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On-device assistant to provide access to device functionality without physical access

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On-device assistant to provide access to device functionality without physical access

ABSTRACT

This disclosure describes techniques to access functionality available only on a mobile device such as a smartphone or wearable device via alternate channels when the mobile device is not in close proximity to the user. The on-device assistant is enabled to access mobile specific functionality when the user and their mobile device are in different locations. Comparison of physical locations of the mobile device and user is performed when the user logs into their work terminal or accesses a work device, indicating the user is no longer in the vicinity of the mobile device. For example, the on-device assistant forwards incoming phone calls to a work phone and forwards push notifications to a work device through a chat application or web interface.

KEYWORDS

- smartphone

- virtual assistant

- device assistant

- remote access

- SMS forwarding

- call forwarding

BACKGROUND

Mobile devices provide functionality such as SMS, telephone calling, device-specific apps etc., that is not accessible without physical access to the device. Thus, if the user is away from the mobile device, e.g., forgets their phone, such functionality is not available to the user.

Some applications implement special functionality to provide notifications on multiple devices; however, this is not a general purpose solution.

DESCRIPTION

This disclosure describes on-device techniques, e.g., implemented via an on-device assistant, the device operating system, or individual applications or services, to provide access to device-specific functionality when the user is away from the device. The techniques are implemented with user permission and can be turned off.

Enabling on-device assistant

With user permission, the on-device assistant can be automatically enabled when the user and their mobile device are determined to be in different physical locations. For example, a comparison of physical locations of a mobile device and another device that the user accesses, e.g., a work computer, work phone, etc. is performed to determine that the user is not in the vicinity of the mobile device. Further, the user is provided with options to manually enable the on-device assistant, e.g., through a web interface, by calling an activation service, etc.

Operation of on-device assistant

The on-device assistant can be implemented at a system level, e.g., as a part of the operating system of the mobile device. This allows the on-device assistant to utilize various available channels. Alternately, on-device assistant functionality can be provided in individual applications or service, e.g., as part of an SMS application, calling application, etc.
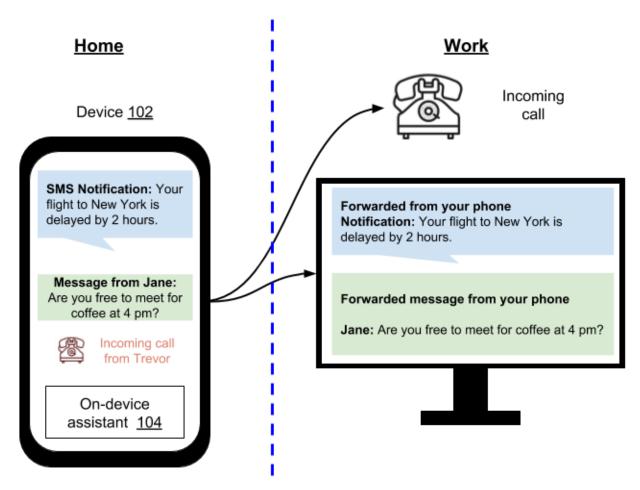
Fig. 1: On-device assistant in operation: forwarding phone calls and messages

Fig. 1 illustrates an example of the on-device assistant in operation. A mobile device (102) is detected as being located at home, while the user is away at a work location. In response (or based on user input), an on-device assistant (104) is activated.

When the device receives an SMS, e.g., "your flight to New York is delayed by 2 hours," the on-device assistant identifies an alternate channel, e.g., an over-the-top (OTT) or IP-based messaging application that the user has access to while at the work location, and forwards the SMS via the messaging application. Similarly, a message from a friend Jane enquiring whether the user is available for coffee, received via a device-specific messaging application, is forwarded to the user via the messaging application. Further, the user can respond to the message

via the messaging application, and the on-device assistant automatically forwards the user's reply to the friend via the device-specific messaging application.

In another example, an incoming phone call ("Call from Trevor") to the device is forwarded to the user's work phone or another phone that the user is available at. If the user is unavailable, the on-device assistant can take different actions such as:

- Answering the call to inform the caller that the user currently does not have access to the device and to provide an indication of alternative ways of contacting the user. For example, the on-device assistant can provide the caller the user's work phone number.

- Taking a message and providing a text transcript to the user via the messaging application

Further, notifications received directly on the device can be evaluated (with user permission), and if deemed important, can be forwarded to the user, e.g., to an assistant application of a work device, via a web interface, etc. Additionally, the on-device assistant can enable remote use of application features that are only available on the device. For example, video calling via a device-specific video conferencing application can be automatically forwarded to a video calling application that is available to the user at the work location.

The described techniques access user data, e.g., user location, incoming messages, calls, notifications, applications accessible via the user device, user contact information, etc. with specific user permission. Users are provided options to restrict or deny permission. The on-device assistant utilizes only the information to which the user has granted permission. The user is provided with options to turn off the on-device assistant.

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 techniques to access functionality available only on a mobile device such as a smartphone or wearable device via alternate channels when the mobile device is not in close proximity to the user. The on-device assistant is enabled to access mobile specific functionality when the user and their mobile device are in different locations. Comparison of physical locations of the mobile device and user is performed when the user logs into their work terminal or accesses a work device, indicating the user is no longer in the vicinity of the mobile device. For example, the on-device assistant forwards incoming phone calls to a work phone and forwards push notifications to a work device through a chat application or web interface.