USC Institute for Creative Technologies

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RESEARCH AREAS

Mental and Behavioral Health

The current goal of the MedVR Mental Health Lab is to continue developing the use of advanced technologies in the discipline of psychology, more specifically to the assessment, training and treatment of stress-related disorders. In addition to further developing applications that can be used in assessment, training and treatment, we are expanding into various areas of neuroscience, incorporating measures of allostatic load into our work with resilience and PTSD.

Related Projects: Bravemind, Detection and Computational Analysis of Psychological Signals (DCAPS), Professional Quality of Life (ProQoL), SimCoach, Stress Resilience in Virtual Environments (STRIVE), Virtual Reality Exposure Therapy

Game Based Rehabilitation

Virtual reality game-based technology can be used effectively to improve performance and participation for persons receiving rehabilitation services. Our User Centered Design approach combines customized, flexible VR software with low-cost commercially available devices to deliver comprehensive, evidence-based rehabilitation training approaches for hospital, clinic, and community-based settings in a variety of client populations.

Related Projects: Novel Interactions for Amputees, Rehabilitation Engineering Research Center (RERC), Telepresence Rehabilitation

Neurocognitive Assessment and Training

Virtual environments provide standardized, safe and yet flexible platforms for neuropsychological assessment and training. Users can be exposed to complex multimodal stimuli within immersive virtual worlds to help clinicians assessing and rehabilitating cognitive functions in civilian and military populations. The USC ICT's MedVR group focuses on the design, development and validation of such virtual environments for individuals with stroke, traumatic brain injury and similar neurological disorders. We place a strong emphasize on grounding our work in clinical and scientific methodology while integrating cognitive, motor and mental functions across our projects in an interdisciplinary team of researchers.

Related Projects: Virtual Reality Cognitive Performance Assessment Test (VRCPAT)

Virtual Humans

Virtual humans have become an important component of many virtual reality applications as they provide for believable and more natural interactions than traditional interfaces afford. MedVR's virtual humans are built upon a broad set of technologies developed over the past decade at ICT. Virtual humans enable applications such as virtual guides for medical information outreach, simulated standardized patients for medical training, and personalized coaches for rehabilitation and wellness. To this end, the MedVR virtual human team has been pioneering the development of an architecture and set of tools that enable research workgroups and non-programmers to design and build virtual characters to solve their application goals.

Related Projects: Detection and Computational Analysis of Psychological Signals (DCAPS), Professional Quality of Life (ProQoL), SimCoach, Virtual Patient