

COMPUTER SCIENCE SEMINAR



Medical Modeling & Simulation: Innovating with Purpose

Mar. 30th Thursday, 11am-12pm
ScienceBuilding-123

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Medical M&S: Innovating with Purpose

The world has entered a new age of inspiration for medical modeling and simulation (M&S). Physicians can practice new procedures, rehearse difficult cases, and plan using patient-specific precision. As we have all become familiar, commercial airline pilots are typically required to obtain many hours of flight time on sophisticated flight simulators practicing maneuvers and fault scenarios too dangerous or expensive to replicate on real aircraft. The analog exists for medical M&S. Likewise, new scientific visualization paradigms are becoming part of the medical landscape. At Old Dominion University's (ODU) Modeling, Simulation and Visualization Engineering (MSVE) Department in Norfolk, Virginia, we have had significant successful collaborations with Eastern Virginia Medical School (EVMS) and Children's Hospital of the King's Daughters (CKHD). MSVE has pioneered the Virtual Pathology Stethoscope, provided an innovative surgical tool, designed using simulation, called the Pectus Bar Extractor, and have developed a unique prototype surgical simulator for the Nuss Procedure -- a minimally invasive procedure for pectus excavatum repair. This presentation discusses the role of M&S at ODU and the successes in achieved in medical M&S.

Bio

Frederic (Rick) D. McKenzie, Ph.D. has a B.S. in engineering, M.S. in computer engineering, and a Ph.D. in computer engineering all from the University of Central Florida in Orlando, Florida U.S.A. Currently, he is Professor and Chair of the Modeling, Simulation and Visualization Engineering (MSVE) Dept. and a joint faculty member in the Department of Electrical and Computer Engineering (ECE) at Old Dominion University in Norfolk, Virginia U.S.A. In addition, Dr. McKenzie is the co-director of the Medical Imaging, Diagnosis, and Analysis (MIDA) Laboratory, Adjunct Professor of Eastern Virginia Medical School (EVMS) in the School of Health Professions, and Graduate Faculty Scholar at University of Central Florida (UCF) in the School of Electrical Engineering and Computer Science. Before coming to Old Dominion University, he spent 6 years in the simulation industry at Science Applications International Corporation (SAIC) as a senior scientist. Dr. McKenzie's research is in medical modeling and simulation, human behavior representation, and simulation architectures often focusing on aspects of scientific visualization and virtual reality.