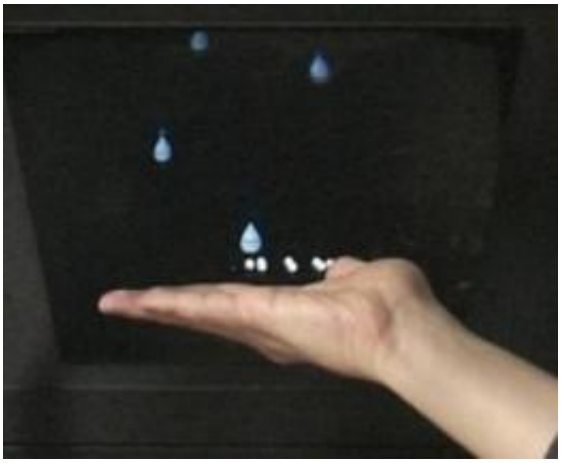
Touchable Hologram Becomes Reality (w/ Video)

August 6 2009, by Lisa Zyga



In this demonstration of the touchable hologram, ultrasound is radiated from above and the user feels as if a rain drop hits his palm. Credit: Hiroyuki Shinoda.

(PhysOrg.com) -- Researchers from the University of Tokyo have developed 3D holograms that can be touched with bare hands. Generally, holograms can't be felt because they're made only of light. But the new technology adds tactile feedback to holograms hovering in 3D space.

Called the Airborne Ultrasound Tactile Display, the hologram projector uses an ultrasound phenomenon called acoustic radiation pressure to create a pressure sensation on a user's hands, which are tracked with two Nintendo Wiimotes. As the researchers explain, the method doesn't use any direct contact and so doesn't dilute the quality of the hologram. The

researchers, led by Hiroyuki Shinoda, currently have the technology on display at SIGGRAPH 2009 in New Orleans.

"A retroreflective marker is attached on the tip of user's middle finger," the researchers explain on their website. "IR LEDs illuminate the marker and two Wiimotes sense the 3D position of the finger. Owing to this hand-tracking system, the users can handle the floating virtual image with their hands."

In the video, the researchers demonstrate how a user can dribble a virtual bouncing ball, feel virtual raindrops bouncing off their hand, and feel a small virtual creature crawling on their palm. The researchers hope that the technology will have applications in video games, 3D CADs, and other uses.

More information: Shinoda Lab

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