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# Triggering virtual assistant actions by live conversation

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## Triggering virtual assistant actions by live conversation

ABSTRACT

This disclosure describes virtual assistant techniques that automatically detect, with user permission, a conversation between a user and other individual(s), and provide information relevant to the conversation. For example, a user may be approached by a stranger with a request for directions to a certain business. Based on user-permitted factors such as the ongoing conversation, the user location, the user's location history, etc., the virtual assistant readies a map relating to the stranger's query. Further, if the user permits, voice identifier of the participants of a conversation is maintained. If the participants in the conversation meet again, the user is provided with information from the last conversation which serves as a conversation starter.

KEYWORDS

- Virtual assistant

- Contextual keyword

- Wake word

- Voice ID

- Assisted directions

- Voice recognition

BACKGROUND

Strangers often ask individuals on the street or in other contexts for directions or other information. If the individual does not know the answer, either the request is not met, or the individual needs to take further action, e.g., look up the information on their smartphone or other device, which prolongs the interaction. Also, at a large event, it is difficult for individuals to remember other people that they interacted with and the context of the interaction.

An example conversation typifies the imprecision or inefficiencies associated with conversations between strangers and users of mobile devices.

*Example conversation*

> **Stranger:** "Where is XYZ Pizza Company?"
>
> **User:** "Uh, don't really know, I haven't eaten there."
>
> **S:** "It's supposed to be on 500 9th Ave".
>
> **U:** "Oh, where are we, we're on 9th now. Let me see [*takes out mobile device and punches in 550 9th Ave*]. No, that's not it. It's actually 500 9th Ave. Let me see if I can find the directions [*reads the directions*] Here's how you get there … I think ..."

This exchange encapsulates imprecise knowledge ("haven't eaten there"), multiple steps towards determining an answer (pulling out the mobile device, activating an app, punching in a query, etc.), human error (punching 550 instead of 500), etc. The exchange takes up the user's time and discourages people from helping strangers.
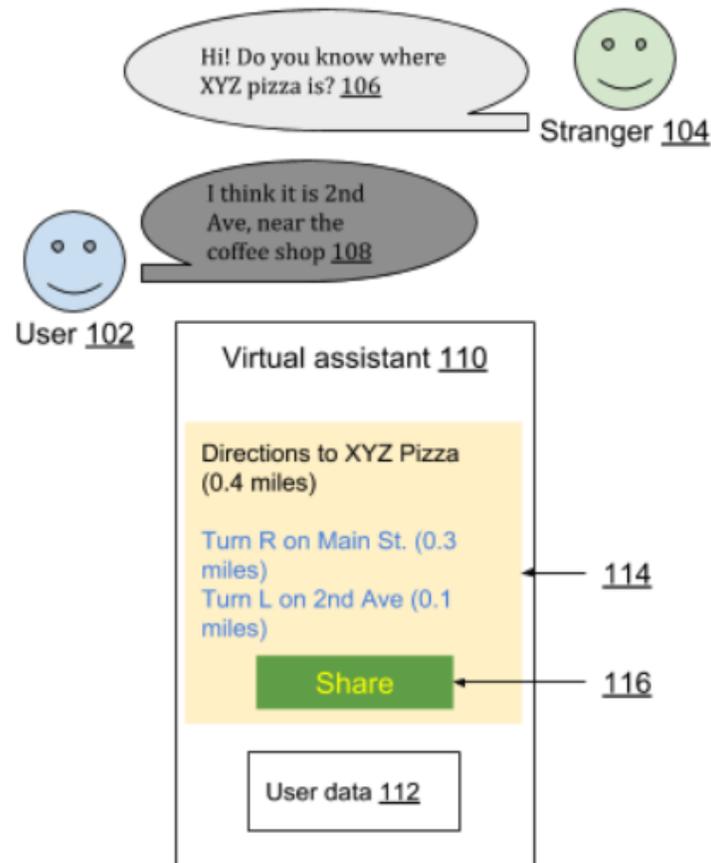
DESCRIPTION

**Fig. 1: Triggering virtual assistant actions by conversation**

Fig. 1 illustrates the triggering of virtual assistant actions by live conversation, per techniques described herein. A user (102) is approached by a stranger (104) with a request (106) for directions to a business XYZ. This may happen, e.g., if the stranger chooses not to search for this information themselves, if the stranger is not technology savvy; if the stranger is in a hurry; if the stranger forgot or does not have a phone; if the stranger does not use a digital navigation service; etc.

The user responds with an imprecise set of directions (108), based on their recollection of the likely location of the business. The user has a virtual assistant (110), e.g., on their mobile device. The virtual assistant has passive listening enabled, with user permission. The virtual

assistant analyzes, with user permission, the ongoing conversation between the user and stranger using a contextual keyword detector to detect keywords, e.g., names of places ("XYZ"), food names ("pizza"), names of other nearby places, etc. When the contextual keyword detector reaches a high confidence, based on user-permitted factors such as keyword density, probability that the keywords relate to a nearby place, places in the user's location history, places commonly known and accessible near the user via (for example) bus routes, etc., the virtual assistant brings up automatically on the mobile device information relevant to the conversation, e.g., directions to the requested business (114). A share button (116) is also provided that enables convenient sharing of the information with the stranger.

In bringing up information relevant to the conversation, the virtual assistant may access user data (112) with user permission. For example, the virtual assistant may access the user's location history in the context of the query keywords to improve the confidence of picking an accurate response to the query. This is useful for ambiguous queries embedded in the conversation, e.g., queries of the type "can you give me directions to that popular pizza place?" or "the pizza place with games?" There is a high likelihood that the user, if a local resident, has such places in their location history. Thus, incorporating the location history, or similar user data, can produce more relevant answers to queries. In this manner, a user's location history and personal ratings of business popularity boosts the confidence of responses to a stranger's queries.

The techniques are useful when the querying stranger has relatively less information about a place and the user has relatively more information, e.g., by virtue of the time spent by the user at a locality, the places visited by the user, the user's intuition, etc. For example, if in response to the stranger's query, the user utters words associated with businesses in the locality, then the confidence of the search is boosted.

*Example*: A user-stranger conversation proceeds as follows.

**Stranger:** "I'm looking for that popular pizza place near here somewhere."

**User:** [*relying on intuition and memory*] "You mean XYZ Pizza?"

**S:** "It's actually well known for calzone."

**U:** "The one with games? That's not a calzone place; it's actually a pizza place, although it does sell calzone."

Here, the user uses their own knowledge and intuition to answer queries made by the stranger. In effect, the user has enhanced the stranger's queries by giving the passively listening virtual assistant clues ("XYZ pizza," "popular," "calzone," "games") about the answer the stranger is likely looking for.

With user permission, the virtual assistant may obtain a voice identifier of the participants in a conversation. For example, the voice identifier is useful metadata if the user interacts with the stranger again. The virtual assistant recognizes the stranger and provides to the user relevant information from the previous conversation, which can serve as a conversation starter. This is useful when the user is interacting with a large number of individuals relatively new to the user, e.g., at a party.

*Example*: A user meets a stranger on the street and gives the latter directions to a pizza restaurant. Later in the day, the user happens to meet the stranger at a party. The virtual assistant recognizes the stranger and reminds the user that this is the same stranger who asked for the pizza restaurant. The user can then bring this up as a conversation starter: "Hey how did you like that pizza place?"

With access to user data as permitted by the user, e.g., the user's calendar, the virtual assistant can provide further contextualized information to the user.

*Example*: A user meets a stranger on the street and provides directions to a party at a pizza restaurant. The virtual assistant, having access to the user's calendar, detects that the user also has a dinner appointment at the same pizza restaurant in fifteen minutes. The virtual assistant provides contextual information to the user: "Aren't you supposed to go there too in fifteen minutes and meet the gang? This could be someone in your party that you're supposed to meet up with!"

Information that is surfaced by the virtual assistant during the conversation may be useful not just to the stranger but to the user as well. Consider, for example, that during a conversation, a third party interrupts and answers the stranger's question before the user. Even so, the just-surfaced map is useful for the user's own knowledge. As the user walks away, glancing down at and scrolling through the map, the user gains information about an as-yet unvisited restaurant that is nevertheless interesting. This comprises a glance view for that restaurant's local page, e.g., in a map application. The virtual assistant can remind the user at a later time to try out the restaurant.

In this manner, passive listening of conversations between individuals, with user permission, is leveraged to trigger contextual virtual assistant actions. Utterances of the user and other participants of a conversation are analyzed to discover keywords to trigger such virtual assistant actions.

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 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 virtual assistant techniques that automatically detect, with user permission, a live conversation between a user and other individual(s), and provide information relevant to the conversation. In an example use case, a user may be approached by a stranger with a request for directions to a certain business. Based on various factors, e.g., the on-going conversation, the user location, the user's location history, etc., the assistant readies a map relating to the stranger's query. Further, with user permission, the techniques obtain of the voice identity of the participants of a conversation. If the participants meet again, the user is provided with information from the last conversation, which serves as a conversation starter.

REFERENCES

1. Mengibar, Pedro J. Moreno. "Customized voice action system." U.S. Patent 9,275,411, issued March 1, 2016.