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Headset with haptic indicator

Christian Schuldt

Fredric Lindstrom

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ABSTRACT

Call capabilities, e.g., using WiFi/LTE, are now available in devices other than phones. For example, a headset can be built with wireless (WiFi/LTE) communication abilities. Such a headset operates in standalone fashion, e.g., without control or short-range communication (e.g., Bluetooth) with a device such as a smartphone or tablet. The headset can be operated in a hands-free manner and can present advantages over the headset-and-smartphone combination. However, a standalone headset operates without the visual cues that are available on the screen of a device such as a phone or tablet. This disclosure describes using a haptic mechanism to convey headset and/or communication status to a wearer of a standalone headset.

KEYWORDS

- Haptics

- Headset

- Status indication

- Mute indication

BACKGROUND

A standalone headset is a headset with in-built abilities for wireless communication, e.g., WiFi, LTE, etc. A standalone headset can conduct a call, e.g., telephone or VoIP call, directly, without need for a smartphone or tablet. Such a headset enables hands-free operation. However, users may not know the communication status of the headset, e.g., whether a microphone of the headset is muted or not, in the absence of a display.

DESCRIPTION

There are several examples of indicators that a user of a standalone headset may benefit from. For example, such indicators include mute status, battery status, whether participants are joining or leaving a conference call, another caller attempting to reach a user during an ongoing conversation, etc.

A headset that implements techniques of this disclosure indicates status using haptic techniques such as vibrations. The techniques are implemented upon specific user permission, e.g., to detect microphone activity, etc. For example, if a user wearing a headset is detected as speaking, e.g., by a microphone of the headset, while the microphone is on mute, the headset can provide a mute indication to the user by a vibration. In this case, the headset starts vibrating after detecting local speech. Communicating mute-status is an important function, e.g., when a conference call is ongoing, and the user is discussing sensitive topics locally with his colleagues, which are not to be shared with remote participants.

Further, a vibration can also be used to indicate change in mute-status, e.g., when the headset goes from unmute-to-mute state, or vice-versa. Conventional headsets do not include mute-status indication, since the indication can be provided on a screen of a companion device, e.g., a smartphone screen. However, in the case of a standalone headset, mute indication by other-than-visual techniques is necessary, since the headset is worn outside a user's gaze. Muting or unmuting a standalone headset can be done using a button on the headset, a gesture, voice control, etc.

Further, a different pattern of vibration and/or aural feedback can be used to indicate other statuses or changes therein, e.g., a longer, shorter, staccato-type, etc. vibration could be used when a battery of the headset drops below a threshold. Similarly, the joining-in, leaving,

or changes in the status of a conference call can also be communicated by using haptics, aural feedback, or by a combination. For example, the headset can vibrate with a ring-tone pattern of vibration, optionally with voice feedback, e.g., "incoming call from Joe."

In case a physical button on the headset is used for enabling a voice assistant, voice commands are recognized only when that button is activated. A vibratory/aural feedback can be given in consort with button operations, e.g.: when the button activated user, a short vibration; when user issues a command, e.g., "call Joe" and releases the button, voice feedback, "calling Joe." Provision of such indications is performed specifically upon user providing permission to acquire activity information, e.g., button activation, speech detection, etc. For users that do not provide permission, user activity is not examined, and indications are not provided.

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 systems and methods 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 which 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

This disclosure describes a haptic feedback technique for use with a standalone headset. The standalone headset is capable of audio call functionality. When a user permits, the headset detects whether the microphone of the headset is on mute. If the microphone is on mute, the headset provides an indication to the user, e.g., by a vibration of the headset.