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Shoulder Tap in Ambient Video Communications

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ABSTRACT

Many virtual meeting or virtual office apps provide users with a focus zone. Avatars of users in a focus zone are visible to other participants; however, users in the focus zone are shut out from ongoing conversations in their vicinity in the virtual office. A problem arises when a first participant desires to talk to a second participant that is in a focus zone or is otherwise engaged, e.g., in a separate conversation or simply away from their desk. This disclosure describes soft-alerting techniques to gently obtain the attention of individuals in a focus zone within an ambient video communications environment such as a virtual office or world. The techniques are analogous to a shoulder tap in the physical world and allow participants to seek attention without excessive intrusion.

KEYWORDS

- Video conferencing
- Virtual environment
- Virtual world
- Virtual space
- Virtual office
- Remote collaboration
- Shoulder tap
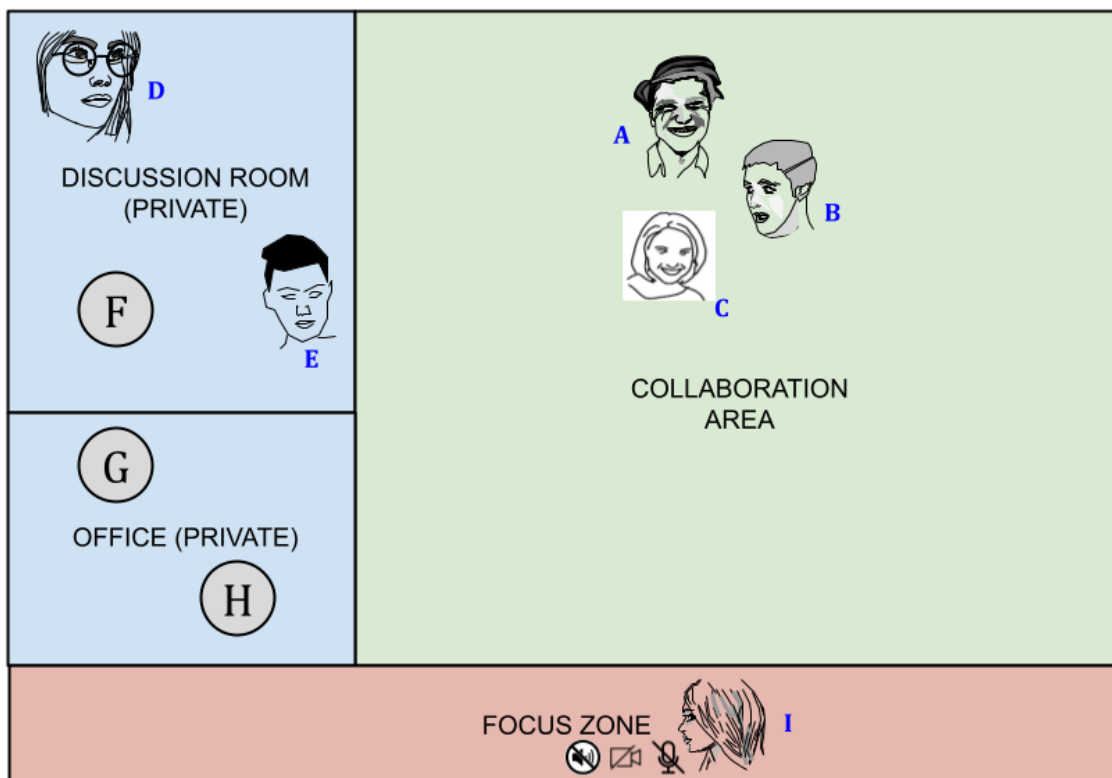- Spatial chat
- Proximity chat
- Soft alert

BACKGROUND

Fig. 1: A virtual office or other virtual space

Fig. 1 illustrates a remote work setting, where workers interact via their avatars in a virtual office or other virtual space. In the example of Fig. 1, users A, B, and C (their avatars) are in a collaborative area, which is a virtual region where conversations are public. Any office worker can enter this area. Avatars present in this area can listen to ongoing conversations and see file and/or screen-shares. Users D, E, and F are in a discussion room. In the discussion room, conversations are private, including file and/or screen-shares. Similarly, users G and H are in an office, which is a space for private conversations.

In virtual spaces or other remote work settings, e.g., video conferences, virtual events, virtual worlds, etc., workers often feel the need to be more connected with each other. One way to do so is to maintain a constant ambient audio/video connection to a virtual space or meeting.

A constant connection to a virtual meeting can be tiresome, so apps that enable virtual meetings often provide users with a mode, or a focus zone, in which they are visible to other participants but shut out from ongoing conversations. In such a mode, a participant is not fully active in conversation with others and is not fully present in virtual space. In Fig. 1, user I is in such a focus zone, where she has shut herself off from conversations, e.g., for the purposes of heads-down work. In the focus zone, the user's camera, speakers, and microphones can be off. The user in the focus zone can be working, away, or otherwise may not want to be disturbed or seen. A physical analogy might be when an office worker enters a soundproof cabin for the purposes of quiet study, or when they don headphones to reduce background office chatter.

A problem arises when a participant, X, desires to talk to another participant, Y, who is in a focus zone or is otherwise engaged, e.g., in a separate conversation or simply away from their desk. As in the physical world, X wishes to let Y know that their attention is needed whenever convenient to Y.

DESCRIPTION

This disclosure describes techniques for soft-alerting, or gently getting the attention of individuals in an ambient video communications environment such as a virtual office or world. The techniques are analogous to the shoulder tap of the physical world, where a first active participant can let a second participant (who may be active or inactive) know that they would like their attention. The described electronic shoulder tap is sticky, such that the tapped participant is notified of it until either the tap is explicitly removed, the tap is addressed, or the tapper has completely left the environment.
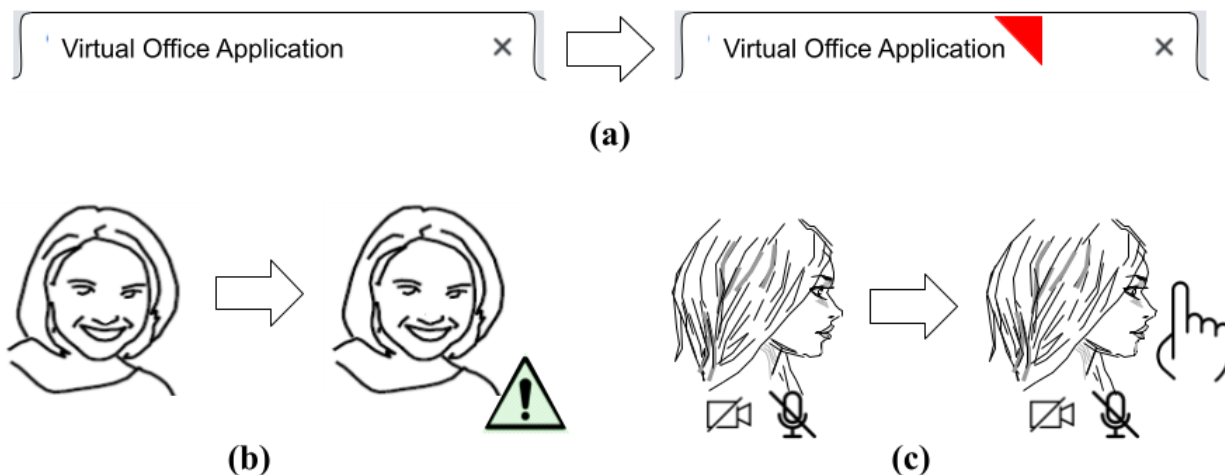
Fig. 2: An example user interface for shoulder tap: (a) At the application of the tap recipient; (b) The view at the tap recipient; (c) The view at the tap originator.

Fig. 2 illustrates an example user interface for shoulder tap. On the device of the tap recipient, the icon of the application or browser that hosts the virtual office (Fig. 2a) is highlighted (e.g., the red triangle in Fig. 2) to indicate that the user's attention is being requested. This change to the icon can occur in a browser tab (as illustrated in Fig. 2a) and/or on an application icon.

In the tap recipient's view of the application (Fig. 2b), the user who originated the tap is flagged, using, as illustrated, an attention (exclamation) icon. In the tap originator's view (Fig. 2c), the recipient's avatar is updated to indicate that they have received the tap, e.g., using the index-finger icon as shown in Fig. 2. Additionally, when a tap occurs, other audio and/or visual indications can be provided to both participants, e.g., an audible sound such as a chime is heard by the recipient of the tap; the recipient receives a notification; etc.
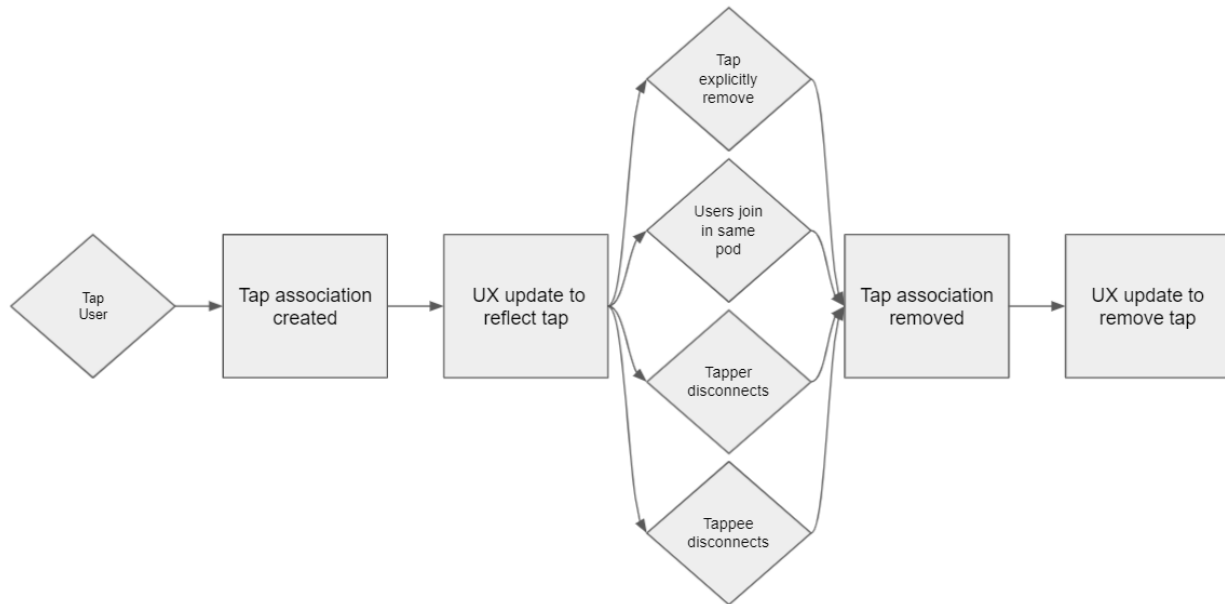
Fig. 3: State flow for shoulder tap

Fig. 3 illustrates a state flow for shoulder tap. A first user taps on a second user's avatar, creating a tap association between the two users. The association includes the tap originator and the tap recipient. Based on the association, the user experience (UX) and interface are updated through audio and/or visual changes. The tap association and visual changes remain in place until one or more of several actions is performed, e.g., the tap is explicitly removed; the two users join the same room in the virtual environment; the tap originator disconnects; the tap recipient disconnects; etc. When one of the actions is performed, the tap association is removed (or fulfilled) and the user interface is updated.

The action of tapping a user can be performed via a number of methods, some examples of which include the following.

- Tapping/clicking on the desired recipient.

- Opening a context menu on the recipient and selecting a tap option.

- Verbally, by saying something like "Hey, <name>."

The tap association is similar to a record in a shared datastore and is accessible to both users. It includes sufficient information to identify the tap originator and the tap recipient.

As illustrated in the example of Fig. 2, the user experience (UX) update can include a variety of audio and/or visual indicators to both the tap originator and the tap recipient.

The tap association remains active and visible until the association record is explicitly removed, or alternatively, marked as fulfilled in some manner. Some example mechanisms to remove or to fulfill the tap include:

- The tap originator or the recipient explicitly removes the tap.

- The tap originator and the tap recipient join in conversation, e.g., by entering the same demarcated region of virtual space.

- The tap originator or the tap recipient disconnects. In some situations, it may be preferable for the tap association to remain.

CONCLUSION

This disclosure describes soft-alerting techniques to gently obtain the attention of individuals in a focus zone within an ambient video communications environment such as a virtual office or world. The techniques are analogous to a shoulder tap in the physical world and allow participants to seek attention without excessive intrusion.

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