A Window on the World: A New Approach to Exploiting Virtual Reality for Patient Rehabilitation

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Scientists at the University of Birmingham are developing virtual scenarios incorporating sounds, sights and smells that will help hospitalised trauma victims and those who cannot go outdoors to experience the outside world and to convalesce quicker.

The virtual worlds, devised by researchers at the University's School of Electronic, Electrical and Computer Engineering, can be viewed on large-screen TVs, video projectors or even head-mounted displays and can be located in hospital wards, care homes, or rehabilitation centres. Patients can explore the sensorily rich simulated rural and coastal worlds using a variety of devices, from simple thumb-operated joysticks to Xbox gamepads.

Previous studies conducted in real-world settings have shown that patients who are exposed to even very simple "green" scenes, such as a group of trees from a hospital ward window, require less painkilling medicines and convalesce much faster in hospital than those who do not have such a view.

The immersive virtual settings being developed at Birmingham are currently based on a short section of the South Devon coastline and a reservoir area within the Dartmoor National Park, both representative of peaceful and picturesque parts of the UK's countryside.

Professor Bob Stone, Chair of Interactive Multimedia Systems, and lead investigator, said, '*This technology could be made available to anyone who, for whatever reason, is in hospital, bed-bound or cannot get outside. They will be able to get the benefits of the countryside and seaside by viewing the virtual scenario on screen.*

'Patients will be free to choose areas that they want to spend time in; they can take a walk along coastal footpaths, sit on a beach, listen to the waves and birdsong, watch the sun go down and – in due course – even experience the smells of the land- and seascapes almost as if they were experiencing the outdoors for real.'

Professor Stone continues, *'We are keen to understand what effect our virtual environments have on patients and will be carrying out further studies into arousal levels and reaction. In the summer we will start to test this on a large number of people so that we can measure biofeedback and make any changes or improvements to the scenario we have chosen.'*

Dr Jamie Hacker Hughes, Head of Defence Clinical Psychology, said: '*I have been working with Prof Stone for some time to investigate the potential application of serious games based technology in possible therapeutic applications with a military population. We shall be looking at these latest developments closely to see if they could be of use within the treatment of Armed Forces personnel.'*

To develop the virtual environment the Birmingham researchers used 3D digital terrain data and high-resolution aerial images of the regions as "templates" whilst locating computer models of trees, plants and manmade objects during the construction of the virtual scenarios. It will also include a 'plug and play' simulated scent generation feature.

The researchers aim to make the virtual environments available free of charge and are now approaching hospitals who may be interested in using the technology.

For further information

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