

AUGMENTED REALITY TO HELP STROKE PATIENTS

Mind over body

IIT-Gn Team Develops System To Motivate Them To Move Limbs

Parth.Shastri
@timesgroup.com

Ahmedabad: Physiotherapy and exercise are part of the rehabilitation of a patient of stroke or hemiplegia (paralysis of one side of the body). But how one can make simple commands like 'lift your hand' or 'make a fist' for movements more interesting?

A team from IIT-Gandhinagar (IIT-Gn) decided to try augmented reality, where they equipped a group of 14 patients with a virtual-reality (VR) headset and haptic (data-sensitive digital) glove to literally play games. The results are encouraging as patients engaged in the activity showed better coordination and improved movements.

Prof Uttama Lahiri of the department of electrical engineering, who led the study, said that the haptic gloves, which were designed and made from the scratch at IIT-Gn, give the feeling of touch with which they can manipulate



The haptic glove designed by researchers

objects in a virtual environment. "We focused on both fine motor and gross motor movements as patients were encouraged to move individual fingers and the entire hand. Most importantly, the experiment provided visual stimuli where participants get a sense of participating in an activity," she said.

The paper, titled 'Design of a VR-Based Upper Limb Gross Motor and Fine Motor Task Platform for Post-Stroke Survivors' presented at ICIS Singapore was co-authored by Kumar Saurav, Adyasha Dash and Dhaval Solanki.

Team members said that the fine motor activity involved a game where four fingers

and the thumb were engaged separately to make a bridge over a river so a car can pass in a stipulated time period. The user has to move a ball in a maze and collect point and objects in the gross motor activity. The actions are also accompanied by sounds and the user can 'touch' objects in virtual space. Clearing a level with unlocks higher levels.

The system can measure the response of each digit and the hand compared to a healthy hand, providing a scale for comparison. Conventional rehabilitation involves one-to-one supervision. Given limited healthcare resources, such a system can provide an alternative, said a researcher.

Title: Mind over body- Augmented reality to help stroke patients

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