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Personalized Shopping via Conversational User Interface

Abhishek Yadav

Amit Handa

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ABSTRACT

Online and offline shopping activity often requires shoppers to spend substantial amounts of time researching, finding, and refining their product search to identify the right product that meets their requirements. Some of this time may be spent in searching and filtering results on general-purpose search engines or merchant websites, neither of which are optimized for shopping related research. This disclosure describes techniques that enable shopping via a rich, multimedia conversational interface. The techniques provide an online shopping experience that is simple, uncluttered, and does not overwhelm the user. The user is provided guidance throughout their shopping journey.

KEYWORDS

- Chat-assisted shopping
- Conversational interface
- Conversational UI
- Chatbot
- Online marketplace
- Online shopping
- E-commerce
- Search engine

BACKGROUND

Online and offline shopping activity often requires shoppers to spend substantial amounts of time researching, finding, and refining their product search to identify the right product that meets their requirements. Some of this time may be spent in searching and filtering results on

general-purpose search engines or merchant websites, neither of which are optimized for shopping related research.

The use of general-purpose web searching to search for and filter products, and to move forward the shopping journey is particularly difficult when viewing products on a mobile device such as a smartphone that has a small display screen. Users are often presented with an overwhelming number of choices and filters. In such interfaces, a systematic, structured path to narrow the available choices is not easily evident. While some retailers have experimented with chat-like apps to facilitate shopping, such a shopping experience does not extend to the final transaction. While a user can search for and share items within a chat interface, they are often taken to a third-party for final payment to complete a purchase.

DESCRIPTION

This disclosure describes a rich multimedia conversational interface for shopping. The described techniques provide an online shopping experience that is simple, uncluttered, and does not overwhelm the user. The user is provided guidance throughout their shopping journey.

Chat-based shopping can be launched, for example, from general-purpose search engines (‘on-site chat-shopping’) or from merchant websites (‘off-site chat-shopping’). Each mode is explained in greater detail below.

On-site chat-shopping, launched from a general-purpose search engine

Users start by searching, e.g., on a general-purpose search engine, and, after an initial query, navigate to an app-based (mobile) or inline chat experience (desktop), where they are guided to refine their search.

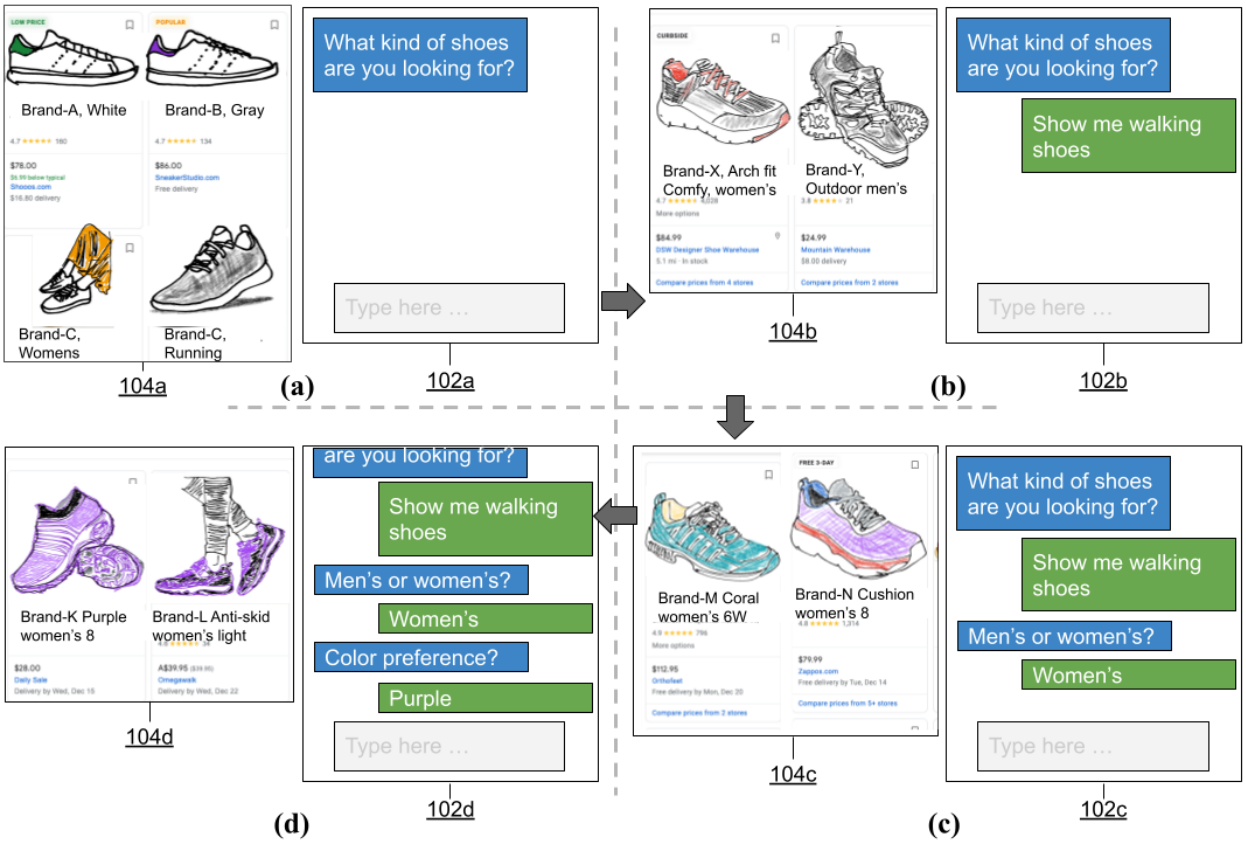

Fig. 1: Example of personalized, chat-assisted shopping

Fig. 1 illustrates an example of personalized, chat-assisted shopping. A user searches for "shoes" on a general-purpose search engine. Alongside search results, an icon appears that upon user selection, opens a chat window (102a), e.g., as shown in Fig. 1(a). A chatbot starts a conversation by saying 'what kind of shoes are you looking for?' (or something similar). Simultaneously, a side window (104a) shows shoes that the user might be interested in. The conversation proceeds, with the products (shoes) being shown in the side window being narrowed based on various attributes, as the user provides input that is used to identify products with specifications that match the user's needs:

User (102b): ‘Show me walking shoes.’

[The window updates to show walking shoes (104b)]

Chatbot (102c): ‘Men’s or women’s?’

User (102c): ‘Women’s’

[The window updates to show women’s walking shoes (104c)]

Chatbot (102d): ‘Any color preference?’

User (102d): ‘Purple’

[The window updates to show purple women’s walking shoes (104d)]

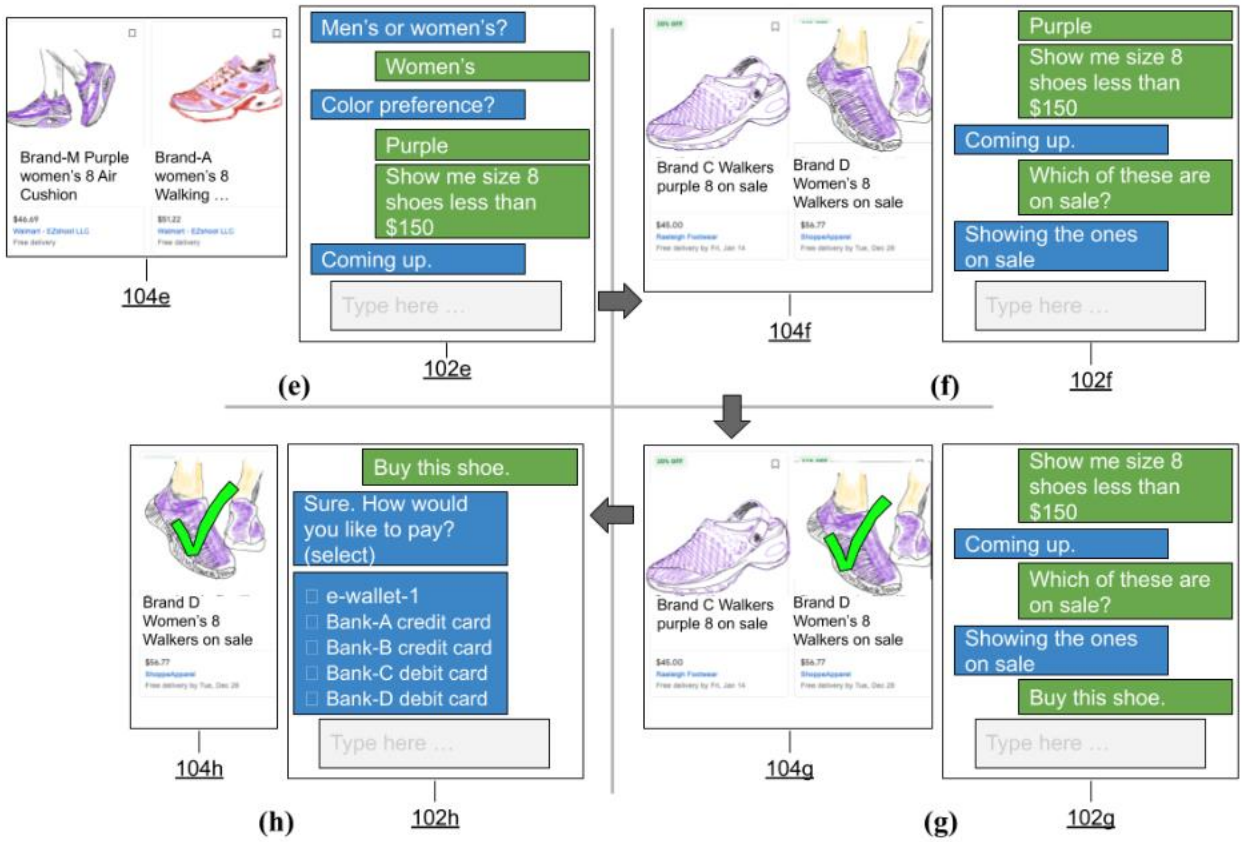

Fig. 1 (cont.): Example of personalized, chat-assisted shopping

The conversation continues, as illustrated in Fig. 1 (cont.):

User (102e): 'Show me size 8 shoes less than $150'

Chatbot (102e): 'Coming up.'

[The window updates to show size-8 purple women's walking shoes less than $150 (104e)]

User (102f): 'Which of these are on sale?'

Chatbot (102f): 'Showing the ones on sale'

[The window updates to show size-8 purple women's walking shoes less than $150 that are on sale (104f)]

The user can continue to use the conversational interface to filter the types of shoes they want to see. At any point, the user can click one of the shoes (104g) shown in the side window to take the transaction to completion ('Buy this shoe,' 102g). The chatbot offers options to purchase the shoe (102h), such that the transaction is completed within the chat window, without the user having to leave the chat. If the order is fulfilled by a third-party merchant, then the order is seamlessly (without further user action) handed off to the merchant via chat or an application programming interface (API) call. Users can add friends to share their shopping experience. Users can also make requests to see content associated with a product, e.g., a best-selling list, a review video, etc.

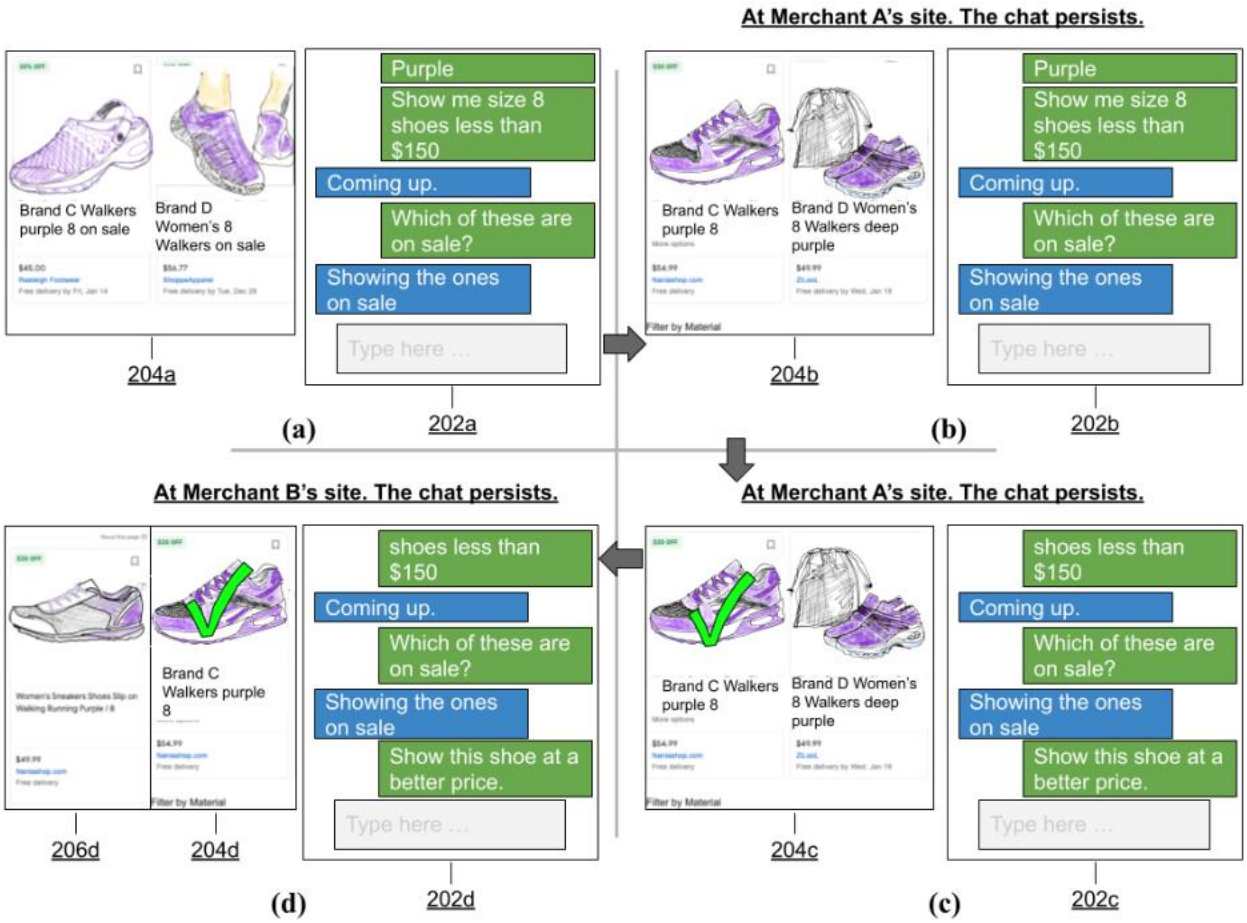

Fig. 2: Chat persists if the user requests to (or is) transferred to a merchant's site

The user can request to be transferred to a merchant site. Upon transfer to a merchant site, with user permission, the chat is persisted such that the user's chat history and preferences can be seamlessly continued on the merchant site. This is illustrated in Fig. 2, where a chat (202a) initiated on a general-purpose search engine continues without interruption at a site operated by a merchant-A (202b). While the selection of items can change from the general-purpose search engine (204a) to items available at merchant-A (204b), the filters specified during the chat (purple, women's, on sale, walking, less than $150) continue to be applied at the merchant website.

At the merchant website, the user identifies a product that they like (204c) but wants a better price (202c). The user is then transferred to merchant-B (Fig. 2d), where the same product (204d) is being offered at a lower price. The chat is persisted across the transfer from merchant-A (202c) to merchant-B (202d), such that the user's chat history and preferences are seamlessly continued. While the selection of items can change from merchant-A (204c) to items available at merchant-B (204d, 206d), the filters specified during the chat (purple, women's, on sale, walking, less than $150) continue to be applied at merchant-B. Thus, the merchant-B website not only shows the selected product at a lower price, it also displays other products (206d) that fulfill the criteria specified by the user during the chat.

Off-site chat-shopping, rendered on merchant sites

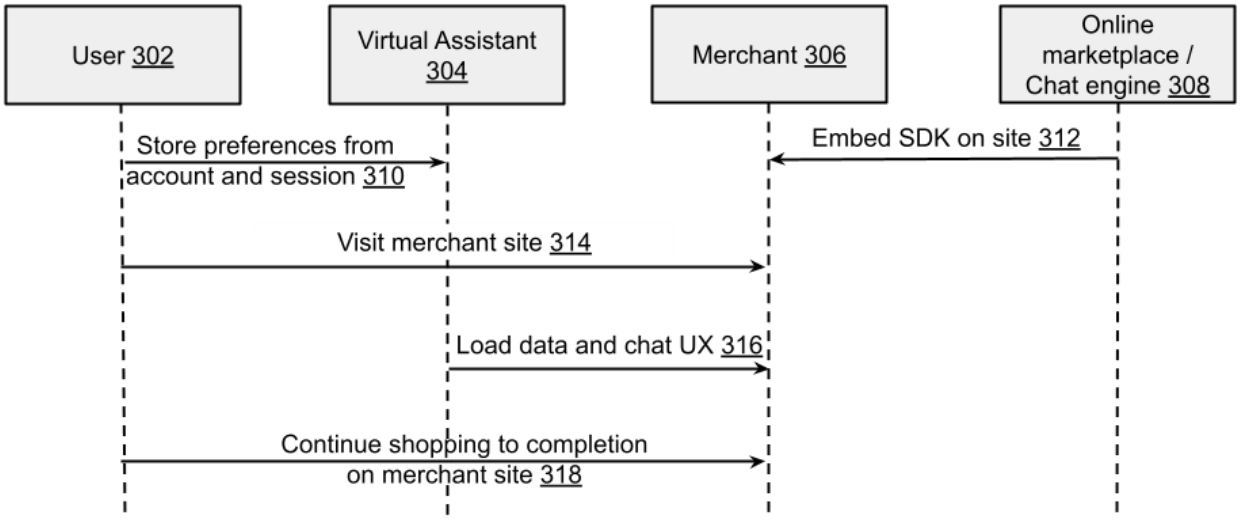

Fig. 3: Off-site chat-based shopping

Off-site chat-based shopping enables online merchants to leverage chat technology independent of a general-purpose search engine to render the shopping journey through a chat interaction. Fig. 3 illustrates an example of off-site chat-based shopping. A user (302) stores account and session preferences (310), e.g., chat history, on an API-accessible virtual assistant

(304). A merchant (306) embeds and loads a software development kit (SDK) (312) from an online marketplace or chat engine (308) that includes a script that enables rendering of the chatbot on the merchant site.

The user visits the merchant website (314). The merchant website communicates with the virtual assistant (316) through an API to load user data and chat user interface (including history). The user takes shopping to completion on the merchant website (318). If the merchant has uploaded their products on the online marketplace, then as the user refines their search using the chat, the online marketplace can share selected product data that enables the merchant to restrict user results to products available from their store.

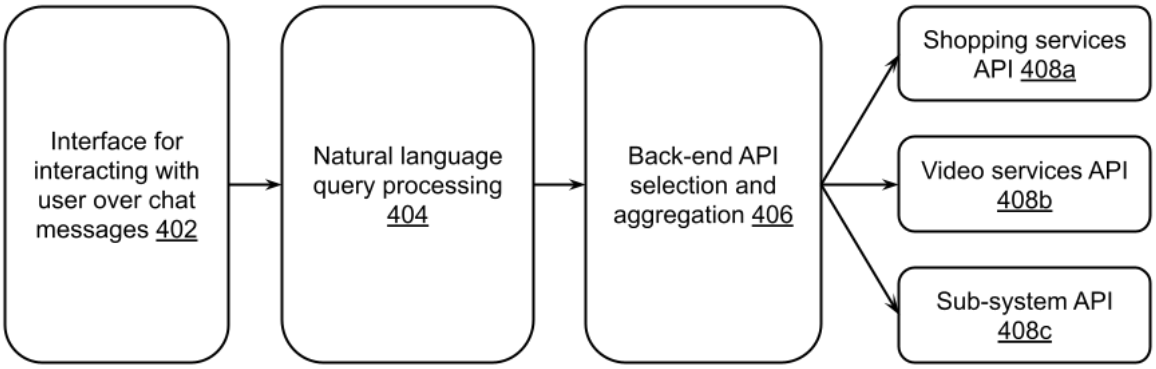

Fig. 4: Components of personalized, chat-assisted shopping

Fig. 4 illustrates components of personalized, chat-assisted shopping. The chatbot interacts with the user over a user interface (402), taking free-form user queries, e.g., ‘show me product X.’ The user interface can be provided over the web or via an application. A natural language query processing module (404) parses the user query and breaks it down into query terms and filters. For example, a query ‘show me vacuum cleaners less than $500’ is broken down to (query_term: ‘vacuum cleaners’; price_range_filter: ‘< $500’). A query ‘show me some

review videos for vacuum cleaners' gets broken into (query term: 'review videos for vacuum cleaners').

A backend API selection module (406) selects the relevant APIs (408a-c) to call. For example, the query 'show me vacuum cleaners for less than $150' can result in a call to a shopping-services API (408a). The query 'show me review videos for vacuum cleaners' can result in a call to a video-services API (408b). The back-end API selection module also aggregates results from multiple APIs if the query results can be served by multiple APIs. Such APIs (or sub-systems and their backends) are agnostic of the chat-assisted processing described herein.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs, or features described herein may enable the collection of user information (e.g., information about a user's social network, social actions or activities, profession, a user's preferences, or a user's current location), and if the user is sent content or communications from a server. 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. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user, or a user's geographic location may be generalized where location information is obtained (such as to a city, ZIP code, or state level) so that a particular location of a user cannot be determined. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes techniques that enable shopping via a rich, multimedia conversational interface. The techniques provide an online shopping experience that is simple, uncluttered, and does not overwhelm the user. The user is provided guidance throughout their shopping journey.

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