



asmVR: Enhancing ASMR Tingles with Multimodal Triggers Based on Virtual Reality

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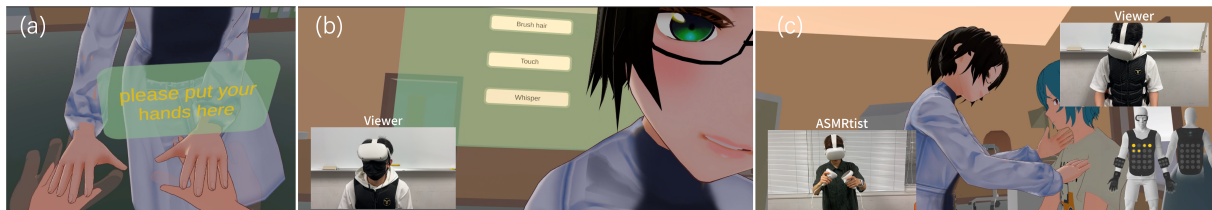


Figure 1: asmVR is a VR platform for immersive ASMR experiences with interactive ASMRtist and tactile feedback. (a) Offline mode touch experience, (b) offline mode whisper experience, (c) real-time ASMRtist and viewer in online mode.

ABSTRACT

Anxiety and stress have gradually become commonplace mental health problems afflicting many people worldwide. We propose asmVR, a novel approach to enhance the autonomous sensory meridian response (ASMR) experience by combining multimodal triggers including visual, auditory, tactile, and emotional stimuli. asmVR helps users enhance ASMR tingling sensations through online and offline modes, provides realistic VR environments and remote avatar ASMRtist for users, showcasing its potential for stress relief, emotion regulation, and customization. Additionally, it reveals new possibilities for the future application of VR in the field of psychotherapy.

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CCS CONCEPTS

• Human-centered computing; • Virtual Reality; • Empathic computing;

KEYWORDS

ASMR, Virtual Reality, Tactile, Avatar, Multiplayer

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1 INTRODUCTION

Autonomous sensory meridian response (ASMR) is a tingling sensation triggered by visual, auditory, and other stimuli. Typically, ASMR triggers can cause a tingling sensation in the user's head, neck, and upper spine. ASMR tingling can help regulate emotions and potentially provide therapeutic benefits, such as lowering heart rate, promoting positive emotions, and improving interpersonal relationships. [Poerio et al. 2018]. ASMR triggers refer to certain special sounds, visuals, or cross-modal stimuli that cause tingling

sensations in some individuals. Common ASMR triggers include sounds and scenes from nature, such as rain, whispering, tapping, lighting, and scenarios involving personal attention [Barratt et al. 2017]. Researchers categorize ASMR triggers into different types: visual, auditory, tactile, and emotional triggers. Due to different preferences, sensitivities, and experiences, ASMR triggers vary from person to person [Niu et al. 2022]. ASMR videos or audio recordings effectively help people alleviate excessive mental stress as a private, convenient, low-cost, and contactless form of entertainment. However, intimacy is hard to bridge over a video platform. Virtual reality potential lies in immersing viewers in a 3D environment, utilizing technology to evoke intimate encounters with immediate intensity [Wilson 2020]. So we propose asmVR, a multimodal trigger VR-based experience to enhance ASMR tingles. The goal of this system is to bridge the gap of intimacy between the ASMRtist (short for ASMR artist) and viewer using a full-body audio-visual-tactile feedback system. ASMRtist can empathetically engage with the viewer through personalized attention, roleplaying, and simulated social interactions [Niu et al. 2022].

2 ASMVR DESIGN AND IMPLEMENTATION

2.1 Preliminary Workshop

We conducted an online workshop, involving seven ASMR enthusiasts (5 females, ages between 20-30) collaborating to design asmVR for ASMR experiences. The following findings emerged through observation and interviews during the workshop: (1) Preference interviews revealed a higher occurrence of vocabulary associated with friction, tapping, whispering, and other terms related to human-body interaction. (2) Tactile triggers often involve ASMRtists touching the camera, objects, or other individuals, thereby inducing tingling sensations for the viewer through empathy and perceptual illusions. Realistic perception of vibrations posed a challenge for the audience.

2.2 Multimodal ASMR Triggers

We developed the VR environment using the Unity game engine¹ and used the Meta Quest 2² and Final IK Unity asset³ to synchronize the movements, basic expressions, and eye blinks with the respective virtual avatars. For auditory triggers, we employed the KU100 binaural microphone⁴ to record and stream high-quality binaural ASMR audio. Tactile feedback was discreetly delivered to the upper body and arms through the combined utilization of the bHaptics Tactsuit X402 and bHaptics Tactosy for Arms⁵. asmVR is comprised of two modes: pre-recorded offline and real-time online.

Offline Mode. Users can experience various ASMR experiences, including whispering, virtual avatar touch, and hair combing. By combining two or more triggers, such as incorporating visual, auditory, real tactile, and emotional stimuli, we collectively facilitate the induction of ASMR tingling sensations and enhance user immersion.

¹<https://unity.com/>

²<https://www.meta.com/quest/products/quest-2/>

³<https://assetstore.unity.com/packages/tools/animation/final-ik-14290>

⁴<https://www.neumann.com/en-en/products/microphones/ku-100/>

⁵<https://www.bhaptics.com/tactsuit>

Online Mode. We utilized Unity’s multiplayer networking solution, Netcode⁶, for simultaneous avatar interaction. The user can experience real-time ASMR via remote ASMRtist for increased intimacy, while the ASMRtist can choose to role-play as a doctor, massage therapist, hair stylist, or other virtual personas to interact with their viewers and enhance intimacy by sending tactile feedback to the viewer remotely. The viewer’s avatar overlays the binaural microphone placed in front of the ASMRtist.

3 DEMO EXPERIENCE

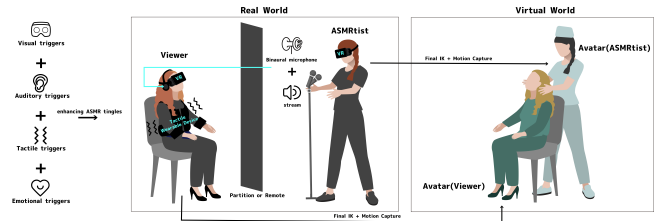


Figure 2: System diagram of asmVR for the online mode

For our demonstration at SIGGRAPH Asia, the audience will have the option to choose between offline and online modes. For the offline mode, the ASMRtist featured in the scene will be pre-recorded using motion capture animations. The audience will have the choice of three distinct ASMR experiences: whispering, hair brushing, and touching. For the online mode, we will set up a divider to ensure physical separation between the participant and the ASMRtist. Both the audience and ASMRtist (a co-author) will embody their respective avatars in real time. The experience will last about 3 minutes each.

4 CONCLUSION

asmVR expands ASMR experiences through VR, haptic feedback, and avatar interaction, enabling a more intimate interaction with ASMRtists. Our research also highlights the promising prospects of VR applications in psychotherapy.

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⁶<https://unity.com/products/netcode>