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Efficient e-commerce on virtual personal assistants

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Efficient e-commerce on virtual personal assistants

ABSTRACT

Virtual personal assistants perform for their users a variety of tasks, e.g., placing online shopping orders, performing e-commerce transactions, handle shopping and commerce queries, etc. Typically, virtual personal assistants interact conversationally with their users and adapt to their user's preferences using machine intelligence. The conversational model between users and virtual assistants makes it difficult for users to get product details needed to confidently place an online order. It is also difficult, through conversation alone, to input delivery information, authenticate payment, or even be confident of what is being purchased. Techniques of this disclosure facilitate e-commerce over virtual personal assistants by displaying on a nearby device, e.g., a smartphone, details of a shopping flow currently ongoing via virtual personal assistant. An interaction (e.g., shopping query) on one device, e.g., a virtual personal assistant, triggers installation of the advertiser's native app on a second nearby device, e.g., a smartphone. The advertiser's app, once installed on the smartphone, provides the user a convenient way to browse items and seamlessly continue with the shopping flow initiated at the virtual personal assistant.

KEYWORDS

Remote app installation; virtual personal assistants; e-commerce; deferred deep link;

BACKGROUND

Users often experience difficulty in performing online shopping or e-commerce transactions on virtual personal assistants, e.g., chat or audio-based digital assistants. Specifically, the conversational model employed by such personal assistants makes it difficult

for users to obtain details, e.g., product features, options, prices, etc., needed to confidently place an order. It is also difficult, through conversation alone, to input delivery information, authenticate payment, or even be confident of what is being purchased. Also, the conversational interface of virtual personal assistants does not integrate easily with bid-based advertisements, which are considered an effective way to handle a specific commercial search from a user.

DESCRIPTION

Techniques of this disclosure facilitate online shopping over virtual personal assistants through the coordinated use of a second device, e.g., smartphone, in conjunction with the virtual personal assistant. Relevant information, e.g., encoded contextual information, is shared by the virtual personal assistant with a second device so that a user can seamlessly continue and complete on the second device a transaction initiated on the virtual personal assistant. Per techniques disclosed herein, an interaction with an ad, e.g., a bid-based ad, on a first device, e.g., a virtual personal assistant, triggers the remote installation of the advertiser's native app on a second nearby device, e.g., a smartphone. On this second device, the advertiser's app provides ways to browse, compare and select items.

The ad launches a deep link in the installed app with pertinent information to allow users to pick up from where they were in the shopping flow with the virtual personal assistant. The user can seamlessly access their email address, location, or payment information on the second device without having to re-enter such details. In this manner, a user leverages the complementary capabilities of two devices, e.g., the audio-only assistant and the browsing abilities of a smartphone with a screen, to efficiently carry out transactions. Furthermore, giving an advertiser the capability to install an app is of value to the advertiser, and thus represents an opportunity for monetization.
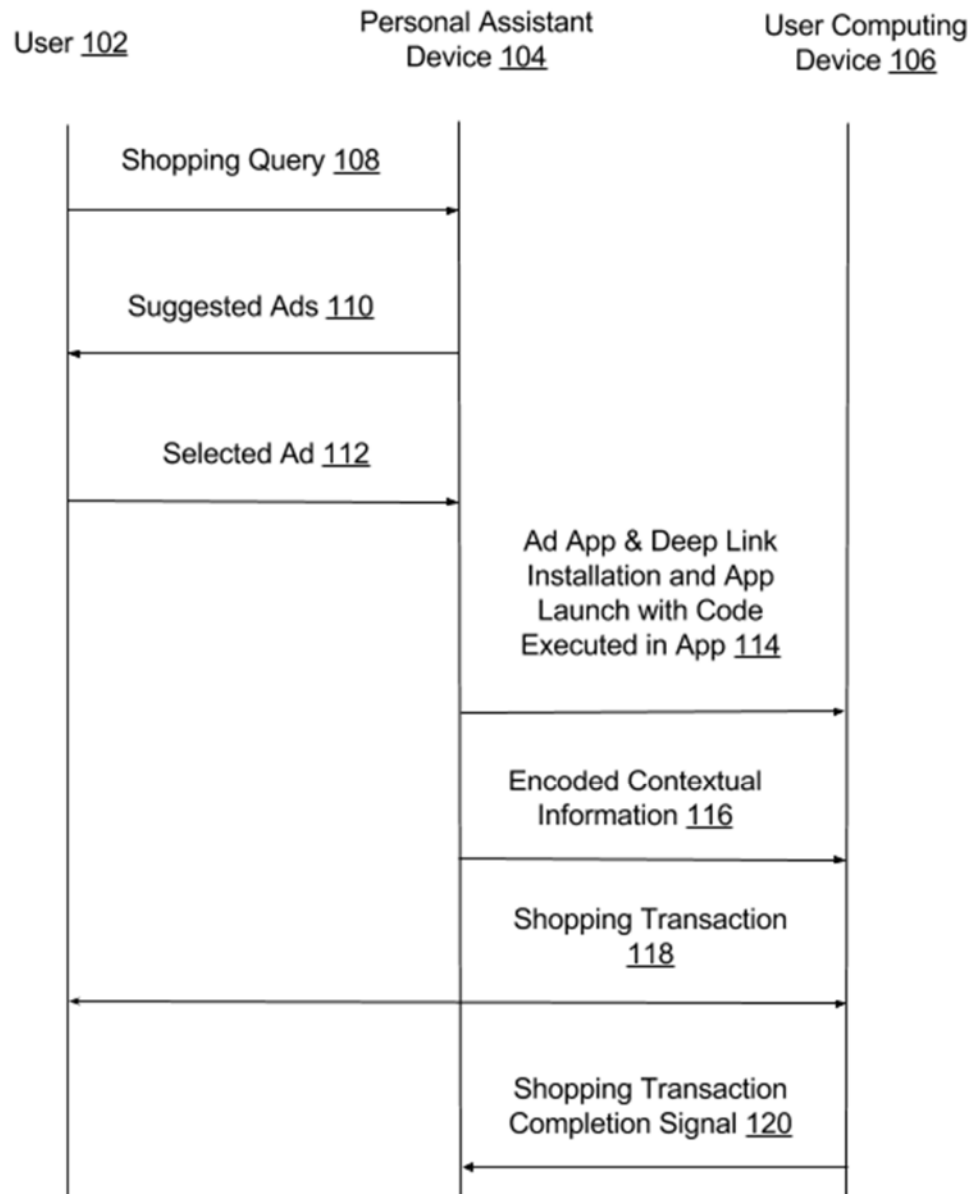
Fig. 1: Timeline of events in a transaction that involves two devices

Fig. 1 shows a timeline of events in a transaction that involves at least two devices. A

user (102) executes a shopping query (108) on a virtual personal assistant device (104). Either

immediately, or at some step in a multi-line conversation, the virtual personal assistant suggests

one or more ads (110) to the user, and the user selects an ad (112). The virtual personal assistant

then installs the advertiser's native app, after obtaining user consent, on a user computing device (106) along with deep link and launches the app with execution of the corresponding code (114).

User interaction with an ad on one device, e.g., a virtual personal assistant like a chat application or an audio digital assistant, triggers remote installation of advertiser's app on a second device. During triggering of the code execution for remote installation, certain encoded contextual information (116) is passed from the first device to the second device. The transfer of information between the two devices may be through a server, although not necessarily so. For example, the two devices may communicate via short-range wireless, short-range optical, or near-field communications (e.g., WiFi^{TM}, Bluetooth^{TM}, etc.). The installation of an advertiser's native app on the second device allows advertisements on virtual personal assistants to perform more efficiently by allowing the user to browse on a device with a screen the selected items and purchase them.

The virtual personal assistant may be an audio-only home assistant or chat assistant while the second device may be a mobile phone, a tablet, a laptop or a similar device with a screen for browsing products. The second device may be a nearby device that is selected based on indicators of physical proximity, such as co-presence on a local WiFi network. The second device may be authenticated, after procuring prior user consent, into an app store using credentials that are already known to the virtual personal assistant, such that entry of a password is not required. The user may be prompted to confirm installation of the app on the second device. Alternatively, installation may proceed immediately based on user's prior verbal confirmation to the personal digital assistant without a second prompt.

After installation of the app, mediated for example by a server, the assistant triggers remote code execution of the app on the second device so as to launch the app at a desired point,

using a deep link to contain the full context of the user's state in the shopping funnel. A "shopping funnel" is a retail / e-commerce term that refers to the process by which an ensemble of diverse customers arrive at marketplace (through the steps of awareness, opinion-formation, consideration, decision-making etc.) and are systematically led by the retailer / e-tailer through steps, e.g., comparison, selection, billing-details entry, etc., leading up to a consummated transaction. In the case of shopping on a virtual assistant, the shopping funnel state information might include information about the user's prior queries that led up to the installation of the app on the second device, These prior queries may be useful so that the installed app can present additional information to the user, for example a visual comparison against other items the user had been requesting on the virtual assistant. After the user completes the shopping/e-commerce transaction (118), the app may use a pre-defined protocol to notify the virtual personal assistant device that the transaction has been completed (120) and that shopping intent has been satisfied. The virtual personal assistant may use this as a signal to exit the shopping or e-commerce mode and end the relevant conversation with the user, e.g., by no longer assuming that the user's remarks should be interpreted with reference to the earlier conversation session.

By installing the advertiser's app on the second device and launching the app with contextual information from the first device, users avoid time-consuming steps that stand between the initiation (on a virtual personal assistant) and completion of the transaction. Users get the best of both worlds by beginning their shopping/e-commerce experience through an audio interface, leveraging the advertiser's native app on a device with an interface suited to browsing details of a product/service, and confirming their order with confidence. They can also benefit from using peripherals that may only be available on the second device (e.g., device specific authentication used with user consent and permission that can authorize access to stored payment

information). The techniques described herein are relevant to both audio-based and chat-based virtual personal assistants. For example, queries to a chatbot made on a user's mobile device may be best handled by installation of an app on another nearby device.

Example

Alice has in her house an audio-based virtual personal assistant and carries a smartphone with her. She executes a shopping query on her assistant by saying "I need to buy laundry detergent." Either immediately, or at some step in a multi-line conversation, the assistant determines that an ad should be selected to respond to Alice's query. In some versions, Alice may already have had a conversation with the personal assistant before the ad is selected. For example, she may already have shared some details regarding the detergent or the merchant she would like to buy the product from.

The virtual personal assistant runs an auction to find the best advertisement corresponding to Alice's detergent query, for example by communicating with an ad server. The winning ad prompts Alice to install the corresponding merchant's app on her smartphone. For instance, the winning ad is from a "Merchant-A", who carries laundry detergent of "Brand-B." The assistant says: "Merchant-A has Brand-B laundry detergent. Would you like to install Merchant-A's app on your phone to buy the detergent?" Alice then confirms or denies permission to install the app. Alice may be prompted again by her smartphone to confirm installation of the app. Alternatively, installation may proceed immediately based on Alice's prior verbal confirmation to the personal assistant without a second prompt.

The smartphone may offer a selection of one or more different apps for Alice to install and continue her shopping interaction. If more than one app is available for installation, the phone may prompt Alice to select from and install any one of the possible apps. For example, the

phone might ask "I've found 3 shopping apps that sell that kind of detergent - would you like to install one of them? ", which would prompt Alice to select one of several offered apps. After installation of the app, mediated if necessary by a server, the app opens to a search results page or a product details page for "Brand-B laundry detergent" as that was the original query given to the personal assistant, and which triggered selection of the ad. With Alice's consent, the personal assistant may give the app parameters like an encoded email address, a physical shipping address, and/or payment information to avoid the need for Alice to have to re-enter this data before completing the detergent purchase on her phone.

The devices where the user starts a transaction and continues/completes it are interchangeable. The foregoing techniques and examples describe a situation where a user starts a transaction on a virtual personal assistant and continues and completes it on a mobile device with a screen. The reverse is possible as well. For example, a user may start a chat conversation with a chatbot installed on a mobile phone. Upon submitting a shopping query to the chatbot, for example to find a food-delivery service, an auction-winning ad might cause the advertiser's app to be installed on an audio-based virtual assistant. After installation, the app can be launched with information, e.g., the type of food the user was discussing, provided from the first device (the mobile phone). The user's order is completed on the second device, which is now the audio-based virtual assistant.

In situations in which certain implementations discussed herein may collect or use personal information about users (e.g., user data, information about a user's social network, user's location and time at the location, user's biometric information, user's activities and demographic information), users are provided with one or more opportunities to control whether information is collected, whether the personal information is stored, whether the personal

information is used, and how the information is collected about the user, stored and used. That is, the techniques discussed herein collect, store and/or use user personal information specifically upon receiving explicit authorization from the relevant users to do so.

For example, a user is provided with control over whether programs or features collect user information about that particular user or other users relevant to the program or feature. Each user for whom personal information is to be collected is presented with one or more options to allow control over the information collection relevant to that user, to provide permission or authorization as to whether the information is collected and as to which portions of the information are to be collected. For example, users can be provided with one or more such control options over a communication network. In addition, certain data may be treated in one or more ways before it is stored or used so that personally identifiable information is removed. As one example, a user's identity may be treated so that no personally identifiable information can be determined. As another example, a user's geographic location may be generalized to a larger region so that the user's particular location cannot be determined.

CONCLUSION

Techniques described herein facilitate e-commerce transactions via a virtual personal assistant by using a second device that allows for convenient browsing of products. A search query executed on a virtual assistant triggers the generation of an ad relevant to the search query. In turn the ad triggers the installation and execution of the advertiser's native app on a second device, e.g., a device that has a screen or is otherwise suited to browsing, comparing and selecting of products. The app is launched on the second device with a deep link that provides contextual information relevant to the user's shopping activity (with user's consent) so that user does not have to re-enter data into the second device in order to complete the transaction. Users

begin their shopping experience through an audio interface, but then leverage the advertiser's native app to view details of a product on a device with interface suited to browsing. The user experience is enhanced, as users exploit the complementary capabilities of an audio-based assistant and a screen-bearing mobile device.