

MMVR19 / NextMed

February 9 – 11, 2012 • Newport Beach Marriott • Newport Beach, CA

Program as of January 21, 2012. Schedule subject to change to accommodate logistical needs.

MMVR19 / NextMed Conference Schedule

Sessions Overview

THURSDAY, February 9

THURSDAY Morning—Poster Session

p. 3, 8

- Simulation Design & Development, Modeling, Learning & Metrics, Simulator Validation, Psychological Health, Physical Rehabilitation, Sensors, Plasma Medicine, University of Nebraska Research Projects (Group One)

THURSDAY Morning—Plenary Session

p. 3

- Human: Computer Interface Technology (Ramin Shahidi, Theodore Berger, Hannes Bleuler, Annie Simon, and James Weiland)
- David Graves
- Richard Boyd

THURSDAY Afternoon—Track A

p. 4

- Modeling
- Haptics

THURSDAY Afternoon—Track B

p. 5

- Physical & Mental Health Applications
- Avatar Based Recovery Platform: New Directions in the Treatment of Chemical Dependency

THURSDAY Afternoon—Track C

p. 7

- Technical and Organizational Requirements for the Implementation of Adaptive Learning: A Case Study In Collaboration
- Using Technology to Assess Simulation Performance of Active Participants, Transform Passive Observers into Activated Learners

Sessions Overview, continued

FRIDAY, February 10

FRIDAY Morning—Poster Session

p. 12, 17

- Imaging, Visualization & Navigation, Surgical Simulation – Design & Development, Surgical Simulation Metrics, Surgical Simulator Validation, Haptics, Robotics, Intelligence Networking, University of Nebraska Research Projects (Group Two)

FRIDAY Morning—Plenary Session

p. 12

- Heinz Lemke
- Robert Hester
- Leslie Saxon
- Yunan Chen
- Exploring the Gaps between Doctors and Engineers (Robert Sweet, Timothy Kowalewski, David Hananel, and Rajesh Kumar)
- Presentation of the 17th Satava Award

FRIDAY Afternoon—Track A

p. 13

- Simulation – Design & Development

FRIDAY Afternoon—Track B

p. 14

- Imaging, Visualization & Navigation
- Robotics
- Diagnostic & Therapeutic Tools

FRIDAY Afternoon—Track C

p.16

- Analysis of Honest Signals for Psychological Health Assessment

SATURDAY, February 11

SATURDAY Morning—Track A

p. 22

- Simulation Validation
- Surgical Metrics
- Surgical Simulator Validation

SATURDAY Morning—Track B

p. 23

- Wearable Augmented Reality for Medical First Response & Situational Awareness



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THURSDAY, February 9

THURSDAY Morning—Poster Session

7:00 - 8:30 During the dedicated poster session, presenters stand with their posters and explain their research to other attendees, while everyone enjoys continental breakfast. Posters remain up all day for browsing. Thursday's posters are listed on pages 8 - 11.

THURSDAY Morning—Plenary Session

8:30 **Karen S. Morgan & James D. Westwood**

Aligned Management Associates, Inc.

Welcome

8:45 Panel — *Human: Computer Interface Technology*

Chair:

Ramin Shahidi

California Inst of Computer-Assisted Surgery

Panelists:

Theodore Berger

Ctr for Neural Engineering, Univ of Southern California

Hannes Bleuler

Robotic Systems Lab, EPFL

Annie Simon

Ctr for Bionic Medicine, Rehabilitation Inst of Chicago

James Weiland

Bioelectronic Research Lab; Univ of Southern California

10:15 Break—Exhibit Hall opens

11:00 **David Graves**

Chemical & Biomolecular Engineering, Univ of California, Berkeley

Computer Simulation of Plasma Medical Devices to Meet Future Challenges in Infection Control and Therapy

11:30 **Richard Boyd**
Virtual World Labs, Lockheed Martin
The Simulation Prescription

12:00 **Lunch in Exhibit Hall**

THURSDAY Afternoon—Track A

1:35 *Moderator's Welcome*

Modeling

1:45 **Rui Hu**
Dept of Electrical and Computer Engineering, Univ of Delaware
A Non-Photorealistic Surgery Simulation System

2:00 **Vinay Menon**
VIRMED Simulation Technology Inc.
Simulation of a Human Circulatory System

2:15 **Juan Antonio Solves Llorens**
Lab Human, I3BH, Univ Politécnic de Valencia
A Study about Coefficients to Estimate the Error in Biomechanical Models used to Virtually Simulate the Organ Behaviors

2:30 **Anand Santhanam**
Dept of Radiation Oncology, Univ of California, Los Angeles
Computational Fluid Dynamics Modeling of Airflow inside Lungs Using Heterogenous Anisotropic Lung Tissue Elastic Properties

2:45 **Hoeryong Jung**
Dept of Mechanical Engineering, KAIST
Real-Time Simulation of Interaction between Colon and Endoscope for the Colonoscopy

3:00 **Farzam Farahmand**
Sch of Mechanical Engineering, Sharif Univ of Technology
A Meshless EFG-Based Algorithm for 3D Deformable Modeling of Soft Tissues in Real-Time

3:15 **Aurélien Deram**
TIMC-IMAG / CNRS, UJF-Grenoble 1
Towards a Generic Framework for Evaluation and Comparison of Soft Tissue Modeling

3:30 Discussion

3:45 Break

Haptics

4:00 **Rui Hu**

Dept of Electrical and Computer Engineering, Univ of Delaware
An Accelerated Haptic Feedback Algorithm Utilizing Volume Reconstruction

4:15 **Andre Mastmeyer**

Inst of Med Informatics, Univ of Lübeck
Direct Haptic Volume Rendering in Lumbar Puncture Simulation

4:30 **Ilana Nisky**

Biomed Engineering Dept, Ben-Gurion Univ of the Negev
Perception of Stiffness in Laparoscopy - the Fulcrum Effect

4:45 **Alexei Sourin**

Sch of Computer Engineering, Nanyang Technological Univ
Haptic Editing of MRI Brain Data

5:00 **Joseph Singapogu**

Haptic Interaction Lab, Clemson Univ
Assessing Surgeon and Novice Force Skill on a Haptic Stiffness Simulator for Laparoscopic Surgery

5:15 Discussion

5:30 Adjourn

THURSDAY Afternoon—Track B

1:35 *Moderator's Welcome*

Physical & Mental Health Applications

1:45 **Giuseppe Riva**

Applied Technology for Neuro-Psychology Lab, Istituto Auxologico Italiano; Catholic Univ of Milan
The Effects of a Mobile Stress Management Protocol on Nurses Working with Cancer Patients: A Controlled Study

2:00 **Thomas Parsons**

Inst for Creative Technologies, Univ of Southern California
Virtual Reality Paced Serial Assessment Test for Neuropsychological Assessment of a Military Cohort

2:15 **Roger Xu**

Signal Processing & Control, Intelligent Automation, Inc.
A Voice-Based Automated System for PTSD Screening and Monitoring

2:30 **Albert "Skip" Rizzo**

Inst for Creative Technologies, Univ of Southern California
STRIVE: Stress Resilience In Virtual Environments: A Pre-Deployment VR System for Training Emotional Coping Skills and Assessing Chronic and Acute Stress

2:45 **Riccardo Secoli**

Dept Mechanical and Aerospace Engineering, Univ of California, Irvine

Using a Smart Wheelchair as a Gaming Device for Floor-Projected Games: A Mixed Reality Environment for Training Powered Wheelchair Driving Skills

3:00 **Bonnie Kennedy**

Blue Marble Rehab, Inc.

Expanding the Scope of Design and Quality Assurance in the Context of Serious Games for Rehabilitation

3:15 Discussion

3:30 Break

3:45 Workshop — *Avatar Based Recovery Platform: New Directions in the Treatment of Chemical Dependency*

(Independently Organized Adjunct Activity)

Chair:

Ivana Steigman

Thrive Research, Inc.

Presentations:

Ivana Steigman

Thrive Research, Inc.

Avatar Based Recovery: An Overview

Walter Greenleaf

Thrive Research, Inc.

Use of On-Line Interactive Virtual Environments (OLIVE) in Healthcare and Psychological Services

David S. Molina

Janus of Santa Cruz; Thrive Research, Inc.

Implementing New Technologies for Treatment in a Community Clinic

Albert Garcia-Romeu

Thrive Research, Inc.

Avatar Based Recovery in the Treatment of Opiate Addiction: A Pilot Study

5:45 Adjourn

THURSDAY Afternoon—Track C

1:35 Panel — *Technical and Organizational Requirements for the Implementation of Adaptive Learning: A Case Study In Collaboration*
(Independently Organized Adjunct Activity)

Chair:

Todd Graham

Accella Learning Company, LLC

Additional Presenters:

Bryan Bergeron

Accella Learning Company, LLC; Massachusetts Inst of Technology

Andrew H. Cline

School of Medicine, Univ of Louisville;

National Ctr for Biomedical Research and Training, Louisiana State Univ

Ross E. Dworkin

Accella Learning Company, LLC; Blue Grotto Technologies, Inc.

3:15 Break

3:30 Workshop — *Using Technology to Assess Simulation Performance of Active Participants, Transform Passive Observers into Activated Learners*
(Independently Organized Adjunct Activity)

Organizers:

Susan Eller

Simulation Technology and Immersive Learning,
Feinberg Sch of Medicine, Northwestern Univ

Paul Pribaz

Simulation Technology and Immersive Learning,
Feinberg Sch of Medicine, Northwestern Univ

5:30 Adjourn

THURSDAY POSTERS

(A dedicated poster discussion session will be held prior to the morning plenary session.)

Simulation Design & Development

Calvin Kwan

Dept of Surgery, Northwestern Univ, Feinberg Sch of Medicine
Moving Past Normal Force: Capturing and Classifying Shear Motion Using 3D Sensors

Peder Pedersen

Dept of Electrical and Computer Engineering, Worcester Polytechnic Inst
Personal Low-Cost Ultrasound Training System

John Qualter

Div of Educational Informatics, New York Univ Sch of Medicine
The Biodigital Human: A Web-Based 3D Platform for Medical Visualization and Education

Joseph Samosky

Simulation and Med Technology Research and Development Ctr, Sch of Medicine & Swanson Sch of Engineering, Univ of Pittsburgh
A Novel Automated Drug Simulant Recognition System for Naturalistic Real-Time Medical Simulation

Jörg Wulf

3B Scientific GmbH
Three-Dimensional Micro-Imaging (μ CT) Based Physical Anatomic Teaching Models: Implementation of a New Learning Aid for Routine Use in Anatomy Lectures

Ayano Kikuchi

Graduate Sch of Engineering, Chiba Univ
Development of a VR-Based Injection Training System using a Standardized Patient

Felix Hamza-Lup

Computer Science and Information Technology, Armstrong Atlantic State Univ
Haptic Simulator for Liver Diagnostics through Palpation

Vikram Nandhan

Ctr for Simulation Technology and Immersive Learning, Northwestern Univ
The Use of Pressure Sensors in an Aesthetic Dermoscopy Simulator to Improve the Diagnosis of Cancerous Skin Lesions

Modeling

Ganesh Sankaranarayanan

Mechanical Aerospace and Nuclear Engineering, Rensselaer Polytechnic Inst
A Simulation Framework for Tool Tissue Interactions in Robotic Surgery

Pierre-Frederic Villard

LORIA, Nancy Univ
A Method to Compute Respiration Parameters for Patient-based Simulators

Alexander Herzog

Dept of Mechanical, Aerospace and Nuclear Engineering , Rensselaer Polytechnic Inst
Model Order Reduction of Neural Connectivity for Computationally Feasible Whole Brain Modeling

Learning & Metrics**Ross Dworkin**

Blue Grotto Technologies, Inc.
The Application of Technology for the Creation of “Retention Profiles” for Use in Adaptive Learning and the Delivery of Remedial Material

Calvin Kwan

Dept of Surgery, Northwestern Univ, Feinberg Sch of Medicine
Introducing Simulation Technology to New Faculty: Do Not Let Them Play

Nathan Delson

Dept of Mechanical and Aerospace Engineering, Univ of California, San Diego
Expert vs. Novice Endpoint Angle and Motion in a Laryngoscopy Simulator

Simulator Validation**Lawrence Salud**

Dept of Surgery, Northwestern Univ, Feinberg Sch of Medicine
Modification of Commercially Available Simulators to Elicit Decision Making Behavior

David Rojas

SickKids Learning Inst, SickKids Hospital
An Online Practice and Educational Networking System for Technical Skills: Learning Experience in Expert Facilitated vs. Independent Learning Communities

Johan Creutzfeldt

CLINTEC and Ctr for Advanced Med Simulation and Training, Karolinska Inst and Karolinska Univ Hospital
Behavioural Ratings in Cardiopulmonary Resuscitation after Multiplayer Virtual World and Scenario Based Full Scale Simulator Training

Psychological Health**Andrea Gaggioli**

Dept of Psychology, Catholic Univ of Milan
An Open Source Mobile Platform for Psychophysiological Self Tracking

Andrea Gaggioli

Dept of Psychology, Catholic Univ of Milan
EEG Alpha Asymmetry in Virtual Environments for the Assessment of Stress-Related Disorders

Giovanni Albani

Dept of Neurosciences, Ist Auxologico Italiano - Piancavallo-Verbania
Virtual Help for Real Surgery: The Case of Awake Surgery

Giuseppe Riva

Applied Technology for Neuro-Psychology Lab, Istituto Auxologico Italiano; Catholic Univ of Milan
Learning Island: The Development of a Virtual Reality System for the Experiential Training of Stress Management

Raphael Rose

Dept of Psychology, Univ of California, Los Angeles
Characteristics of a Sample of Graduate Students Interested in Self-Guided, Multimedia, Computer-based Stress Management and Resilience Training

Tomislav Zbozinek

Dept of Psychology, Univ of California, Los Angeles
Usefulness and Usability of a Self-Guided, Multimedia, Computer-Based Stress Management And Resilience Training Program

José Mosso Vázquez

Univ Panamericana; Hospital General y Regional No. 25, IMSS; Clínica Pisanty, ISSSTE
3 Virtual Scenarios in 3D for Obesity Treatment in Mexico

Physical Rehabilitation**Štěpán Obdržálek**

Dept of Electrical Engineering and Computer Science, Univ of California, Berkeley
Real-Time Human Pose Detection and Tracking for Tele-Rehabilitation in Virtual Reality

Timothy Judkins

Robotics & ElectroMechanical Systems, Intelligent Automation, Inc.
Development of a Virtual Therapist for Exercise Motivation for Smart Phones

Alvaro Uribe Quevedo

Integrated Automation and Robotics Lab, Mechanical Design Dept, Faculty of Mechanical Engineering, Univ of Campinas, Brazil
3DUI Assisted Lower and Upper Member Therapy

Sensors**Robert Tan**

Dept of Bioengineering, Univ of California, Los Angeles
Conductometric Catheter-Mounted Pressure Sensor

Plasma Medicine**Magesh Thiyagarajan**

Plasma Engineering Research Lab, Texas A&M Univ - Corpus Christi
THP-1 Leukemia Cancer Treatment Using a Portable Plasma Device

Magesh Thiyagarajan

Plasma Engineering Research Lab, Texas A&M Univ - Corpus Christi
Portable Plasma Medical Device for Infection Treatment

University of Nebraska Research Projects (Group One)

Mary Bernhagen

Dept Anesthesiology, Univ of Nebraska Med Ctr

Telementoring for Airway Management Between a Far Forward Special Operations Location to a Major Medical Center Using Inexpensive Telemedicine Solutions

Ben Boedeker

Dept Anesthesiology, Univ of Nebraska Med Ctr

Virtual Intubation Training at a Remote Military Site

David Boedeker

Univ of Nebraska Omaha

Development of Medical Engagement Training Toolkits to Support Special Operations Military Assistance Programs in Austere Environments

Nikola Miljkovic

Univ of Nebraska Med Ctr; Research Service, Omaha VA Med Ctr

Use of a Cardiac Algorithm in a Preoperative Evaluation Clinic-A Pilot Study

Thomas Nicholas

Dept Anesthesiology, Univ of Nebraska Med Ctr

Performance Comparison of Laryngoscopy and Suction Techniques in a Hemorrhagic Airway Manikin Simulator: Direct Laryngoscopy with Yankauer vs Storz CMAC with Attached Suction Tip

Steven Schmidt

Dept Emergency Medicine, Univ of Nebraska Med Ctr

A Comparison of an Integrated Suction Blade versus a Traditional Videolaryngoscope Blade in the Endotracheal Intubation of a Hemorrhagic Cadaver Model – A Pilot Study



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FRIDAY, February 10

FRIDAY Morning—Poster Session

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FRIDAY Morning—Plenary Session

8:30 Moderator's Welcome

8:40 **Heinz Lemke**

Inst for Technical Informatics, Technical Univ Berlin
The Digital Operating Room—Present and Future

9:00 **Robert Hester**

Dept of Physiology & Biophysics, Univ of Mississippi Medical Ctr
HumMod, A Multilevel Mathematical of Human Physiology for Medical Training

9:30 **Leslie Saxon**

Keck School of Medicine; Univ of Southern California
The Future of Body Computing

10:00 Break

10:20 **Yunan Chen**

Donald Bren Sch of Information and Computer Sciences & Inst for Clinical and Translational Science,
Univ of California, Irvine
Collaborative Work Practices: Challenges and Opportunities for Designing Healthcare IT Systems

10:50 Panel — *Exploring the Gaps between Doctors and Engineers*

Chairs:

Robert Sweet

Urologic Surgery, Univ of Minnesota Medical Sch

Timothy Kowalewski

BioRobotics Lab, Univ of Washington

Additional Panelists:

David Hananel

SimPORTAL/CREST, Univ of Minnesota

Rajesh Kumar

Dept of Computer Science, The Johns Hopkins Univ

11:50 **Presentation of the 17th Satava Award**

12:10 Break (Lunch on your own)

FRIDAY Afternoon—Track A

1:35 *Moderator's Welcome*

Simulation – Design & Development

1:45 **W. LeRoy Heinrichs**

Innovation in Learning, Inc.

SBAR 'Flattens the Hierarchy' Among Caregivers

2:00 **Bryan Bergeron**

Accella Learning Company

Distributed Adaptive Simulation Through Standards-Based Integration of Simulators and Adaptive Learning Systems

2:15 **Woojin Ahn**

Ctr for Modeling, Simulation and Imaging in Medicine, Rensselaer Polytechnic Inst

A Framework for Web Browser-Based Medical Simulation Using WebGL

2:30 **Lawrence Salud**

Dept of Surgery, Northwestern Univ, Feinberg Sch of Medicine

Clinical Examination Simulation: Getting to Real

2:45 **Joseph Samosky**

Simulation and Med Technology Research and Development Ctr, Sch of Medicine & Swanson Sch of Engineering, Univ of Pittsburgh

BodyWindows: Enhancing a Mannequin with Projective Augmented Reality for Exploring Anatomy, Physiology and Medical Procedures

3:00 **Jason Kutarnia**

Electrical and Computer Engineering, Worcester Polytechnic Inst

Generation of 3D Ultrasound Training Volumes from Freehand Acquired Data

3:15 Discussion

3:30 Break

3:45 **Bill Kapralos**

Faculty of Business and Information Technology, Univ of Ontario Inst of Technology
Developing Effective Serious Games: The Effect of Background Sound on Visual Fidelity Perception with Varying Texture Resolution

4:00 **Don Stredney**

Biomed Applications, OSC
Virtual Simulation of Mouse Anatomy and Procedural Techniques

4:15 **Diego Rivera-Gutierrez**

Dept of Computer & Information Science & Engineering, Univ of Florida
Shader Lamps Virtual Patients: the Physical Manifestation of Virtual Patients

4:30 **Betty Mohler**

Max Planck Inst for Biological Cybernetics
Enhancing Medical Communication Training Using Motion Capture, Perspective Taking and Virtual Reality

4:45 **Yunhe Shen**

Ctr for Research in Education and Simulation Technologies (CREST), Med Sch Simulation Program, Univ of Minnesota
Virtual Trainer for Intra-Detrusor Injection of Botulinum Toxin to Treat Urinary Incontinence

5:00 **Tansel Halic**

Dept of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Inst
A Resource Management Tool for Real-Time Multimodal Surgical Simulation

5:15 **Florian Beier**

Inst for Computational Medicine, Univ of Heidelberg
An Aneurysm Clipping Training Module for the Neurosurgical Training Simulator NeuroSim

5:30 Discussion

5:45 Adjourn

FRIDAY Afternoon—Track B

1:35 *Moderator's Welcome*

Imaging, Visualization & Navigation

1:45 **Cristian Linte**

Biomed Imaging Resource, Mayo Clinic
Augmented Environments for Minimally Invasive Therapy: Implementation Barriers from Technology to Practice

2:00 **Jannick Rolland**

Inst of Optics, Univ of Rochester
Virtual Skin Biopsy with Gabor Domain Optical Coherence Microscopy

2:15 **Naoki Suzuki**

Inst for High Dimensional Med Imaging, The Jikei Univ Sch of Medicine

System Development for Unrestrictive View and 4D Shape Acquisition in Abdominal Cavity Operation using Virtual Space

2:30 **Juan Antonio Solves Llorens**

Lab Human, I3BH, Univ Politécnica de Valencia

MRI Skin Segmentation for the Virtual Deformation of the Breast under Mammographic Compression

2:45 **David Bouget**

INSERM / INRIA / CNRS, Univ Rennes 1, Unité/Projet VisAGeS U746

Surgical Tools Recognition and Pupil Segmentation for Cataract Surgical Process Modeling

3:00 **Sean Chen**

BioMed Engineering, McGill Univ

Augmented Reality Visualization for Guidance in Neurovascular Surgery

3:15 Discussion

3:30 Break

3:45 **Sushravya Raghunath**

Mayo Clinic College of Medicine

Detail-on-Demand Visualization for Lean Understanding of Lung Abnormalities

Robotics

4:00 **Pietro Valdastrì**

STORM Lab, Vanderbilt Univ

A Novel Surgical Robotic Platform based on Trans-Abdominal Active Magnetic Links

4:15 **Tim Beyl**

Inst for Process Control and Robotics, Karlsruhe Inst of Technology

Haptic Feedback in OP:Sense - Augmented Reality in Telemanned Robotic Surgery

Diagnostic & Therapeutic Tools

4:30 **Shyam Natarajan**

Dept of Bioengineering, Univ of California, Los Angeles

A Transurethral Catheter-based Ultrasound System for Multi-Modal Fusion

4:45 **Qian Zhao**

Dept of Electronic Engineering, Chinese Univ of Hong Kong; The Johns Hopkins Univ

A Decision Fusion Strategy for Polyp Detection in Capsule Endoscopy

5:00 **Evin Gultepe**

Dept of Chemical and Biomolecular Engineering, Chemistry; Inst for Nanobiotechnology, The Johns Hopkins Univ

Thermo-Responsive, Tetherless Microsurgical Tools

5:15 **Amit Mulgaonkar**

Ctr for Advanced Surgical and Interventional Technology (CASIT) & Dept of Biomed Engineering, Univ of California, Los Angeles

A Prototype Stimulator System for Noninvasive Low Intensity Focused Ultrasound Delivery

5:30 Discussion

5:45 Adjourn

FRIDAY Afternoon—Track C

1:35 Focus Session & Panels — *Analysis of Honest Signals for Psychological Health Assessment (Independently Organized Adjunct Activity)*

Chairs:

Russell Shilling

DARPA

Albert “Skip” Rizzo

Inst for Creative Technologies, Univ of Southern California

Presentations:

Russell Shilling

DARPA

Introduction to Detection and Computational Analysis of Psychological Signals

Albert “Skip” Rizzo

Inst for Creative Technologies, Univ of Southern California

Telemedical and Online Intelligent Virtual Human Guided Healthcare Support Leveraging User State Sensing

Louis-Philippe Morency

Inst for Creative Technologies, Univ of Southern California

Multimodal Perception and Learning

Alex “Sandy” Pentland

Massachusetts Inst of Technology

Honest Signals

Rohit Prasad

Raytheon BBN Technologies

Text and Voice Analytics for Psychological Distress Detection

Roy Stripling

CRESST, Univ of California, Los Angeles

Evaluation and Assessment of DCAPS Systems

Discussion & Demos

5:30 Adjourn

FRIDAY POSTERS

(A dedicated poster discussion session will be held prior to the morning plenary session.)

Imaging, Visualization & Navigation

Jay Carlson

Dept of Electrical Engineering, Univ of Nebraska - Lincoln

A Compact High-Definition Low-Cost Digital Stereoscopic Video Camera for Rapid Robotic Surgery Development

Ali Soroush

Sch of Mechanical Engineering, Sharif Univ of Technology

Design and Implementation of an Improved Real-Time Tracking System for Navigation Surgery Using the Fusion of Optical and Inertial Tracking Methods

Karl Krissian

Dept of Computer Science, Univ de Las Palmas de Gran Canaria

AMILab Software: Medical Image Analysis, Processing and Visualization

Oliver Burgert

Innovation Ctr Computer Assisted Surgery (ICCAS), Univ Leipzig

Multi-Dimensional Presentation State - Towards a DICOM Mechanism for Consistent Presentation of Higher Dimensional Medical Imaging Data

Andoni Beristain

Vicomtech-IK4

Volume Visual Attention Maps (VVAM) in Ray-Casting Rendering

Anderson Maciel

Inst de Informática, Univ Federal do Rio Grande do Sul

Anatomic Hepatectomy Planning through Mobile Display Visualization and Interaction

Karl-Hans Englmeier

Inst for Biological and Med Imaging (IBMI), Helmholtz Zentrum Munich

A New Heterogeneity Analysis Method for Comparison of DCE-MRI Time Curves in Breast Tumors for Therapy Monitoring

Mathias Hofer

Univ Leipzig

Potential of the Navigated Controlled Surgery at the Lateral Skull Base with the Navigated Control Unit (NCU 2.0)

Constantinos Loukas

Med Physics Lab-Simulation Ctr, Sch of Medicine, Univ of Athens
Visual Tracking of Laparoscopic Instruments in a Hough Space

Surgical Simulation – Design & Development

Sergei Kurenov

Dept of Surgical Oncology, Roswell Park Cancer Inst
Enhanced Tissue Interaction For Robotic Surgery Simulation

Lauren Davis

Simulation Technology & Immersive Learning, Northwestern Univ Feinberg Sch of Medicine
Computer Aided Design as a Tool for Development of a Neonatal Chest Tube Simulator

Asaki Hattori

Inst for High Dimensional Med Imaging, The Jikei Univ Sch of Medicine
Training System for NOTES and SPS Surgery Robot that Enables Spatiotemporal Retrospective Analysis of the Training Process

Oliver Schuppe

Inst for Computational Medicine, Univ of Heidelberg
An Optical Tracking System for a Microsurgical Training Simulator

Magnus Eriksson

Sch of Technology and Health, KTH Royal Inst of Technology
A 6 Degrees-of-Freedom Haptic Milling Simulator for Surgical Training of Vertebral Operations

Aaron Olikier

BioDigital Systems; NYU Sch of Medicine
Step-Based Cognitive Virtual Surgery Simulation: An Innovative Approach to Surgical Education

Vishal Patel

Div of Surgery, Dept of Surgery and Cancer, Imperial College, London
Multi-User Trauma Patient Scenario in Virtual Worlds

Vishal Patel

Div of Surgery, Dept of Surgery and Cancer, Imperial College, London
Virtual Worlds are an Innovative Tool for Medical Device Training in a Simulated Environment

Vishal Patel

Div of Surgery, Dept of Surgery and Cancer, Imperial College, London
The Application of an Interactive Virtual World Simulation for Evaluation of the Handoff Process in Healthcare

Ganesh Sankaranarayanan

Mechanical Aerospace and Nuclear Engineering, Rensselaer Polytechnic Inst
ToolTrackTM: A Compact, Low-Cost System for Measuring Surgical Tool Motion

Ganesh Sankaranarayanan

Mechanical Aerospace and Nuclear Engineering, Rensselaer Polytechnic Inst
Use of a Linear Motion Stroke Potentiometer as a High Precision Sensor for Linear Translation in a Laparoscopic Ligating Loop Simulation

Surgical Simulation Metrics

Chun-Kai Huang

Univ of Nebraska Med Ctr
Investigating the Muscle Activities of Performing Surgical Training Tasks Using a Virtual Simulator

Marie-Eve LeBel

Div of Orthopaedic Surgery, Dept of Surgery, Univ of Western Ontario
Creating a Representative Map for Arthroscopy Simulation

Arun Nemani

Ctr for Modeling, Simulation and Imaging in Medicine, Rensselaer Polytechnic Inst
Automated Real Time Peg and Tool Detection for the FLS Trainer Box

Anna Skinner

AnthroTronix Inc.
Assessment of Laparoscopic Surgical Skill Acquisition and Retention

Surgical Simulator Validation

Jeffrey Cheung

SickKids Learning Inst, SickKids Hospital
Evaluation of Tensiometric Assessment as a Measure of Skill Degradation

Joseph Singapogu

Haptic Interaction Lab, Clemson Univ
Haptic Tasks for Physical Laparoscopic ("Box") Trainers to Differentiate Surgeon Skill

John Qualter

Div of Educational Informatics, New York Univ Sch of Medicine
Integration of Surgical Simulation in Plastic Surgery Residency Training

Haptics

Hannes Bleuler

Robotic Systems Lab (LSRO), EPFL
Haptic Handles for Robotic Surgery

Liliane dos Santos Machado

Dept of Informatics, Univ Federal da Paraiba
An Experimental Study on CHVE's Performance Evaluation

Timothy Judkins

Robotics & ElectroMechanical Systems, Intelligent Automation, Inc.
Development of the KineSys MedSim: A Novel Hands-Free Haptic Robot for Medical Simulation

Robotics

Omid Motlagh

Mechanical and Manufacturing Engineering, Univ Putra Malaysia

Evaluation of Robot Motion Control Algorithms for Service Robots

Omid Motlagh

Mechanical and Manufacturing Engineering, Univ Putra Malaysia

A Navigation Algorithm for Service Robots in Cluttered Environments

Farzam Farahmand

Sch of Mechanical Engineering, Sharif Univ of Technology

Design of a 4 DOF Laparoscopic Surgery Robot for Manipulation of Large Organs

Sergei Kurenov

Dept of Surgical Oncology, Roswell Park Cancer Inst

A Simple Master-Slave Control Mapping Setup to Learn Robot-Assisted Surgery Manipulation

Tamás Haidegger

Dept of Control Engineering and IT, Budapest Univ of Technology and Economics

Technology Supporting Hand Hygiene Control—Heritage of Semmelweis

Intelligence Networking

José Mosso Vázquez

Univ Panamericana; Hospital General y Regional No. 25, IMSS; Clínica Pisanty, ISSSTE

iPhone G3 for Telemedicine in Emergency Surgery — Report of 46 cases at the HGR No. 25 of the IMSS

Cory Leeson

Simulation and Med Technology R&D Ctr & Dept of Bioengineering, Univ of Pittsburgh

PleurAlert: An Augmented Chest Drainage System with Electronic Sensing, Automated Alerts and Internet Connectivity

University of Nebraska Research Projects (Group Two)

Mary Bernhagen

Dept Anesthesiology, Univ of Nebraska Med Ctr

Using the Battlefield Telemedicine System (BTS) to Train Deployed Medical Personnel in Complicated Medical Tasks – A Proof of Concept

Ben Boedeker

Dept Anesthesiology, Univ of Nebraska Med Ctr

User Preference Comparing a Conventional Videolaryngoscope Blade vs. a Novel Suction Videolaryngoscope Blade in Simulated Hemorrhagic Airway Intubation

Gail Kuper

Dept Anesthesiology, Univ of Nebraska Med Ctr

Utilization of a Civilian Academic Center as Force Multiplier in Support of NATO Special Operations Medicine – A Pilot Demonstration

Nikola Miljkovic

Univ of Nebraska Med Ctr; Research Service, Omaha VA Med Ctr

Use of a Malleable Bougie and Curved Forceps with Videolaryngoscopy in Airway Management Training in a Cadaver Model– A Pilot Study

Jeffrey Morgan

Womack Army Med Ctr

Tele-Orthopaedics: United States Army European Regional Medical Command

Thomas Nicholas

Dept Anesthesiology, Univ of Nebraska Med Ctr

Nasotracheal Intubation in a Difficult Airway using the Storz C-MAC Videolaryngoscope, the Boedeker Bougie Endotracheal Introducer, and the Boedeker Curved Forceps

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SATURDAY, February 11

7:30 Continental Breakfast

SATURDAY Morning—Track A

8:25 *Moderator's Welcome*

Simulation Validation

8:30 **Allen Andrade**

Lab of E-Learning and Multimedia Research & Geriatric Research, Education, and Clinical Ctr (GRECC),
Bruce W. Carter VA Med Ctr; Univ of Miami Miller Sch of Medicine

Using Anthropomorphic Avatars Resembling Sedentary Older Individuals as Models to Enhance Self-Efficacy and Adherence to Physical Activity: Psychophysiological Correlates

8:45 **Stefan Marks**

Sch of Computing & Mathematical Sciences, Auckland Univ of
Technology, New Zealand

Design and Evaluation of a Medical Teamwork Training Simulator using Consumer-Level Equipment

9:00 **Sandrine de Ribaupierre**

Corps for Research in Instructional and Perceptual Technologies (CRIPT), Schulich Sch of Medicine and
Dentistry, Univ of Western Ontario

Evaluation of Neuroanatomical Training Using a 3D Visual Reality Model

9:15 **Li Felländer-Tsai**

CLINTEC, Karolinska Inst

*Training Diagnosis and Treatment of Cervical Spine Trauma Using a New Educational Program for
Visualization through Imaging and Simulation (VIS): A First Evaluation by Medical Students*

9:30 **Allen Andrade**

Lab of E-Learning and Multimedia Research & Geriatric Research, Education, and Clinical Ctr (GRECC),
Bruce W. Carter VA Med Ctr; Univ of Miami Miller Sch of Medicine

Medical Students' Attitudes toward Obese Patient Avatars of Different Skin Color

9:45 Discussion

10:00 Break

Surgical Metrics

10:15 **Camille Williams**

Wilson Centre & Grad Dept of Rehab Science, Univ of Toronto

The Benefits of Fundamentals of Laparoscopic Surgery (FLS) Training on Simulated Arthroscopy Performance

10:30 **Daniel Bailey**

Univ of Illinois at Chicago

Concurrent and Face Validity of a Capsulorhexis Simulation with Respect to Human Patients

10:45 **Gregory Wiet**

Nationwide Children's Hospital

Translating Surgical Metrics into Automated Assessments

Surgical Simulator Validation

11:00 **Kristen Pitzul**

Div of General Surgery, Univ Health Network

Validation of Three Virtual Reality Fundamentals of Laparoscopic Surgery (FLS) Modules

11:15 **Marie-Eve LeBel**

Div of Orthopaedic Surgery, Dept of Surgery, Univ of Western Ontario

Force Sensing-Based Simulator for Arthroscopic Skills Assessment in Orthopaedic Knee Surgery

11:30 Discussion

11:45 Adjourn

SATURDAY Morning—Track B

8:30 Focus Session — *Wearable Augmented Reality for Medical First Response & Situational Awareness (Independently Organized Adjunct Activity)*

Chairs:

Jayfus T. Doswell

Juxtopia LLC

Kenneth Wilson

Trauma Surgery, Morehouse Sch of Medicine

Peter Kazanzides (invited)

Ctr for Computer Integrated Surgical Systems & Technology (CISST), The Johns Hopkins Univ

Diane Adams

Health Informatics Information Technology (HIIT), American Public Health Assoc (APHA)

Presentations:

Maia Anderson

Sch of Nursing, Sojourner Douglass College
Wearable Augmented Reality for Emergency Public Health Care Response

Corey Dicken

Dept of Electrical Engineering, Morgan State Univ
Ruggedized Subsystems for Wearable Augmented Reality for use in Casualty Care Settings

Jayfus T. Doswell

Juxtopia LLC
Context-Aware Augmented Reality System Architecture for Medical First Response and Situational Awareness

Peter Kazanzides (invited)

Ctr for Computer Integrated Surgical Systems and Technology (CISST), The Johns Hopkins Univ
Wearable Augmented Reality for Surgical Navigation and Situational Awareness

Manohar Mareboyana

Dept of Computer Science, Bowie State Univ
Object Recognition for Wearable Augmented Reality During Casualty Care

Gail Nicholson (invited)

Naval Warfare Center
Usability and Human Factors in Wearable Augmented Reality Systems

Sachin Shetty

Electrical & Computer Engineering, Tennessee State Univ
Advanced Embedded Computer System for the Wearable AR HMD

Sharad Sharma

Dept of Computer Science, Bowie State Univ
WARN: Wearable Augmented Reality Note for Casualty Care Documentation

Jamal Uddin

Dept of Chemistry, Coppin State Univ
NanoPower: Nanotechnology Power for Wearable Augmented Reality During Long Incident Operations

Kenneth Wilson

Trauma Surgery, Morehouse Sch of Medicine
Wearable Augmented Reality for Remote Trauma Care Assistance

11:45 Adjourn