
SCS Keynote Speaker



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Presentation Abstract: Simulation has become an integral part of modern medical education and training. There is growing consensus within the medical community that simulation can provide a consistent and safe environment for learning dexterous and cognitive skills. Medical simulation resources can be broadly divided into three categories: Standardized patients, human patient simulators, and virtual reality. Standardized patients are individuals trained to present a consistent portrayal of a patient in a medical scenario. Human patient simulators are computerized mannequins capable of modeling and presenting human physiology to the learner. Virtual reality presents a computer-generated representation of a medical scenario that challenges learners in a manner intended to optimize learning.

The Val G. Hemming Simulation Center is a 30,000 sq. ft. medical simulation facility. It is part of the Uniformed Services University of the Health Sciences. The Center's mission is to research, develop and adapt simulation technology in support of the University's educational goals. The Center houses the Wide Area Virtual Environment. The WAVE is an 8,000 sq. ft. immersive virtual reality theater that combines virtual reality with theatrical effects, live actors, and part task trainers to deliver an unparalleled learning experience for small medical teams. Using the WAVE, the Center is one of the first medical simulation facilities in the world to combine all three categories of simulation into an integrated learning experience.

This talk will share our experience in building and operating this distinctive facility. Challenges both technical and procedural will be discussed. This talk will highlight the design, construction, and use of the Wide Area Virtual Environment, a unique training resource capable of simulating a very wide range of medical scenarios for both military and civilian applications.

Biography: Dr. Alan Liu is the Director of the Virtual Medical Environments Laboratory at the Val G. Hemming Simulation Center, Uniformed Services University of the Health Sciences. He is the principal architect of the Center's pericardiocentesis and diagnostic peritoneal lavage simulators. They are the world's first computer-based trainers for these procedures. These simulators were used in the nation's first Advanced Trauma Life Support (ATLS) course conducted without animals or cadavers. Dr. Liu was on the 2008 DoD Joint Analysis Team to address the use of live animals in medical education and training. He led the effort to develop the Center's 3D virtual reality haptic feedback system for surgical training. The system forms the basis of the Center's VR trainers for cricothyroidotomy and emergency craniotomy. Dr. Liu's current research focus is on the 8,000 sq. ft. Wide Area Virtual Environment (WAVE). The WAVE is the world's largest immersive virtual reality theater for medical team training.