ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

RELAB
REHABILITATION ENGINEERING LAB

Internship / Semester Project / Master Project

3D Upgrade: Assessment of hand and arm function using virtual reality and haptics

Goal: Upgrade an existing VR/haptics assessment tool to restore depth perception

Background information
Hand sensorimotor function is often severely impaired in people suffering from neurological disorders, e.g. following a stroke. The selection of an appropriate therapy to recover the lost abilities requires a detailed assessment of the functional deficits.

Conventional upper limb motor function assessments suffer from several limitations, including inter-rater variability and a lack of objectivity. We therefore propose to provide more objective and reliable tests by using robotic devices to assess hand and arm function.

The Rehabilitation Engineering Lab (RELab) has developed a novel test, the Virtual Peg Insertion Test, which combines virtual reality and haptics using the PHANToM Omni (SensAble Technologies), a low-cost, general purpose haptic interface.
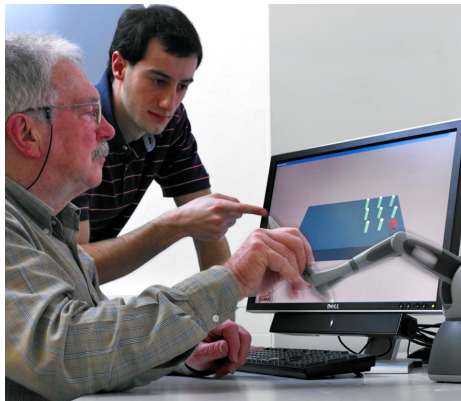
VR peg insertion test (RELab)   **3D VISION kit (NVIDIA)**

Project description
In order to improve the current test and increase its realism, we would like to render the task in 3D. This would require to adapt the existing C++ code and interface it to a wireless stereoscopic system with 3D vision glasses by NVIDIA.

The suitable candidate should have good knowledge of C++ programming and some experience in 3D systems.

We look forward to your application!

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