Submission Details: xr_205s1

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Title

Title: Curl Clash: Simulating Realistic Sensations for a Comprehensive Curling Experience

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Content Category

Content Category: XR Demo

Keywords

Keywords: Interaction technologies
Virtual and augmented reality

Abstract

Abstract (Maximum 300 words):

Curl Clash is an XR system designed to provide an immersive curling experience with a unique focus on realistic sliding, a feature rarely implemented in VR sports. Our system incorporates sliding mats and shoe covers to simulate the slipperiness of ice, translating real-world sliding motions into the virtual environment. Additionally, custom-made props and motion trackers enhance the experience of throwing and sweeping. Targeted at beginners, Curl Clash features three practice levels to develop essential curling skills. By combining visual, auditory, and haptic feedback, our system offers a comprehensive and accessible way to learn and enjoy curling.

Executive Summary

Executive Summary (Maximum 50 words):

Curl Clash is an immersive curling XR system providing a realistic sliding experience. With XR devices and real props, users can learn important movements of the curling sport, such as sliding, throwing, and sweeping

Optional Review Service

Would you like to request review by the English Review Service? No

References

References (Maximum 300 words):

1] Maxwell Kennard, Haihan Zhang, Yuki Akimoto, Masakazu Hirokawa, and Kenji Suzuki. 2020. Effects of Visual Biofeedback on Competition Performance Using an Immersive Mixed Reality System. In 2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC). IEEE, 3793–3798. [2] Takayuki Nozawa, Erwin Wu, and Hideki Koike. 2019. VR Ski Coach: Indoor Ski Training System Visualizing Difference from Leading Skier. In 2019 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). 1341–1342. https: //doi.org/10.1109/VR.2019.8797717 [3] Li-Yang Wang, Ping-Hsuan Han, and Liwei Chan. 2022. Push-Ups: Enhancing Kinesthetic Experience with Shape-Forming Devices on the Feet Soles. In Proceedings of the Sixteenth International Conference on Tangible, Embedded, and Embodied Interaction. 1–8.

Software and Hardware Used

Software and Hardware Used:

Vive XR Elite * 1 Vive XR Elite battery backup * 1 Vive Wrist Tracker * 2 Vive Ultimate Tracker * 3 Curling stone prop * 1 Curling broom prop * 1 Sliding mat * 4 (0.5m * 1.8m each) iPad * 2 Laptop * 4

Project Information

Time Length: 4:58 minutes

Maximum number of participants who can simultaneously participate in your demo: 1

Technical/Installation Details

Technical Description:

To convey realistic sliding, we use sliding mats and shoe covers to simulate the slipperiness of the ice surface. As players slide on the mats, their motion data is transferred to our virtual world. In addition to sliding motion, we incorporated custom-made props to enhance the curling experience. Multiple trackers are mounted on the props to capture their real position.

Has this work appeared or been submitted elsewhere? No

Project URL:

Preferred floor space (width x depth x height). Be sure to specify the units, e.g.: 15x10x7 (feet) or 5x3x2 (m). 4 x 4 (m)

Lighting Requirements: Must be in a lighted area

Lighting Emission: Does not give off any light whatsoever

Sound Requirements: Is indifferent to sound (could be in loud or quiet area of exhibition)

Sound Emission: Produces some sound, but only within the confines of the piece

Other Impacts Are there any other issues/requirements that will impact on nearby demonstrations (e.g. VR Trackers interfering with each other, wireless transmissions, smells, water vapour, etc.)?

The surroundings of our exhibition environment need to be stable because the Vive Ultimate Tracker is a vision-based device. It positions itself in the space by scanning the surroundings. Therefore, we hope to minimize environmental changes, such as foot traffic, which can disrupt the tracker's ability to maintain accurate tracking.

What hardware is required to view your piece on: Experience in VR headset and cast the content to our laptop.

Please describe any safety hazards or concerns related to the exhibiting of displays/demonstration. The experience may involve physical contact and may lead to potential injury, e.g. slipping.

Describe your network requirements in detail. Please specify ethernet and/or wireless connectivity, frequencies used, minimum internet bandwidth, and list any non-integral wireless devices as applicable. None.

Describe your electrical requirements. Is electricity an integral part of your installation? One socket and one extend cord.

Please describe any other installation requirements. None.

Submission Option: ACM SIGGRAPH Education Resources

If your submission is not selected for the conference, you may opt to submit my materials to the ACM SIGGRAPH

Education committee for CGEMS or cgSource consideration.
If your submission is selected for the conference, you can still opt to make a separate, modified submission to the ACM SIGGRAPH Education Committee for CGEMS or cgSource consideration.

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Main Image of Project

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Entry Video

Entry Video (2 minutes max) (200MB max - mov, mp4, avi, mpg):

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Supplementary Materials

Floor Plan PDF (10MB max - pdf):

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Size: 162KB
Pages: 3

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MD5: 1651e9268fc83fb59a7b507475ee4383

Optional PDF Copyright Text, Image Credits, and Comments:

Optional Supplementary Materials (5MB max - zip):

Optional Supplementary Video:

Optional Multimedia file (100MB max - mov, mp4, avi, mpg):

Acknowledgement

Acknowledgement: yes