

asmVR: Light Triggers in Virtual Reality to Induce ASMR

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Figure 1: (left) the proposed asmVR system setup, (middle) The ASMRtist uses a flashlight to create light triggers, and (right) The ASMRtist roleplays using a doctor avatar to touch the viewer's face

Abstract

Autonomous sensory meridian response (ASMR) is a tingling sensation that can be aroused by visual, sound, touch and emotional triggers, and can produce feelings of relaxation and euphoria. Light trigger is a new kind of visual trigger that has been gaining popularity in YouTube ASMR videos, and we analyzed this to draw design considerations. From there, we propose asmVR, a VR-based method to experience ASMR using light triggers. The ASMRtist can create the content using hand-tracked light triggers while roleplaying a virtual avatar, while viewers can experience an immersive and intimate relation with them to help trigger ASMR. We also propose a user study plan in the future to evaluate its effectiveness in inducing ASMR, as well as propose future development plans.

CCS Concepts

• **Human computer interaction** → Virtual reality;

1. Introduction

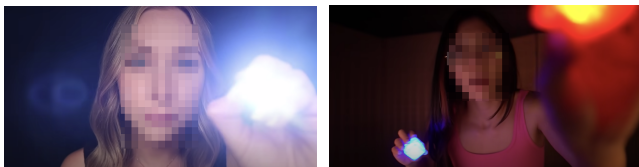
Anxiety disorders are very common around the world, especially during COVID-19, and show an upward trend, so people want to find some ways to reduce stress and relax, ASMR is a good choice. Autonomous sensory meridian response (ASMR) is a tingling sensation that typically begins on the scalp and moves down the back of the neck and upper spine. ASMR can produce feelings of relaxation and euphoria, improve mood, and even may relieve symptoms of insomnia and depression [RBB20]. Therefore, there are many people who start choosing ASMR as a way to relax. ASMR videos are becoming increasingly popular on YouTube, and there are more than 5.2 million videos of ASMR on YouTube so far this year.

ASMR is used to describe a 'tingly' physical response that viewers may experience by watching ASMR videos. ASMRtists (used to refer to ASMR artists or content creators) try to use various triggers to help viewers induce ASMR tingling. Shou Niu et al.

summarized them into four types of videos: visual, sound, touch and scenario [NMB*22a]. These different methods and triggers are summarized as multimodal interactions for arousing ASMR. All these triggers have a very important feature, that they emphasize senses of intimacy and immersion. In Naomi Smith and Anne-MarieSnider's research, they believe that intimacy is one of the important factors inducing ASMR tingling [SS19]. Therefore, the research of improve the immersion and intimacy of ASMR videos holds great promise for the advancement of inducing ASMR tingling.

With the development of technology, virtual reality (VR) is constantly applied in games and movies. VR technology is increasingly being used to study intimate relationships, and as a viable method to engage in relational processes by creating digital and immersive spaces. In Helle Breth Klausen's research, some ASMR videos have begun to use VR technology and three-dimensional binaural sound to create immersion and presence, and may even

induce parahaptic interactions [Kla21]. Light trigger is a kind of visual trigger and very common in ASMR videos, and with the development of VR technology, we can simulate different lights by using game engine. Therefore, the application of light triggers in VR to induce ASMR will be a new attempt and will be committed to increasing viewers' sense of immersion and intimacy, helping to induce ASMR tingling and feeling relaxed. The contributions of this work are therefore the following: 1) we propose asmVR, a VR-based method to induce ASMR using light triggers, and 2) we detail the design and implementation process of our prototype, as well as propose a future user study to evaluate its effectiveness.



(a) The ASMRtist uses flashlight to scan viewers' face (b) The ASMRtist uses luminous props to interact with viewers

Figure 2: Example screenshots of ASMR light trigger videos showing light trigger interactions from YouTube.

2. Design and Implementation

To design the asmVR experience, we first analyze the common elements and methods applied in ASMR light trigger videos so that we can have a preliminary impression on how ASMRtists use light triggers to induce ASMR, and then apply them in our design. We randomly selected 10 ASMR light trigger videos from 10 ASMRtists with more than 100,000 views on YouTube for grounded theory analysis [NMB*22b], and two authors of this research watched 5 videos each and take annotations. Based on the gathered data, to design from the perspective of ASMRtists, three main factors need to be considered: The first is to control the movement and change of light, the second is sound recording, and the third is interaction with viewers. asmVR is a VR light triggers system, using the Unreal game engine. For the hardware, we chose Meta Quest 2 and KU100 binaural microphone. We use the Take Recorder function in Unreal to record and track the hand controller's movement. From the perspective of ASMRtists, they can design their own avatar, such as they can design a doctor's role (see Figure 1(middle and right)), play roles in scenarios, and interact with viewers so that it can increase emotional communication with viewers. In this system, ASMRtist can control the movement of the virtual light through quest controllers. From the view of viewers, they will experience light triggers in VR, and they will see avatars as ASMRtists which is completely different from ASMR videos they have experienced before. asmVR can not only can help ASMRtists feel free to select and control different virtual light sources by manipulating the hand controllers, but it can also let viewers experience a new immersive ASMR method. Viewers can immerse themselves in a VR environment, enjoy interaction with avatars, and experience ASMR tingling brought by virtual light triggers.

3. Planned User Study

For our planned user study, the goal is to determine if asmVR is able to better induce ASMR to viewers. 20 participants will be recruited to experience as viewers. We plan to conduct a within-subject study with the ASMR experience as the independent variable. Before the experiment, we will use the big five inventory and sensory suggestibility scale to measure their susceptibility to ASMR [KCO*20]. After that, they are required to select their favorite VR ASMR light trigger videos from our pre-recorded videos. They will watch non-VR ASMR videos first as the baseline condition while we record their heart rate and skin conductivity [PBHV18]. After the experience, they will rest for 5 minutes while answering a Likert-scale questionnaire regarding their ASMR sensation. We then repeat the procedure for the asmVR. The order of conditions will be counterbalanced.

4. Conclusion and Future Works

We propose asmVR, a VR-based method to induce ASMR using light triggers. By providing ASMRtists with immersive tools and embodying avatars, we believe that this can potentially assist viewers to induce ASMR and feel more relaxed. For our future works, we will integrate motion capture for the avatar so that accurate yet subtle body movements can enhance the experience for the viewers. Furthermore, we also plan to explore tactile triggers in ASMR video design by connecting tactile perception wearable devices with asmVR, which may enhance viewers' feeling of being illuminated by temperature change.

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