CFP

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As Augmented Reality (AR) and Virtual Reality (VR) are being more widely used in the home and workplace, user comfort, health, and safety are becoming more important. Users need to be able to have confidence in AR/VR devices and content, including comfort, health, and safety. Comfort concerns can lead users to avoid or prematurely decline to use AR/VR, even if the concerns are readily addressed or corrected. For example, in VR, some degree of visually induced motion sickness (VIMS) is reported by 30-40% of users [1], and for some people, these effects can last for several hours after the VR experience [2]. In outdoor mobile AR applications, AR content might distract people from real-world dangers [3].

Costello [4] identifies a range of health and safety concerns associated with VR divided into physical, physiological, and psychological factors. Similarly, there could be health concerns associated with AR, such as eye strain associated with the vergence accommodation conflict common in optical see-through AR systems [5].

It is important to note that comfort, health, and safety concerns for AR and VR can be quite different. For example, VIMS could be more concerned with VR, but less prevalent in AR due to users being able to see and calibrate with the real world in real time under most circumstances. However, while VR use typically takes place in a controlled setting with a predefined or preselected tracking space, AR may be used anywhere, with potential physical hazards or dynamic events in the surroundings unexpected to the users or unknown to application designers.

There are also important issues that should be considered for specific sectors of the population, such as children, or people with disabilities. For example, Yamada-Rice et al. [6] identify unique health and safety concerns for younger ages of population .

Despite the notion that comfort, health, and safety are important issues for use of AR and VR, there have been relatively few venues to present research in the field. This workshop will provide an opportunity for academic and industry researchers to present their latest work, and research in the process. It will also host a discussion identifying important research topics in comfort, health, and safety.

The workshop will consist of two online sessions over a single day. The first session will be a mini-symposium, with attendees presenting short papers. The best of these will be invited to be submitted in expanded form for a special issue of the MTI journal. The second session will be devoted to a discussion of the important research issues in comfort, health and safety with the goal of producing a substantial review paper summarizing grand challenges that need to be addressed. Participants will first brainstorm a list of relevant topics, including ideas motivated by the earlier presentations. We will then use breakout rooms to conduct a *World Cafe* style session, in which participants rotate between rooms to ideate and distill the key challenges and potential paths to research solutions. These discussions will be summarized in a position paper to be submitted for publication.

A final important outcome of the workshop will be to identify best practices for maintaining and promoting comfort, health, and safety, and for reducing and addressing associated health and safety issues. These best practices will be summarized on a website including links to videos and examples.

References

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