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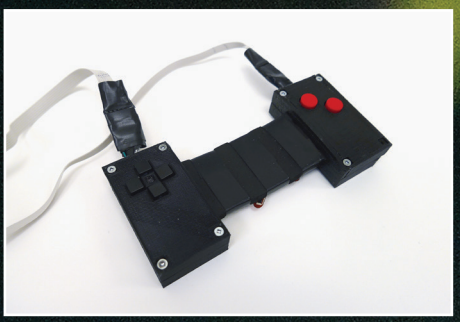

DEMO HOUR

1. Bendtroller

Bendtroller is a deformable game controller that allows players to bend and twist it to control in-game actions such as jumping or rotating puzzle pieces. The device is composed of two rigid sides with buttons connected by a flexible bridge, which contains bend sensors to detect its deformation. The game-playing experience is enhanced by mapping button input to navigation events and deformation gestures to in-game actions (jumping, rotating, punching). We found that deformation gestures are best mapped to simple, natural tasks.

Shorey, P. and Girouard, G. Bendtroller: An exploration of in-game action mappings with a deformable game controller. *Proc. of the 2017 CHI Conference on Human Factors in Computing Systems.* ACM, New York, 2017, 1447–1458; https://doi.org/10.1145/3025453.3025463
http://cil.csit.carleton.ca/bendtroller/
https://www.youtube.com/watch?v=5dZoi0y8Lag

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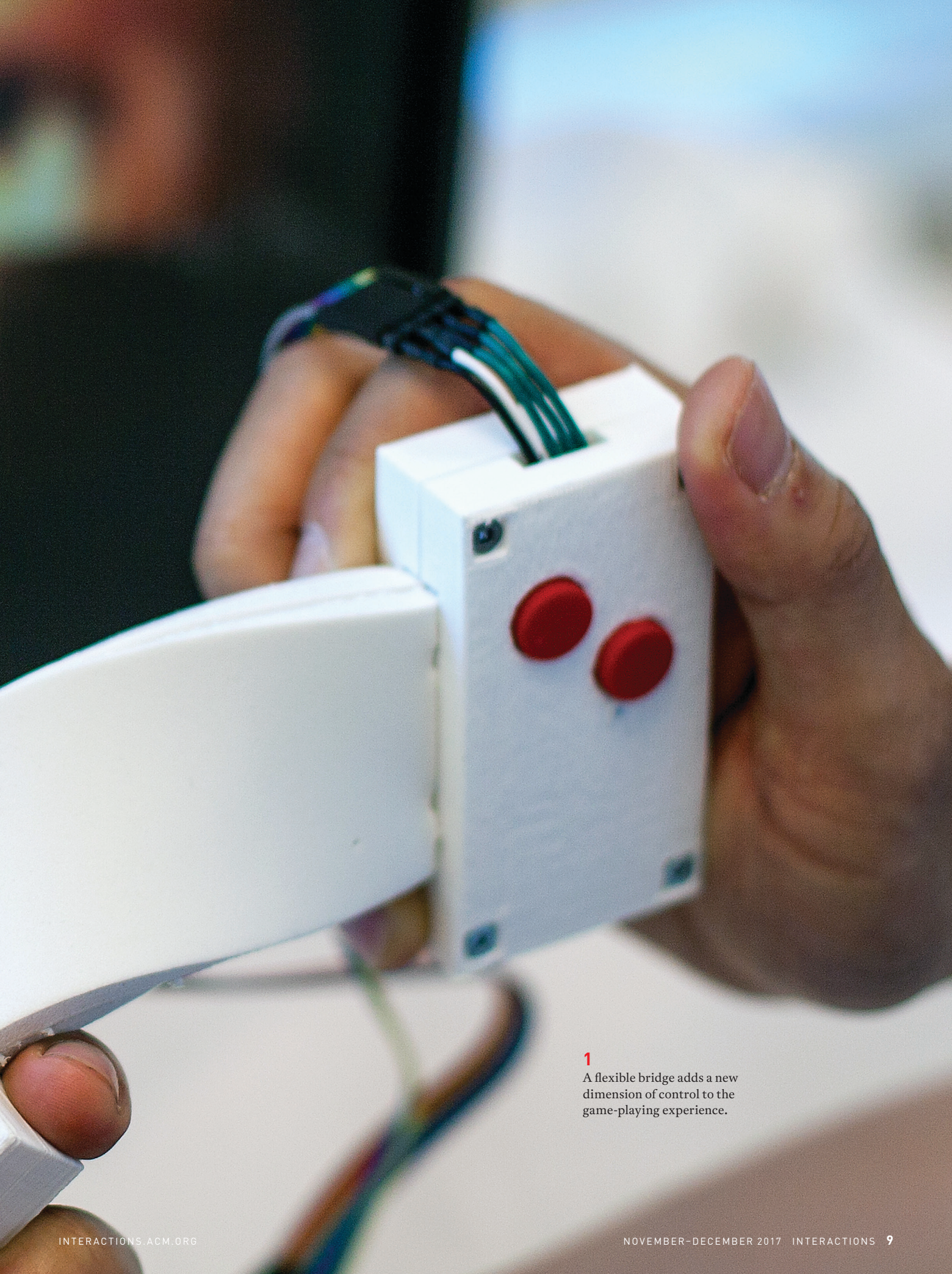
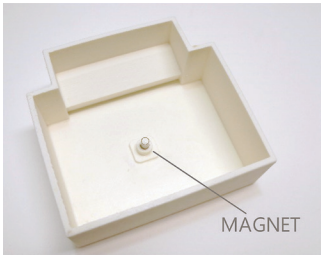
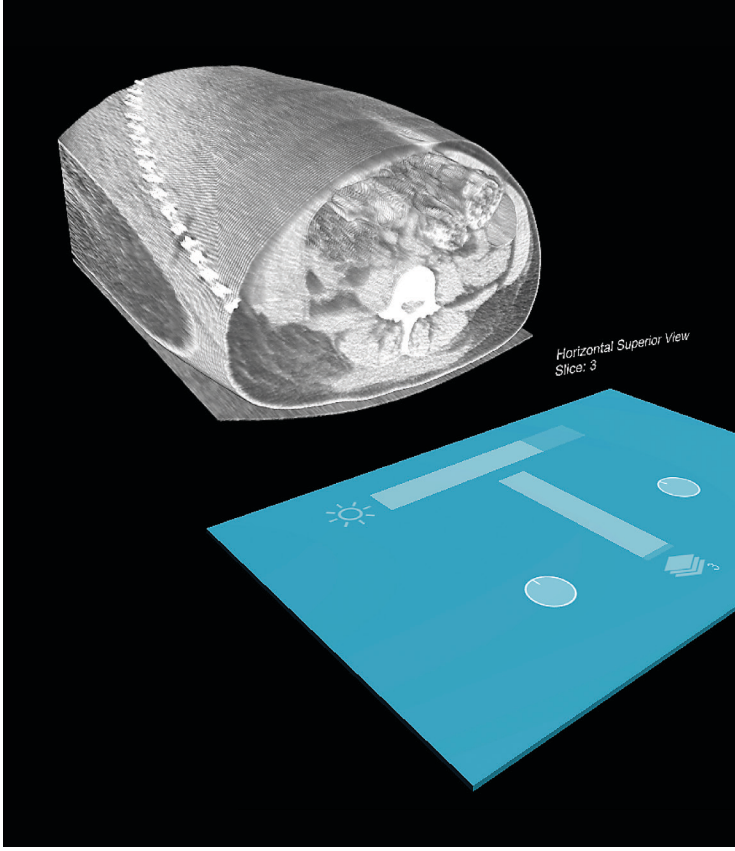


1
A flexible bridge adds a new dimension of control to the game-playing experience.

2
By simply embedding a small magnet, everyday objects become interactive, without the need for installing electronic components.





3
Virtual desk and rendered medical volume.

3
The system combines virtual reality and desktop touch interactions to aid radiodiagnostics and cancel out improper light and luminance conditions.

2. TRing

TRing offers a novel method for bringing interactivity to objects by embedding a small magnet in them and using a finger-worn device. No time-consuming post processing is needed. Using a magnetic-sensing technique, the system tracks the user's fingertip around the embedded magnet.
TRing can thus easily replace conventional physical interface elements such as buttons and sliders. Our work will benefit HCI practitioners as well as general users who want to quickly implement a personalized physical interface without having deeper knowledge of electronic components.

Yoon, S.H., Zhang, Y., Huo, K., and Ramani, K. TRing: Instant and customizable interactions with objects using an embedded magnet and a finger-worn device. *Proc. of the 29th Annual ACM Symposium on User Interface Software & Technology.* 2016.
https://engineering.purdue.edu/cdesign/wp/tring-instant-and-customizable-interactions-with-objects-using-an-embedded-magnet-and-a-finger-worn-device/
https://youtu.be/MDS5G7-U9Kk

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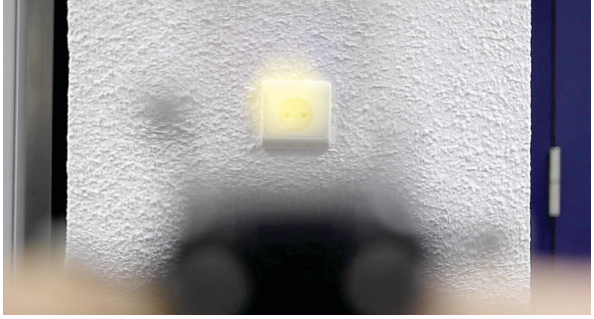
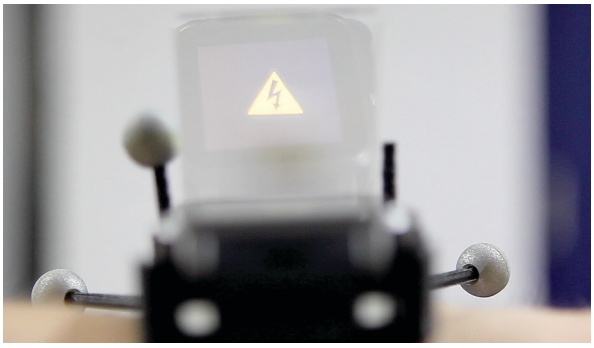
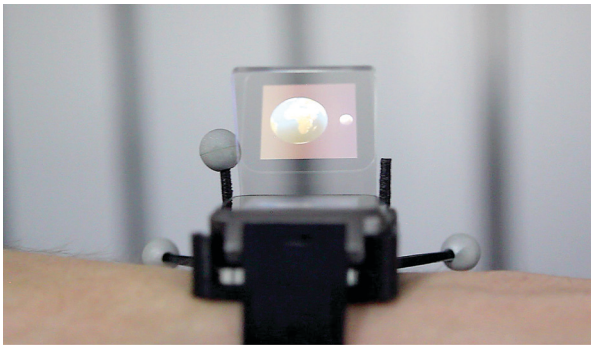
3. VRRRRoom

Reading-room conditions such as illumination, ambient light, and display luminance play an important role in how radiologists analyze and interpret images. Indeed, serious diagnostic errors can appear when observing images through everyday monitors. Typically these occur whenever professionals are ill positioned with respect to the display, or when they visualize images under improper light and luminance conditions. VRRRRoom combines immersive HMDs with interactive surfaces to support radiologists in analyzing medical images and formulating diagnostics. In this project, we show that virtual reality is a viable, portable, and cost-efficient option that can assist radiodiagnostics by considerably diminishing the effects of unsuitable ambient conditions.

Sousa, M., Mendes, D., Paulo, S., Matela, N., Jorge, J., and Simões Lopes, D. VRRRRoom: Virtual reality for radiologists in the reading room. *Proc. of the 2017 CHI Conference on Human Factors in Computing Systems.* ACM, New York, 2017; http://dx.doi.org/10.1145/3025453.3025566
http://it-medex.inesc-id.pt/project/vrrrroom
https://youtu.be/7sFT-vO27XQ







4
WatchThru extends smartwatch displays into 3D space, enabling novel AR interactions.

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4. WatchThru

WatchThru is an interactive method for extending wrist-worn displays on commercially available smartwatches. To address the limited visual and interaction space, WatchThru expands the device into 3D through a transparent display. This enables three novel interactions that leverage and extend smartwatch glanceability: Pop-up Visuals, Second Perspective, and Peek-through. In contrast to most AR displays, this device does not obstruct the user's face, nor does it require the user to hold it (like a smartphone). It therefore has interesting potential as a wearable, unobtrusive, and always-accessible wrist-worn AR device.

Wenig, D., Schöning, J., Olwal, A., Oben, M., and Malaka, R. WatchThru: Expanding smartwatch displays with mid-air visuals and wrist-worn augmented reality. *Proc. of the International Conference on Human Factors in Computing Systems.* 2017.
http://www.dirkwenig.eu/research/watchthru/
https://www.youtube.com/watch?v=PsNDF8yrhwI

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WatchThru has interesting potential as an unobtrusive and always-accessible wrist-worn AR device.

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