Haptic glove

LIGHTWEIGHT HAPTIC FEEDBACK GLOVES LET USERS 'TOUCH' VR OBJECTS

SCIENCE

New, lightweight haptic feedback gloves provide a realistic feeling of lifting and manipulating virtual objects.

As the business of virtual reality heats up, engineers and software developers have been working on technology that will allow users to touch virtual objects while also feeling like they are touching, grasping and manipulating real objects. Innovations in this area have already included a full-body VR suit and a real-world holodeck. Now, scientists from Ecole Polytechnic Federale Lausanne (EPFL) and ETH Zurich have developed an ultra lightweight glove that enables users to feel and manipulate virtual objects. The system weighs less than 8 grams per finger and could be run on just a small battery.

According to Herbert Shea, head of EPFL's Soft Transducers Laboratory, "We wanted to develop a lightweight device that – unlike existing virtual-reality gloves – doesn't require a bulky exoskeleton, pumps or very thick cables". In tests, volunteers performed virtual reality tasks and reported a realistic feeling from the gloves.

The glove, called DextrES, is made of nylon and thin elastic metal strips, separated by a thin insulator. When the user's fingers come into contact with a virtual object, the controller applies a voltage difference between the metal strips. Electrostatic attraction creates a braking force between the strips, which prevents the fingers from moving past a certain point. This gives wearers the impression that there is something in their hand. When the object is 'released' the voltage is removed. The metal strips will then separate and the user can once again move their fingers freely.

6th November 2018
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Takeaway:

The researchers still need to conduct tests to help them render realistic feedback in a variety of conditions. The next step is to scale up the device and apply it to other parts of the body to create a full body haptic feedback system. In addition to gaming, researchers believe potential applications could include training surgeons or use in augmented reality applications. What other uses are there for a haptic glove that provides the sense of touch?