

[0023] Clause 14: The method of any of clauses 1-13, further comprising: generating, with at least one processor, a plurality of recommended orders, each recommended order associated with at least one user; and communicating, with at least one processor, a re-order request based on the plurality of recommended orders.

[0024] Clause 15: The method of any of clauses 1-14, wherein the re-order request is communicated from a merchant device of the at least one merchant to a supplier device of a supplier associated with the at least one merchant.

[0025] Clause 16: The method of any of clauses 1-15, wherein generating the recommended order comprises analyzing the transaction data using at least one machine learning algorithm.

[0026] Clause 17: The method of any of clauses 1-16, wherein the line-item data comprises a unique item identifier.

[0027] Clause 18: The method of any of clauses 1-17, wherein the recommended order is communicated to the user device via at least one of a text message, an email message, and a notification to a mobile application.

[0028] Clause 19: The method of any of clauses 1-18, wherein at least one item of the plurality of items comprises a seasonal grocery item.

[0029] Clause 20: The method of any of clauses 1-19, wherein the at least one merchant comprises a grocery store.

[0030] Clause 21: A system for automatically generating a recommended order, comprising at least one processor programmed or configured to: receive transaction data associated with a plurality of transactions of a user, the transaction data comprising line-item data associated with at least one item for each transaction of the plurality of transactions; receive merchant inventory data associated with at least one merchant; generate a recommended order for the user based on the transaction data and the merchant inventory data, wherein the recommended order comprises a plurality of items from the at least one merchant; and communicate the recommended order to a user device associated with the user.

[0031] Clause 22: The system of clause 21, wherein the plurality of transactions comprise at least one transaction between the user and a first merchant and at least one transaction between a user and a second merchant different from the first merchant.

[0032] Clause 23: The system of clause 21 or 22, wherein the merchant inventory data is associated with the first merchant, and the recommended order comprises a plurality of items from the first merchant.

[0033] Clause 24: The system of any of clauses 21-23, wherein at least one item of the plurality of items comprises a perishable grocery item.

[0034] Clause 25: The system of any of clauses 21-24, wherein the at least one processor is further programmed or configured to: receive an approval message configured to cause processing of the recommended order.

[0035] Clause 26: The system of any of clauses 21-25, wherein the at least one processor is further programmed or configured to: receive an edited order including at least one item or amount of an item different from the recommended order, wherein the edited order is configured to cause processing of the edited order.

[0036] Clause 27: The system of any of clauses 21-26, wherein the at least one processor is further programmed or configured to: receive user inventory data associated with the user, wherein the user inventory data is generated by a smart appliance associated with the user, wherein the recommended order is based on the user inventory data.

[0037] Clause 28: The system of any of clauses 21-27, the smart appliance is configured to: analyze a plurality of items contained in the smart appliance; determine at least one item to be added to the recommended order based on the analysis of the plurality of items; generate the user inventory data based on the at least one item to be added to the recommended order; and communicate the user inventory data.

[0038] Clause 29: The system of any of clauses 21-28, wherein the smart appliance is configured to: analyze a plurality of items contained in the smart appliance; generate a list of the plurality of items contained in the smart appliance, wherein the user inventory data comprises the list; and communicate the user inventory data.

[0039] Clause 30: The system of any of clauses 21-29, wherein the at least one processor is further programmed or configured to: receive at least one user settings message, wherein the user settings message comprises at least one order preference associated with the user.

[0040] Clause 31: The system of any of clauses 21-30, wherein the order preference comprises at least one of a user allergy, a user item preference, a user order frequency preference, a user budget preference, or a user delivery preference.

[0041] Clause 32: The system of any of clauses 21-31, wherein generating the recommended order comprises: analyzing the transaction data to determine a historical consumption pattern of the user associated with at least one item of the plurality of items; and including the at least one item of the plurality of items on the recommended order based on the historical consumption pattern.

[0042] Clause 33: The system of any of clauses 21-32, wherein generating the recommended order comprises: analyzing the transaction data to determine an expected expiration date associated with at least one item of the plurality of items; and including the at least one item of the plurality of items on the recommended order based on the expected expiration date.

[0043] Clause 34: The system of any of clauses 21-33, wherein the at least one processor is further programmed or configured to: generate a plurality of recommended orders, each recommended order associated with at least one user; and communicate a re-order request based on the plurality of recommended orders.

[0044] Clause 35: The system of any of clauses 21-34, wherein the re-order request is communicated from a merchant device of the at least one merchant to a supplier device of a supplier associated with the at least one merchant.

[0045] Clause 36: The system of any of clauses 21-35, wherein generating the recommended order comprises analyzing the transaction data using at least one machine learning algorithm.

[0046] Clause 37: The system of any of clauses 21-36, wherein the line-item data comprises a unique item identifier.

[0047] Clause 38: The system of any of clauses 21-37, wherein the recommended order is communicated to the user device via at least one of a text message, an email message, and a notification to a mobile application.

[0048] Clause 39: The system of any of clauses 21-38, wherein at least one item of the plurality of items comprises a seasonal grocery item.

[0049] Clause 40: The system of any of clauses 21-39, wherein the at least one merchant comprises a grocery store.

[0050] These and other features and characteristics of the present disclosure, as well as the methods of operation and functions of the related elements of structures and the combination of parts and economies of manufacture, will become more apparent upon consideration of the following description and the appended claims with reference to the accompanying drawings and appendix, all of which form a part of this specification, wherein like reference numerals designate corresponding parts in the various figures. It is to be expressly understood, however, that the drawings are for the purpose of illustration and description only and are not intended as a definition of the limits of the present disclosure. As used in the specification and the claims, the singular form of “a,” “an,” and “the” include plural referents unless the context clearly dictates otherwise.

BRIEF DESCRIPTION OF THE DRAWINGS

[0051] Additional advantages and details of the present disclosure are explained in greater detail below with reference to the exemplary embodiments that are illustrated in the accompanying schematic figures, in which:

[0052] FIG. 1 shows a schematic diagram of a system for automatically generating a recommended order according to some non-limiting embodiments or aspects;

[0053] FIG. 2 shows a schematic diagram of a system for automatically generating a recommended order according to some non-limiting embodiments or aspects;

[0054] FIG. 3 shows a graphical user interface displaying a recommended order according to some non-limiting embodiments or aspects; and

[0055] FIG. 4 shows a schematic diagram of components of one or more devices of FIGS. 1 and 2 according to some non-limiting embodiments or aspects.

DETAILED DESCRIPTION

[0056] For purposes of the description hereinafter, the terms “end,” “upper,” “lower,” “right,” “left,” “vertical,” “horizontal,” “top,” “bottom,” “lateral,” “longitudinal,” and derivatives thereof shall relate to the disclosure as it is oriented in the drawing figures. However, it is to be understood that the disclosure may assume various alternative variations and step sequences, except where expressly specified to the contrary. It is also to be understood that the specific devices and processes illustrated in the attached drawings, and described in the following specification, are simply exemplary embodiments or aspects of the disclosure. Hence, specific dimensions and other physical characteristics related to the embodiments or aspects of the embodiments disclosed herein are not to be considered as limiting unless otherwise indicated.

[0057] No aspect, component, element, structure, act, step, function, instruction, and/or the like used herein should be construed as critical or essential unless explicitly described as such. Also, as used herein, the articles “a” and “an” are intended to include one or more items and may be used interchangeably with “one or more” and “at least one.” Furthermore, as used herein, the term “set” is intended to include one or more items (e.g., related items, unrelated items, a combination of related and unrelated items, and/or the like) and may be used interchangeably with “one or more” or “at least one.” Where only one item is intended, the term “one” or similar language is used. Also, as used herein, the terms “has,” “have,” “having,” or the like are intended to be open-ended terms. Further, the phrase “based on” is intended to mean “based at least partially on” unless explicitly stated otherwise.

[0058] As used herein, the term “account identifier” may include one or more types of identifiers associated with a user account (e.g., a PAN, a primary account number, a card number, a payment card number, a token, and/or the like). In some non-limiting embodiments, an issuer institution may provide an account identifier (e.g., a PAN, a token, and/or the like) to a user that uniquely identifies one or more accounts associated with that user. The account identifier may be embodied on a physical financial instrument (e.g., a payment device, a payment card, a credit card, a debit card, and/or the like) and/or may be electronic information communicated to the

user that the user may use for electronic payments. In some non-limiting embodiments, the account identifier may be an original account identifier, where the original account identifier was provided to a user at the creation of the account associated with the account identifier. In some non-limiting embodiments, the account identifier may be an account identifier (e.g., a supplemental account identifier) that is provided to a user after the original account identifier was provided to the user. For example, if the original account identifier is forgotten, stolen, and/or the like, a supplemental account identifier may be provided to the user. In some non-limiting embodiments, an account identifier may be directly or indirectly associated with an issuer institution such that an account identifier may be a token that maps to a PAN or other type of identifier. Account identifiers may be alphanumeric, any combination of characters and/or symbols, and/or the like. An issuer institution may be associated with a bank identification number (BIN) that uniquely identifies the issuer institution.

[0059] As used herein, the terms “communication” and “communicate” may refer to the reception, receipt, transmission, transfer, provision, and/or the like of information (e.g., data, signals, messages, instructions, commands, and/or the like). For one unit (e.g., a device, a system, a component of a device or system, combinations thereof, and/or the like) to be in communication with another unit means that the one unit is able to directly or indirectly receive information from and/or send (e.g., transmit) information to the other unit. This may refer to a direct or indirect connection that is wired and/or wireless in nature. Additionally, two units may be in communication with each other even though the information transmitted may be modified, processed, relayed, and/or routed between the first and second unit. For example, a first unit may be in communication with a second unit even though the first unit passively receives information and does not actively send information to the second unit. As another example, a first unit may be in communication with a second unit if at least one intermediary unit (e.g., a third unit located between the first unit and the second unit) processes information received from the first unit and sends the processed information to the second unit. In some non-limiting embodiments or aspects, a message may refer to a network packet (e.g., a data packet and/or the like) that includes data.

[0060] As used herein, the term “computing device” may refer to one or more electronic devices configured to process data. A computing device may, in some examples, include the necessary components to receive, process, and output data, such as a processor, a display, a memory, an input device, a network interface, and/or the like. A computing device may be a mobile device. As an example, a mobile device may include a cellular phone (e.g., a smartphone or standard cellular phone), a portable computer, a wearable device (e.g., watches, glasses, lenses, clothing, and/or the like), a personal digital assistant (PDA), and/or other like devices. A computing device may also be a desktop computer or other form of non-mobile computer. The computing device may be a smart appliance, such as a smart refrigerator.

[0061] As used herein, the terms “issuer institution,” “payment device issuer,” “issuer,” or “issuer bank” may refer to one or more entities that provide accounts to customers for conducting transactions (e.g., payment transactions), such as initiating credit and/or debit payments. For example, an issuer institution may provide an account identifier, such as a personal account number (PAN), to a customer that uniquely identifies one or more accounts associated with that customer. The account identifier may be embodied on a payment device, such as a physical financial instrument, e.g., a payment card, and/or may be electronic and used for electronic payments. The terms “issuer institution” and “issuer institution system” may also refer to one or more computer systems operated by or on behalf of an issuer institution, such as a server computer executing one or more software applications. For example, an issuer institution system may include one or more authorization servers for authorizing a transaction.

[0062] As used herein, the term “merchant” may refer to one or more entities (e.g., operators of retail businesses that provide goods and/or services, and/or access to goods and/or services, to a user (e.g., a customer, a consumer, a customer of the merchant, and/or the like) based on a transaction (e.g., a payment transaction)). As used herein, “merchant system” may refer to one or more computer systems operated by or on behalf of a merchant, such as a server computer

executing one or more software applications. As used herein, the term “product” may refer to one or more goods and/or services offered by a merchant.

[0063] As used herein, the term “payment device” may refer to a payment card (e.g., a credit or debit card), a gift card, a smartcard, smart media, a payroll card, a healthcare card, a wrist band, a machine-readable medium containing account information, a keychain device or fob, an RFID transponder, a retailer discount or loyalty card, a cellular phone, an electronic wallet mobile application, a personal digital assistant (PDA), a pager, a security card, a computer, an access card, a wireless terminal, a transponder, and/or the like. In some non-limiting embodiments, the payment device may include volatile or non-volatile memory to store information (e.g., an account identifier, a name of the account holder, and/or the like).

[0064] As used herein, a “point-of-sale (POS) device” may refer to one or more devices, which may be used by a merchant to initiate transactions (e.g., a payment transaction), engage in transactions, and/or process transactions. For example, a POS device may include one or more computers, peripheral devices, card readers, near-field communication (NFC) receivers, radio frequency identification (RFID) receivers, and/or other contactless transceivers or receivers, contact-based receivers, payment terminals, computers, servers, input devices, and/or the like.

[0065] As used herein, a “point-of-sale (POS) system” may refer to one or more computers and/or peripheral devices used by a merchant to conduct a transaction. For example, a POS system may include one or more POS devices and/or other like devices that may be used to conduct a payment transaction. A POS system (e.g., a merchant POS system) may also include one or more server computers programmed or configured to process online payment transactions through webpages, mobile applications, and/or the like.

[0066] As used herein, the term "server" may refer to or include one or more computing devices that are operated by or facilitate communication and processing for multiple parties in a network environment, such as the Internet, although it will be appreciated that communication may be facilitated over one or more public or private network environments and that various

other arrangements are possible. Further, multiple computing devices (e.g., servers, point-of-sale (POS) devices, mobile devices, and/or the like) directly or indirectly communicating in the network environment may constitute a "system." Reference to "a server" or "a processor," as used herein, may refer to a previously-recited server and/or processor that is recited as performing a previous step or function, a different server and/or processor, and/or a combination of servers and/or processors. For example, as used in the specification and the claims, a first server and/or a first processor that is recited as performing a first step or function may refer to the same or different server and/or a processor recited as performing a second step or function. As further used herein, the term "server" may refer to a member node of a computational cluster.

[0067] As used herein, the term "transaction service provider" may refer to an entity that receives transaction authorization requests from merchants or other entities and provides guarantees of payment, in some cases through an agreement between the transaction service provider and the issuer institution. In some non-limiting embodiments, a transaction service provider may include a credit card company, a debit card company, and/or the like. As used herein, the term "transaction service provider system" may also refer to one or more computer systems operated by or on behalf of a transaction service provider, such as a transaction processing server executing one or more software applications. A transaction processing server may include one or more processors and, in some non-limiting embodiments, may be operated by or on behalf of a transaction service provider.

[0068] Non-limiting embodiments or aspects of the present disclosure are directed to methods, systems, and computer program products for automatically generating a recommended order. Non-limiting embodiments or aspects enable a recommended order to be automatically generated for a user based on line-item transaction data associated with the user. The recommended order may also be generated based on merchant inventory data associated with the merchant and/or user inventory data associated with the user and generated by a smart appliance associated with the user. This data may enable the system to automatically generate

an accurate recommended order for a user without the user manually selecting the items associated with the order. Non-limiting embodiments or aspects enable the user to approve the automatically generated order to cause the recommended order to be processed. Non-limiting embodiments or aspects enable the user to edit the automatically generated order to cause the edited order to be processed. Non-limiting embodiments or aspects enable the merchant to more efficiently and accurately re-order items from a supplier based on the automatically generated orders for the user. Non-limiting embodiments or aspects of the system increase the accuracy and efficiency with which the re-order of perishable grocery items is effected, based on the user's transaction data and/or merchant inventory data and/or user inventory data.

[0069] Referring to FIG. 1, a system 100 is shown for automatically generating a recommended order according to some non-limiting embodiments or aspects. The system 100 may include a user device 102 of a user (e.g., a consumer) in communication with a merchant system 104 of a merchant. The user device 102 may be a computing device. The user device 102 may communicate with the merchant system 104 to initiate electronic payment transactions with the merchant system 104 using a payment device associated with the user. The merchant system 104 may communicate with a transaction processing system 106 of a transaction service provider associated with the user and/or an issuer system (not shown) of an issuer associated with the user to process (e.g., authorize, clear, settle, and/or the like) the electronic payment transactions (e.g., via one or more authorization requests, authorization responses, authentication requests, authentication responses, clearing requests, clearing responses, settlement requests, settlement responses, and/or the like).

[0070] The transaction processing system 106 may be associated with a transaction service provider, which in turn may be associated with a payment device of the user. The transaction processing system 106 may receive and/or store transaction data from the merchant system 104 in connection with transactions conducted between the user (e.g., via the user device 102) and the merchant system 104, between the user and other merchant systems, and/or the like. Additionally or alternatively, transaction processing system 106 may collect and/or store such

transaction data in association with the user. The transaction data may include any data collected in association with processing electronic payment transactions, such as the data elements specified in ISO 8583. Additionally or alternatively, the transaction data may include line-item data associated with items purchased by the user from the merchant. In some non-limiting embodiments or aspects, the merchant system 104 may communicate the line-item data to the transaction processing system 106 when the user is enrolled in at least one program with the merchant, such as a program to enable the merchant system 104, the transaction processing system 106, an order recommendation system 108, and/or the like to automatically generate recommended orders. The line-item data may include details about the specific items purchased by the user in a transaction, such as the brand and/or model of a particular item, the price thereof, the quantity purchased, a unique item identifier (e.g., UPC code, barcode, QR code), expiration date, and/or the like.

[0071] The transaction processing system 106 may communicate the transaction data associated with the user to an order recommendation system 108. The order recommendation system 108 may be operated by or on behalf of the transaction service provider, the merchant, and/or another third-party entity. In some non-limiting embodiments, the order recommendation system 108 and the transaction processing system 106 may be components of the same system.

[0072] With continued reference to FIG. 1, the order recommendation system 108 may receive merchant inventory data associated with the merchant of the merchant system 104. The merchant inventory data may include items currently available at the merchant and/or a quantity of those items available at the merchant. The merchant inventory data may also include data associated with when an item not currently available at the merchant is expected to again be available at the merchant.

[0073] The order recommendation system 108 may generate a recommended order for the user based on the received transaction data associated with the user and the merchant inventory

data associated with the merchant. The recommended order may include a plurality of items from the merchant. In some non-limiting embodiments or aspects, the merchant may be a grocery store selling fresh and/or preserved foods. The grocery store may include a supermarket, a convenience store, a farmers market, a delicatessen, and/or the like. The items may include grocery items, including fresh or preserved foods. For example, at least one grocery item may be a perishable grocery item. A perishable grocery item may be one that is not heat-treated, frozen, or otherwise preserved in a manner so as to prevent the quality of the food from being adversely affected if held longer than a predetermined number of calendar days (e.g., 7 calendar days and/or the like) under normal shipping and/or storage conditions. Additionally or alternatively, at least one grocery item may be a seasonal grocery item. A seasonal grocery item may be an item that is not available at a grocery store in a given geographical region year round but only during certain time periods of the year.

[0074] With continued reference to FIG. 1, the order recommendation system 108 may communicate the generated recommended order to the user device 102 (e.g., directly or via at least one intermediary system, such as the merchant system 104, the transaction processing system 106, and/or the like). For example, such communication may cause and/or enable the user to accept, edit, and/or reject the recommended order, e.g., via the user device 102. In some non-limiting embodiments or aspects, the recommended order may be communicated to the user device 102 via at least one of a text message, an email message, a notification to a mobile application, and the like. Additionally or alternatively, the recommended order may be displayed on the user device 102 via a graphical user interface, e.g., in a web browser, an email application, a stand-alone application (e.g., a grocery ordering mobile application and/or the like), and/or the like.

[0075] In some non-limiting embodiments or aspects, the order recommendation system 108 may generate a plurality of recommended orders. For example, each recommended order may be associated with at least one user.

[0076] Referring to FIG. 2, a system 150 is shown for automatically generating a recommended order according to some non-limiting embodiments or aspects. The system 150 from FIG. 2 may include the same or similar features as described in connection with the system 100 from FIG. 1, and/or may include the following additional features. The transaction processing system 106 may be in communication with a plurality of merchant systems 104a, 104b conducting transactions with the user device 102, such that the transaction processing system receives transaction data associated with transactions conducted by the user across multiple merchants. The user device 102 may initiate a plurality of transactions, with at least one transaction being initiated with a first merchant system 104a and at least one transaction being initiated with a second merchant system 104b, such that the transaction data received by the transaction processing system 106, and communicated to the order recommendation system 108 comprises transaction data from multiple merchant systems 104a, 104b.

[0077] With continued reference to FIG. 2, in some non-limiting embodiments or aspects, the merchant inventory data may be associated with the first merchant system 104a, and the recommended order generated by the order recommendation system 108 may include a plurality of items from the first merchant system 104a. However, the generated recommended order may be based on transaction data from the first merchant system 104a and the second merchant system 104b, so as to more accurately capture the user's purchasing history. The first merchant system 104a and/or the second merchant system 104b may consent to sharing their merchant inventory data and communicate the merchant inventory data to the order recommendation system 108 and/or the first merchant system 104a and/or the second merchant system 104b may receive the recommended order from the order recommendation system 108 and communicate a response thereto indicating which items from the recommended order are contained in the merchant's current inventory and/or which items from the recommended order are not contained in the merchant's current inventory.

[0078] Referring again to FIGS. 1 and 2, a smart appliance 110 associated with the user may be in communication with the order recommendation system 108. The order recommendation

system 108 may receive user inventory data associated with the user from the smart appliance 110. As used herein, a “smart appliance” refers to a household appliance configured to communicate with another computing device (e.g., the user device 102, at least one device of the merchant system 104, at least one device of the transaction service provider system 106, at least one device of the order recommendation system 108, and/or the like). For example, the smart appliance 110 may be in communication with the user device 102, which may be a smartphone, a tablet computer, a mobile computing device, a laptop, and/or the like of the user. In some non-limiting embodiments, the user may control the smart appliance 110 (e.g., certain features thereof) by a computing device (e.g., the user device 102 and/or the like) communicating at least one command to be executed by the smart appliance 110. In some non-limiting embodiments, the smart appliance 110 may communicate a notification to the user based on an event being detected by the smart appliance 110.

[0079] In some non-limiting embodiments or aspects, the smart appliance 110 may include a smart refrigerator. The smart refrigerator may include at least one scanner, user interface, camera, detector, and/or the like to track inventory of items contained therein. The smart appliance 110 may determine user inventory data based on the items determined to be in the smart appliance 110. The smart appliance 110 may determine the user inventory data by analyzing a plurality of items contained in the smart appliance 110. The smart appliance 110 may determine at least one item to be added to the recommended order based on the analysis of the plurality of items. This determination may be made based on an item not being present in the smart appliance 110, the quantity or amount of the item being low in the smart appliance 110, and/or the duration the item has been contained in the smart appliance 110. The smart appliance 110 may communicate the item to be added to the recommended order as the user inventory data to the order recommendation system 108. The order recommendation system 108 may add the item to the recommended order.

[0080] In some non-limiting embodiments or aspects, the smart appliance 110 may determine the user inventory data by analyzing a plurality of items contained in the smart appliance 110.

The smart appliance 110 may generate a list of the plurality of items contained in the smart appliance 110, which may include quantity or amount of the item and/or a length of time the item has been contained in the smart appliance 110. The smart appliance 110 may communicate the list as the user inventory data to the order recommendation system 108. The order recommendation system 108 may generate the recommended order based on the list.

[0081] With continued reference to FIGS. 1 and 2, the user device 102 may communicate a user settings message to the order recommendation system 108. The user settings message may include at least one order preference associated with the user, and the order recommendation system 108 may generate the recommended order based on the user settings message. The order preference may include at least one of a user allergy (e.g., a peanut allergy, gluten intolerance, and/or the like), a user item preference (e.g., a brand or specific item preference, etc.), a user order frequency (e.g., weekly, monthly, and/or the like), a user budget preference (e.g., monthly grocery budget of \$500, and/or the like), user delivery preference (e.g., in-store pick-up, shipping to home address, and/or the like).

[0082] With continued reference to FIGS. 1 and 2, the merchant system 104 may communicate with a supplier system 112 of a supplier supplying grocery items to the merchant for sale. The merchant system 104 may communicate a re-order request to the supplier system 112 to cause the supplier system 112 to send further items to the merchant. The re-order request may be based on a current inventory of the merchant. The re-order request may be based on the plurality of recommended orders generated by the order recommendation system 108 for various users of the merchant, including historical recommended orders, accepted recommended orders, and/or accepted edited orders. As such, the re-order request may enable the merchant system 104 to more efficiently re-order items from the supplier system 112 based on a more accurate forecasting of the items expected to be purchased by users and the consumption pattern associated with those items by users.

[0083] With continued reference to FIGS. 1 and 2, the order recommendation system 108 may generate a recommended order for a user based at least on the transaction data of the user and the merchant inventory data. The order recommendation system 108 may generate the recommended order by analyzing the transaction data of the user to determine a historical consumption pattern of the item by the user and include or exclude the item from the recommended order based on the historical consumption pattern. For example, based on the transaction data, the order recommendation system 108 may determine that the user consumes the item in a certain time period (e.g., one month and/or the like), such that the item is added to the recommended order at approximately the time (within 1 day, 1 week, 1 month, etc.) the item is expected to be (e.g., likely to be, determined to be, and/or the like) consumed (e.g., completely consumed and/or the like) by the user.

[0084] The order recommendation system 108 may generate the recommended order by analyzing the transaction data of the user to determine an expected expiration date of the item and include or exclude the item from the recommended order based on the expected expiration date of the item. For example, based on the transaction data, the order recommendation system 108 may determine that the item expires in 1 month, such that the item is added to the recommended order at approximately the time (within 1 day, 1 week, 1 month, etc.) the item is expected to expire.

[0085] The transaction data of the user may be analyzed using at least one machine learning algorithm to generate the recommended order for the user.

[0086] Referring to FIG. 3, a graphical user interface 200 is shown for displaying a recommended order 202 on the user device 102. The recommended order 202 may include a plurality of items. The recommended order 202 may identify each item in the recommended order, such as by a unique item identifier, a brand or trade name, a product type, or the like. The recommended order 202 may include other details about each item, such as a quantity

recommended for purchase and a purchase price. The recommended order 202 may include a recommended order total amount.

[0087] With continued reference to FIG. 3, the graphical user interface 200 may include at least one selectable option 204, 206, 208 to enable the user to respond to the recommended order 202.

[0088] The user may select the “Approve” selectable option 204 to generate and communicate an approval message to the order recommendation system 108 to cause the order recommendation system 108 to initiate processing of the recommended order 202.

[0089] The user may select the “Edit” selectable option 206 to enable the user to edit the recommended order 202 to generate an edited order. The edited order may include at least one item or amount of an item different from the recommended order 202. For example, the user may add or remove an item from the recommended order 202. For example, the user may change the amount of an item from the recommended order 202. Once the edited order has been generated, the edited order may be communicated by the user device 102 to the order recommendation system 108 as an edited approval message to cause the order recommendation system 108 to initiate processing of the edited order.

[0090] The user may select the “Reject” selectable option 208 to generate and communicate a rejection message to the order recommendation system 108 to cause the order recommendation system 108 to forgo processing of the recommended order 202 at the present time.

[0091] In some non-limiting embodiments or aspects, a computer program product for automatically generating a recommended order includes at least one non-transitory computer readable medium including program instructions that, when executed by at least one processor, cause the at least one processor to execute one of the previously-described methods. The at

least one processor may include the merchant system, the transaction processing system, and/or the order recommendation system.

[0092] Referring to FIG. 4, illustrated is a diagram of example components of device 300. Device 300 may correspond to one or more systems or devices shown in FIGS. 1 and 2. In some non-limiting embodiments or aspects, one or more devices of the foregoing may include at least one device 300 and/or at least one component of device 300. As shown in FIG. 4, device 300 may include bus 302, processor 304, memory 306, storage component 308, input component 310, output component 312, and communication interface 314.

[0093] Bus 302 may include a component that permits communication among the components of device 300. In some non-limiting embodiments or aspects, processor 304 may be implemented in hardware, software, or a combination of hardware and software. For example, processor 304 may include a processor (e.g., a central processing unit (CPU), a graphics processing unit (GPU), an accelerated processing unit (APU), etc.), a microprocessor, a digital signal processor (DSP), and/or any processing component (e.g., a field-programmable gate array (FPGA), an application-specific integrated circuit (ASIC), etc.) that can be programmed to perform a function. Memory 306 may include random access memory (RAM), read-only memory (ROM), and/or another type of dynamic or static storage device (e.g., flash memory, magnetic memory, optical memory, etc.) that stores information and/or instructions for use by processor 304.

[0094] Storage component 308 may store information and/or software related to the operation and use of device 300. For example, storage component 308 may include a hard disk (e.g., a magnetic disk, an optical disk, a magneto-optic disk, a solid state disk, etc.), a compact disc (CD), a digital versatile disc (DVD), a floppy disk, a cartridge, a magnetic tape, and/or another type of computer-readable medium, along with a corresponding drive.

[0095] Input component 310 may include a component that permits device 300 to receive information, such as via user input (e.g., a touchscreen display, a keyboard, a keypad, a mouse, a button, a switch, a microphone, a camera, etc.). Additionally or alternatively, input component 310 may include a sensor for sensing information (e.g., a global positioning system (GPS) component, an accelerometer, a gyroscope, an actuator, etc.). Output component 312 may include a component that provides output information from device 300 (e.g., a display, a speaker, one or more light-emitting diodes (LEDs), etc.).

[0096] Communication interface 314 may include a transceiver-like component (e.g., a transceiver, a separate receiver and transmitter, etc.) that enables device 300 to communicate with other devices, such as via a wired connection, a wireless connection, or a combination of wired and wireless connections. Communication interface 314 may permit device 300 to receive information from another device and/or provide information to another device. For example, communication interface 314 may include an Ethernet interface, an optical interface, a coaxial interface, an infrared interface, a radio frequency (RF) interface, a universal serial bus (USB) interface, a Wi-Fi® interface, a cellular network interface, and/or the like.

[0097] Device 300 may perform one or more processes described herein. Device 300 may perform these processes based on processor 304 executing software instructions stored by a computer-readable medium, such as memory 306 and/or storage component 308. A computer-readable medium (e.g., a non-transitory computer-readable medium) is defined herein as a non-transitory memory device. A non-transitory memory device includes memory space located inside of a single physical storage device or memory space spread across multiple physical storage devices.

[0098] Software instructions may be read into memory 306 and/or storage component 308 from another computer-readable medium or from another device via communication interface 314. When executed, software instructions stored in memory 306 and/or storage component 308 may cause processor 304 to perform one or more processes described herein. Additionally

or alternatively, hardwired circuitry may be used in place of or in combination with software instructions to perform one or more processes described herein. Thus, embodiments or aspects described herein are not limited to any specific combination of hardware circuitry and software.

[0099] Memory 306 and/or storage component 308 may include data storage or one or more data structures (e.g., a database, and/or the like). Device 300 may be capable of receiving information from, storing information in, communicating information to, or searching information stored in the data storage or one or more data structures in memory 306 and/or storage component 308. For example, the information may include encryption data, input data, output data, transaction data, account data, or any combination thereof.

[00100] The number and arrangement of components shown in FIG. 4 are provided as an example. In some non-limiting embodiments or aspects, device 300 may include additional components, fewer components, different components, or differently arranged components than those shown in FIG. 4. Additionally or alternatively, a set of components (e.g., one or more components) of device 300 may perform one or more functions described as being performed by another set of components of device 300.

[00101] Further details regarding non-limiting embodiments or aspects of systems, methods, and computer program products for automatically generating a recommended order are disclosed in Appendix A filed herewith, the entire disclosure of which is hereby incorporated by reference in its entirety.

[00102] Although the present disclosure has been described in detail for the purpose of illustration based on what is currently considered to be the most practical and preferred embodiments, it is to be understood that such detail is solely for that purpose and that the present disclosure is not limited to the disclosed embodiments, but, on the contrary, is intended to cover modifications and equivalent arrangements that are within the spirit and scope of the appended claims. For example, it is to be understood that the present disclosure contemplates

that, to the extent possible, one or more features of any embodiment can be combined with one or more features of any other embodiment.

**METHOD, SYSTEM, AND COMPUTER PROGRAM PRODUCT FOR AUTOMATICALLY
GENERATING A RECOMMENDED ORDER**

ABSTRACT

A method for automatically generating a recommended order is disclosed. The method may include receiving transaction data associated with a plurality of transactions of a user. The transaction data may include line-item data associated with at least one item for each transaction of the plurality of transactions. Merchant inventory data associated with at least one merchant may be received. A recommended order for the user may be generated based on the transaction data and the merchant inventory data. The recommended order may include a plurality of items from the at least one merchant. The recommended order may be communicated to a user device associated with the user. A system and computer program product are also disclosed.

Figure 2

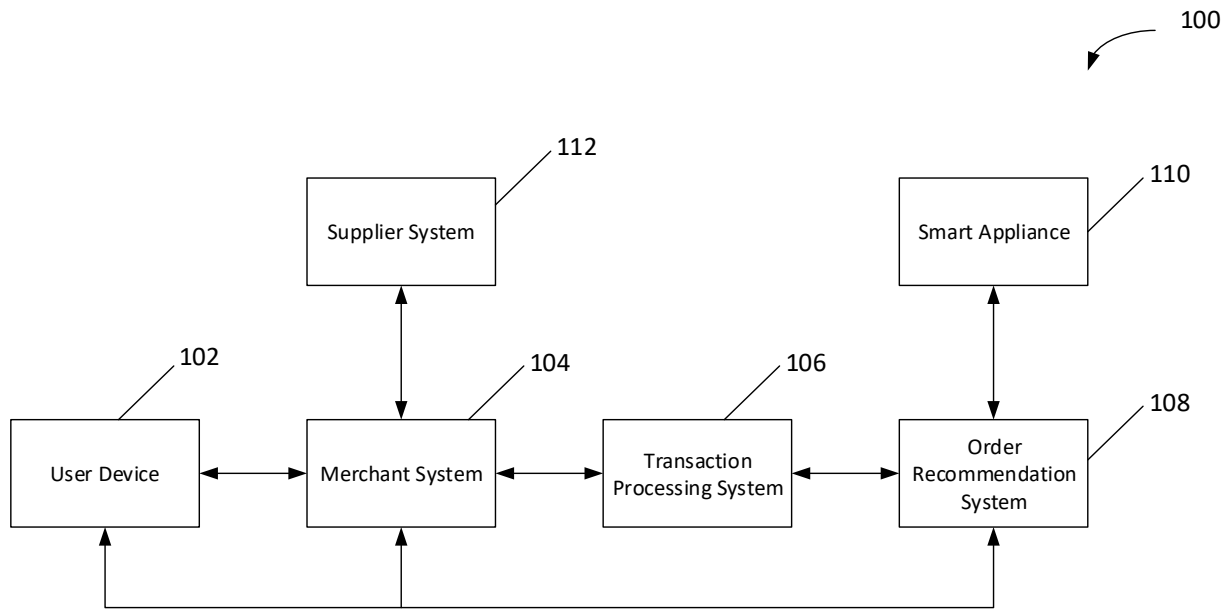


Figure 1

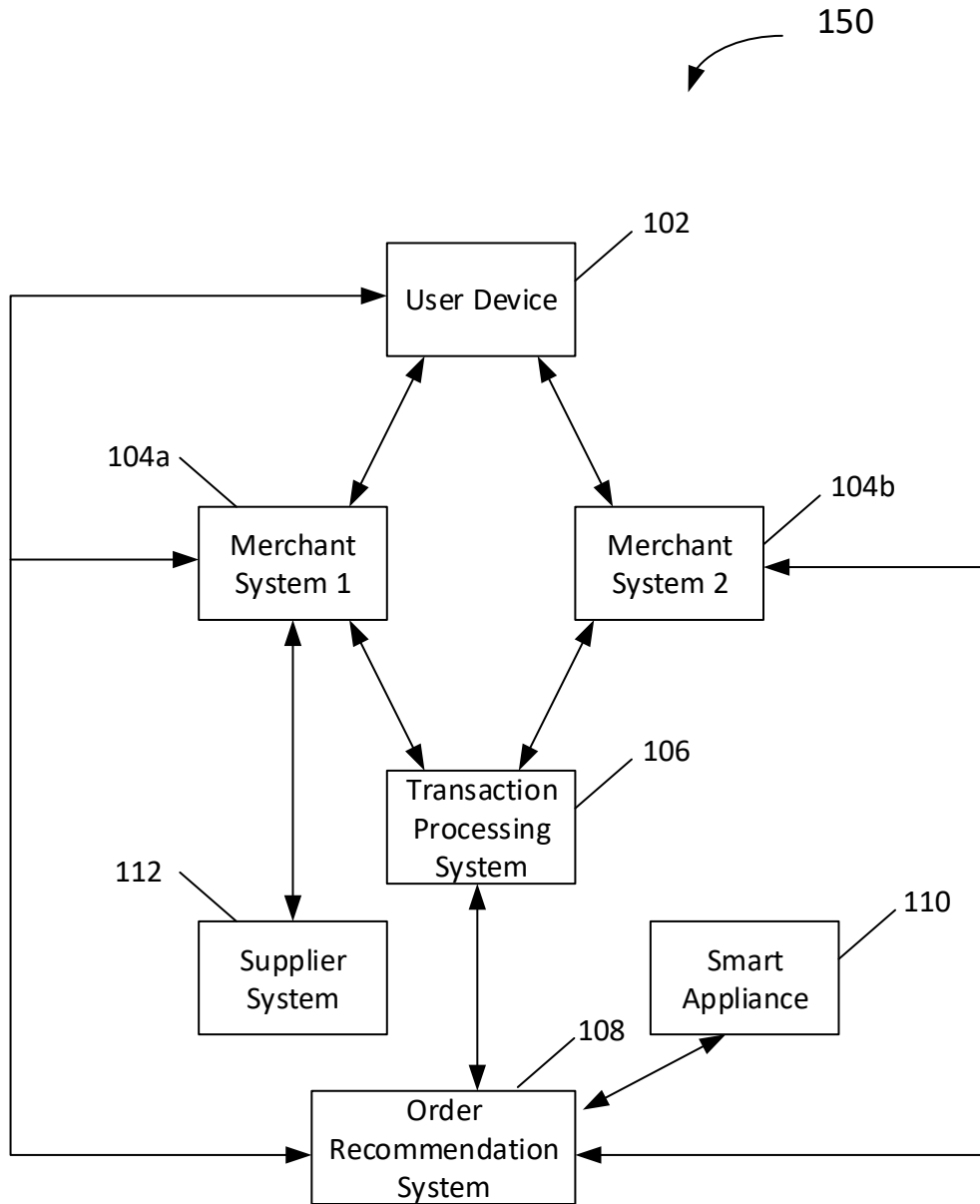


Figure 2



Figure 3

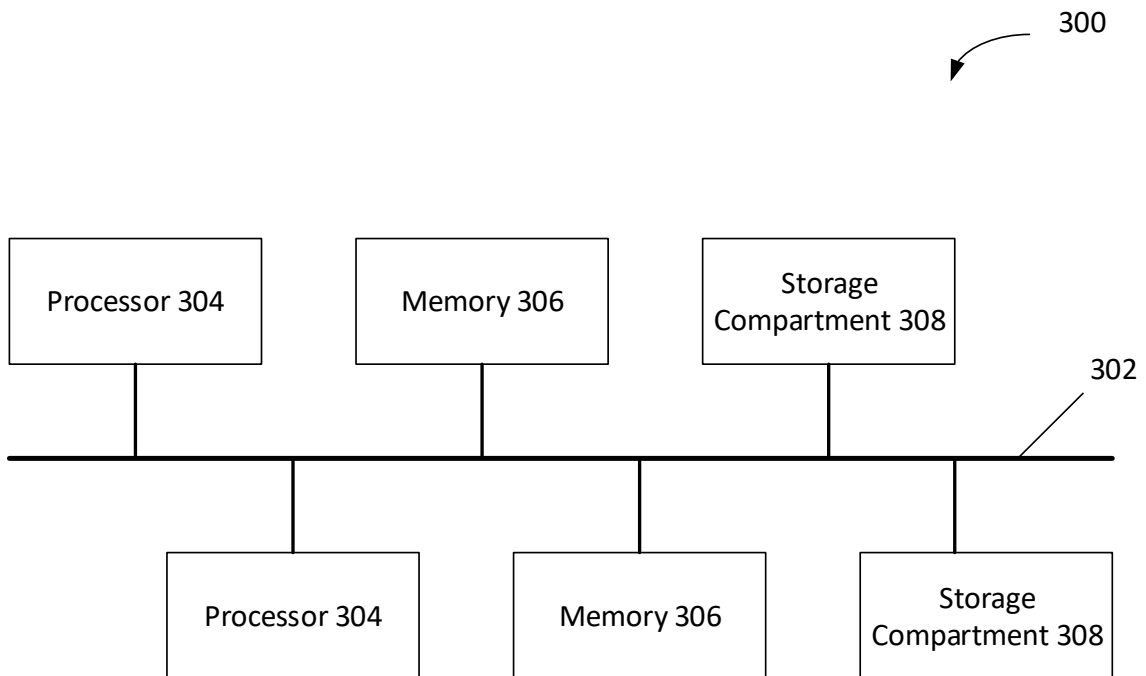


Figure 4