

# Virtual reality app makes haptics as immersive as visuals

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Disney Research has developed a 360-degree virtual reality application that enables users to enhance their experience by adding customized haptic effects that can be triggered by user movements, biofeedback or timelines.

A team led by Ali Israr, senior research engineer at Disney Research, demonstrated the haptic plugin using a unique chair to provide full body sensations and a library of "feel effects" that enabled users to select and customize sensations such as falling rain, a beating heart or a cat walking.

"Virtual reality has seen a renaissance in recent years as advancements in computer graphics, computing platforms and the seamless flow of information between hardware and software have come together in a powerful way," said Israr. "Our team is working to make VR haptic sensations just as rich as the 360-degree visual media now available."

The researchers will present their VR360 player at the ACM Symposium on Virtual Reality Software and Technology, Nov. 2-4 in Munich.

"Current VR systems provide 'buzz-like' haptic sensations through hand controllers," Israr said. "But technology exists for much richer sensations. We've created a framework that would enable users to select from a wide range of meaningful sensations that can be adjusted to complement the visual scene and to play them through a variety of [haptic feedback](#) devices."

The haptic playback and authoring plugin developed by the researchers connects a VR game engine to a custom haptic device. It allows users to create, personalize and associate haptic feedback to the events triggered in the VR game engine.

The haptic definition app, called VR360HD, was developed and tested using a consumer headset and Disney Research's haptic chair. The chair features a grid of six vibrotactile actuators in its back and two subwoofers, or "shakers," in the seat and back. The grid produces localized moving sensations in the back, while the subwoofers shake two different regions of the body and can create a sensation of motion.

Users were able to select from a library of feel effects, also assembled and tested by Disney Research. These feel effects are identified with common terms such as rain, pulsing, or rumbling, and can be adjusted so that people can distinguish, for instance, between a light sprinkle and a heavy downpour.

Combining creativity and innovation, this research continues Disney's rich legacy of inventing new ways to tell great stories and leveraging technology required to build the future of entertainment.

**More information:** [www.disneyresearch.com/publications/ced-haptic-feedback/](http://www.disneyresearch.com/publications/ced-haptic-feedback/)

Provided by Disney Research

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