Paper ID: 72348
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IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Medical Care for Humans in Space (3)

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HOLOTRIAGE: A NOVEL MEDICAL FIRST RESPONSE TRAINING FOR ASTRONAUTS INTEGRATING ARTIFICIAL INTELLIGENCE, DIGITAL TWINS, AVATARS, HAPTICS, AND MIXED REALITY SPATIAL COMPUTING TECHNOLOGIES

Abstract

Simulation based medical training is an effective method for preparing and training medical first responders and astronauts for medical interventions and life-threatening challenges specially in remote, isolated environments and in Space or on a planetary surface. Virtual Reality (VR) has seen usage to run simulation training at lower cost, yet VR does not offer the direct connection to the material reality that first responders will actually be operating in. Thus, AvatarMEDICInc has created HoloTRIAGE automated training platform utilizing Mixed Reality (MR) otherwise known as Spatial Computing. MR overlays digital assets onto the physical world in an anchored way, meaning that digital assets behave as if they are literally present in the physical world and are represented as DIGITAL TWINS or tele-AVATARS and telepresence (an advancement of telemedicine paradigm). MR is epitomized by devices such as Microsoft HoloLens 2 and MR abilities are available on mobile devices which can be used on ISS for astronauts or medical providers in austere or disaster areas on Earth. Artificial Intelligence (AI) enables the HoloTRIAGE platform to automatically scan and segment the environment for use in automatically constructing scenarios and placing virtual assets, with options to allow instructors to specify broad parameters and have specifics automatically implemented. Further, AI delivers realistic interactive virtual victims, and is utilized to assess trainee performance. Entirely new metrics are available, such as eye-tracking and body pose data, enabling new fidelity of assessments and responsive simulations. Avatars allow remote experts or specialist instructors to record themselves and/or be present in realtime to teach and participate. Haptics enables trainees to feel physical impressions of digital assets, including resistance, pressure, texture and temperature. HoloTRIAGE represents a new era for first response training using virtual assets in real context, and AvatarMEDIC's network of leading experts ensures that training content is focused, accurate and supportive of real first response needs. Designed to augment existing physical simulation exercises and materials, as well as enable complete replacement of physical materials with virtual assets. Developed specifically for conducting training in remote and austere environments where weight and personnel are most limited. Enables cost savings and increase in total number of possible exercises. This presentation will demonstrate the HoloTRIAGE application and discus development and deployment of the technology and its potential application for space exploration and medical care delivery for astronauts.