# Technical Disclosure Commons

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# AUTOMATICALLY RE-ENABLING EYE GAZE SHARE

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## ABSTRACT

In a remote collaboration session in which participants are not in the same room, participants may wear three dimensional (3D) headsets and share their eye gazes with other participants.  Participants may briefly mute audio and stop sharing their eye gaze. Currently, when a participant wants to unmute audio and resume sharing their eye gaze, the participant must select two separate buttons – one to unmute audio and one to reshare their eye gaze.  Techniques described herein provide for automatically re-enabling eye gaze sharing when unmuting the audio if eye gaze share had previously been selected.

## DETAILED DESCRIPTION

A good real estate agent pays close attention to their clients when showing a property.  In particular, the real estate agent will pay very close attention to non-verbal communication. The agent will take note of what features or problem areas their clients lock on to when looking at a property. For example, if the agent notices their client looking closely at the refrigerator, the agent may want to emphasize that the property has upgraded appliances. If the client is staring at a stain in the carpet, the agent may spin that it's a great place for young kids and pets and that the discounted price reflects the lived-in condition of the property.

When a real estate agent shows a property to a remote client in a video collaboration session, the agent may miss out on a lot of the non-verbal communication that they would normally experience during an in-person showing.  Leveraging hologram technology can significantly enhance a remote showing to make the remote showing more like an in-person experience.  Using existing hologram technology, an agent could provide a virtual walkthrough to their clients who are wearing 3D headsets. Seeing a 3D representation would give the clients an additional perspective. Unfortunately, even in an enhanced

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augmented reality environment, the agent may miss out on what their remote client is specifically looking at during the collaboration session.

A head-gaze cursor / vector is used by a 3D headset user to navigate and select buttons, menu items, 3D objects, etc. It would be ideal in the 3D remote agent example if the agent could see their clients' head gaze cursors in addition to their own 3D headset's head gaze cursor. Each cursor would have its own separate color and/or brightness so that the agent knows where it originates. For example, the agent's cursor may be bright blue (used for navigating the collaboration system menus, mute button, hang up button, share option, etc.) while the client's cursor (from the agent's perspective) may be a dimmer red color. By viewing the client's head gaze cursor, the agent may be able to know exactly what the client is viewing. Although this example discusses a real estate agent, techniques described herein can be applied to many different scenarios, especially scenarios involving sales and customer interactions.

Figure 1, below, illustrates an example in which a user is able to view eye gaze cursors from multiple participants.
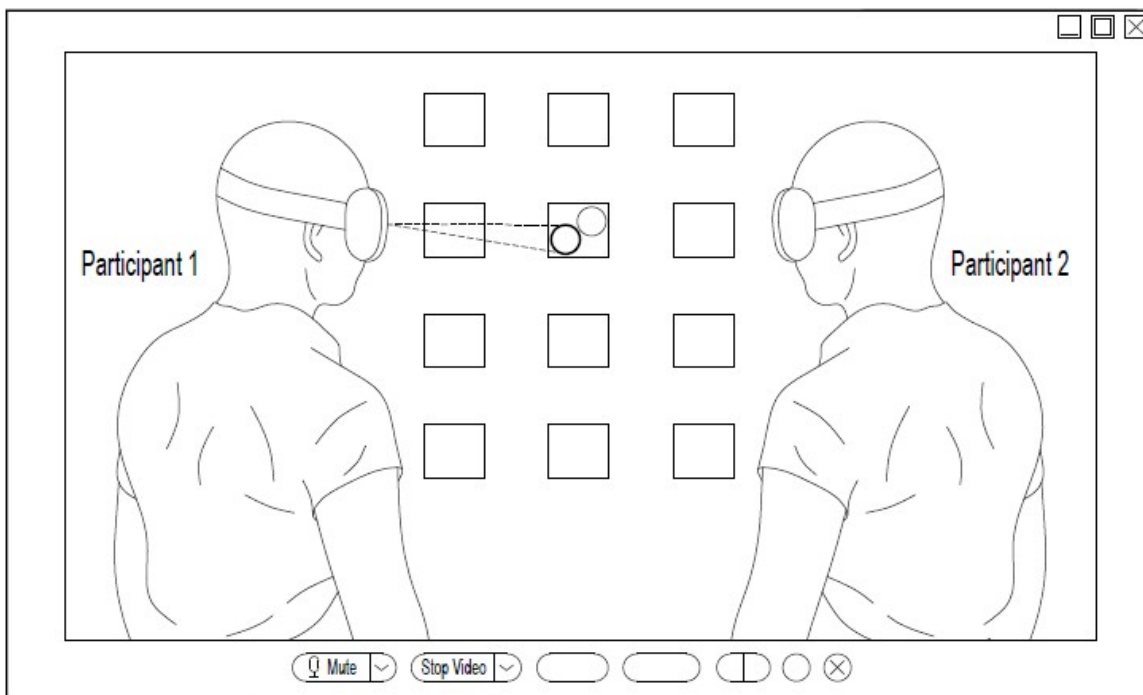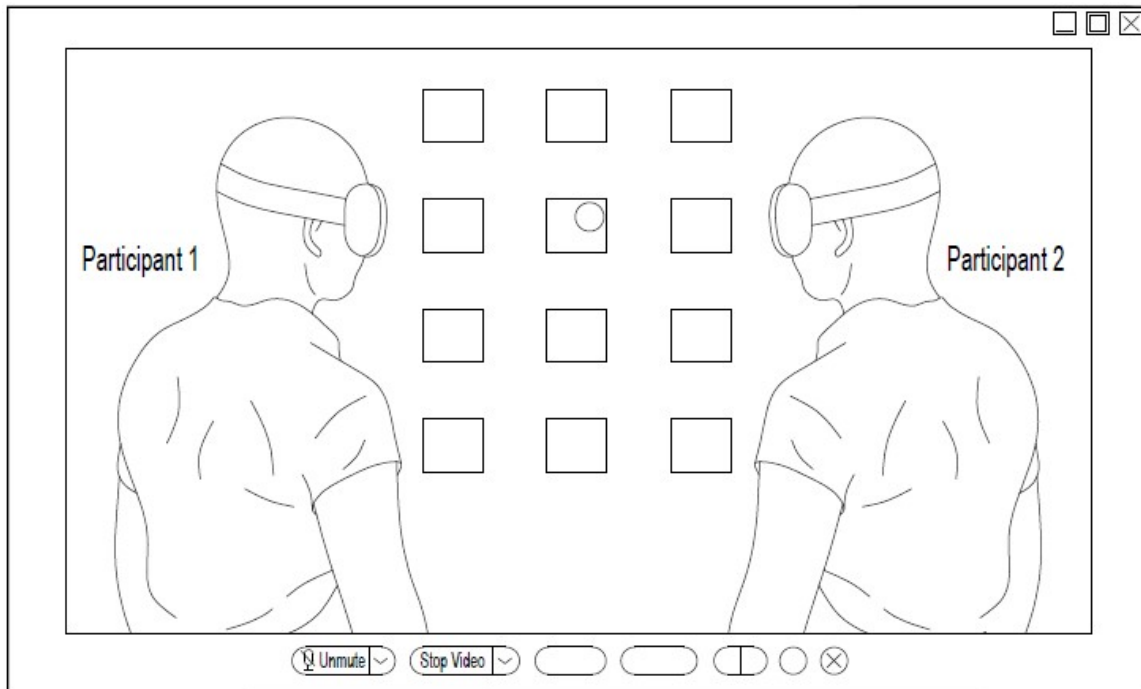


*Figure 1: Example Illustration of Viewing Eye Gazes from Multiple Participants*

As illustrated in Figure 1, Participant 2 is able to view the eye gaze cursors of Participant 1 and Participant 2 at the same time. In this example, Participant 1 has given permission for Participant 2 to view his/her eye gaze. As illustrated in Figure 1, Participant 1's eye gaze cursor is different from Participant 2's eye gaze cursor so Participant 2 is able to distinguish between the two eye gaze cursors.

Figure 2, below, illustrates an example in which a user has unshared their eye gaze so their eye gaze cannot be seen by other participants.



*Figure 2: Example Illustration of Unsharing Eye Gaze*

In the example shown in Figure 2, Participant 1 has unshared his/her eye gaze. As illustrated in Figure 2, Participant 2 is no longer able to view Participant 1's eye gaze cursor. Participant 2 is now able to see only Participant 2's eye gaze cursor.

In a remote collaboration session in which the participants are not in the same room and are sharing their eye gazes with other participants, a participant may want to rapidly mute and unshare their eye gaze. For example, referring to the real estate example discussed above, the remote clients may want to go on mute and unshare their eye gazes while having a brief private side discussion. Later, the clients may want to both unmute their audio and re-share their eye gazes with the remote real estate agent. It is cumbersome

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to press two separate buttons, one for mute/unmute and one for eye gaze share/unshare. It is more convenient to provide one button that toggles both settings at the same time.

Consider an example in which User A, User B, and User C are participating in a video collaboration session while wearing 3D headsets. In this example, User A is a real estate agent and User B and User C are real estate clients. User A may initiate a 3D session and User A's 3D headset may create a video stream using a front facing camera. The video stream is sent to a media component in the cloud. Using their headsets, User B and User C are able to view the video that is being captured using User A's headset and streamed out via the cloud media component.

In this example, consider that User B and User C give consent to send their eye gaze coordinates to the cloud component. The cloud component generates head gaze cursors for both User B and User C and the head gaze cursors may be seen by User A when User A is wearing a 3D headset. Each cursor (one for User B and one for User C) has its own unique color, which is a different color than the head gaze cursor being generated locally by User A's own headset. User A is able to see all three cursors, while User B sees only their own cursor (generated by User B's headset) and User C sees only their own cursor (generated by User C's headset).

According to techniques presented herein, if User B selects the mute button for a session, User B's audio is muted and User B's eye gaze coordinates are not shared. In the same manner, if User C selects the mute button for that session, User C's audio is muted and User C's eye gaze coordinates are also not shared. Later, if User B selects the unmute button, User B's audio is unmuted and User B's eye gaze coordinates are shared. Again, in the same manner, if User C selects the unmute button for the session, User C's audio is unmuted and User C's eye gaze coordinates are also shared again. Re-selecting the eye gaze share button while on mute would put the user into a mode in which the user's audio is still on mute, but the user's eye gaze is shared. At that point, selecting the unmute button would unmute the user's audio and the user's eye gaze would continue to be shared.

According to techniques described herein, the more common case in which a user mutes audio and stops sharing their eye gaze can be performed with a single button click. Meanwhile, the more uncommon case in which the user mutes audio but continues sharing their eye gaze could be performed with a two button click process.

In summary, according to techniques presented herein, a meeting participant's eye gaze coordinates are not shared when the user goes on audio mute. In addition, unmuting the audio automatically reenables eye gaze sharing if eye gaze sharing had previously been selected.