Zurich University
of Applied Sciences

After Work Lecture

Novel Computer-Aided Therapy in Medicine: How Augmented Reflection Technology (ART) Can Assist Stroke Rehabilitation

Prof. Dr. Holger Regenbrecht

Professor in Human-Computer Interaction, Department of Information Science, University of Otago, Dunedin, New Zealand

Monday, 24 November 2014, 5.30 to 6.30pm
Room TN E0.58, Technikumstrasse 71, 8400 Winterthur

Prof. Dr. Holger Regenbecht

Holger Regenbrecht has been working in the fields of Virtual Reality and Augmented Reality for almost 20 years. He initiated and managed the Virtual Reality Laboratory at Bauhaus University Weimar (Germany) and the Mixed Reality Laboratory at DaimlerChrysler Research and Technology (Ulm, Germany). Today he manages the Computer-Mediated Realities Laboratory at the University of Otago. His research interests include Human-Computer Interaction (HCI), Applied Computer Science and Information Technology, Augmented Reality, Three-Dimensional User Interfaces (3DUI) and Computer-Aided Therapy and Rehabilitation. Holger's current work focuses on Translational Information and Communication Technology research, in particular for health and well-being, and on understanding computer-mediated realities. He has published over 80 peer-reviewed articles, and his work has been quoted more than 2,000 times.

Augmented Reflection Technology - A new innovation in rehabilitation therapy

Prof. Dr. Holger Regenbrecht has developed a low cost, non-immersive virtual reality system in which the user's hands can be seen as digital, computer-generated copies of the 'real' hands. In this virtual environment, a person can undertake stimulating and challenging computer tasks and play games with both his/her arms and hands regardless of his/her 'actual' motor skills or physical abilities. In stroke patients, this interface can be used on the stroke-affected upper extremity to promote motor recovery and encourage repetitive task-specific practice as well as to stimulate neuroplasticity. By mirroring the healthy limb, the virtual reality system creates the visual appearance of two limbs moving and hence 'tricks the brain' into believing the stroke-affected limb is fully functioning. This innovative technology supports motor recovery in the affected limb, and eventually neuroplastic changes will occur in the cortex. This 'game-like' approach in therapy together with visual manipulations, such as mirroring and amplification, has been shown to improve motor functioning and outcomes in post-stroke rehabilitation.

This is an interprofessional After Work Lecture presented by ZHAW School of Health Professions in cooperation with ZHAW School of Engineering.

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