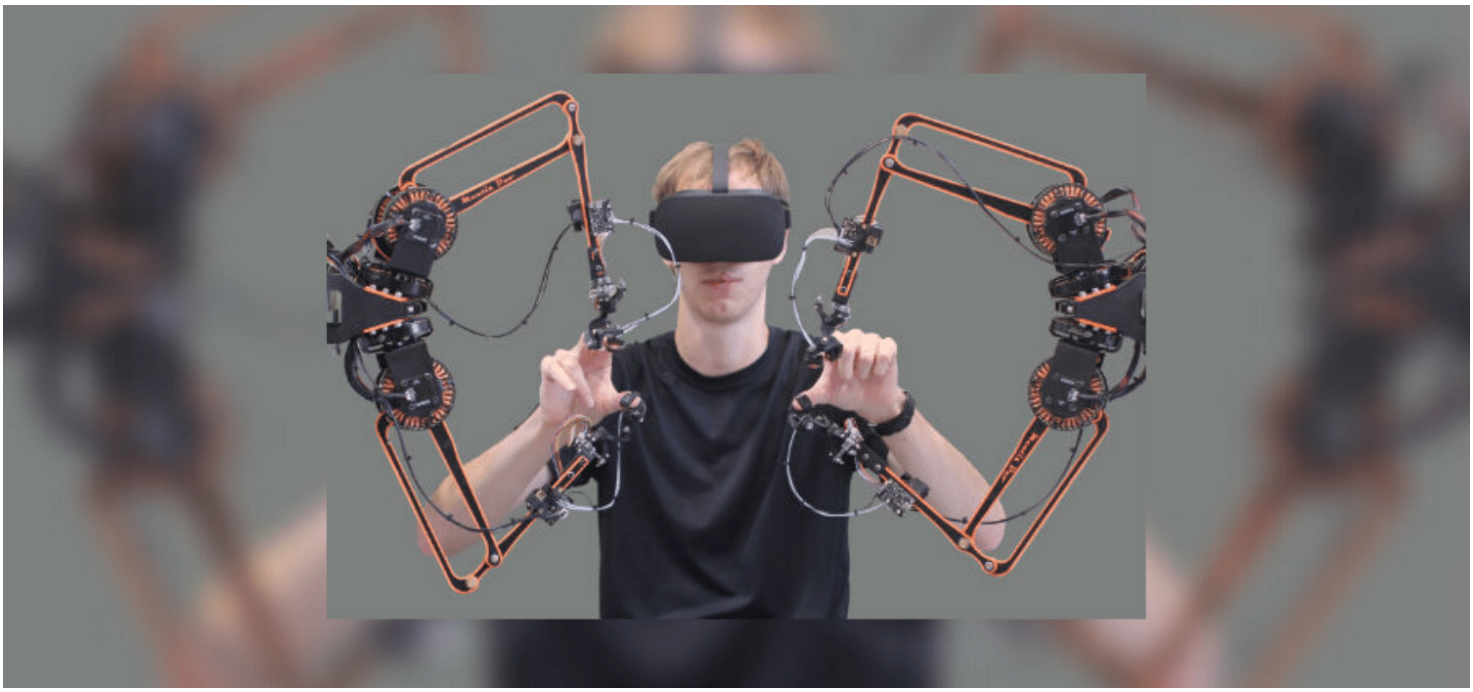

Builders can choose to make one arm or multiple, along with a range of lengths and sizes. | Photo source University of Bristol

DIY ROBOTIC ARM BRINGS THE SENSE OF TOUCH TO VIRTUAL REALITY

COMPUTING & TECH

Available in a range of sizes, the open-source design uses easily accessible electronic parts

Spotted: University of Bristol experts in human-computer interaction have built a haptic robotic arm using affordable, easily accessible components. Led by Dr Anne Roudaut, Associate Professor in Human-Computer Interaction, the project's goal is to democratise haptics. Bringing the sense of touch into virtual reality opens up an entirely new dimension of immersive experience.

The design of the arm is open source, and the equipment is inexpensive and widely available. The motors are lightweight, brushless DC motors most commonly used in crop-dusting drones. They cost €64 (55 GBP). Other parts include timing belts, laser-cut arm sections and a wheeled base. The development team, part of the Bristol University's Faculty of Engineering's School of Computer Science, Electrical and Electronic Engineering, and Engineering Maths (SCEEM) says that mobility and scalability are two important features in making the arm accessible to the widest possible audience.

Builders can choose to make one arm or multiple, along with a range of lengths and sizes. One version of the robotic arm is wearable and includes four arms; another is easily transported, and the largest option is usable in workshops and laboratories. The arms have multiple degrees of freedom and are capable of increased functionality through connections with external devices such as Raspberry Pi. Haptic feedback in the arm is powerful and likely to appeal to gamers and businesses who work extensively with virtual reality immersion experiences.

Many of the projects using haptics, spotted by Springwise, are in the fields of entertainment or accessibility. These include an immersive history experience set during the Second World War and a new range of clothing that incorporates cameras and sensors to help deafblind people communicate.

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Takeaway:

Education could greatly benefit from the ability to touch and feel in virtual reality. Training programmes in industries as diverse as electrical engineering and healthcare could save significant amounts of money while reaching a larger number and a greater diversity of students. The application of haptics in VR could prove particularly beneficial to those who may otherwise have been unable to access certain courses for geographical, as well as financial reasons. Training in unusual conditions, such as refugee camps, could also become a possibility.