# Conference Program

*As of March 16, 2016*

## Thursday, April 7

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*While we aim for stability, this program may change to accommodate educational objectives and logistical needs. Please return for updates.*
Thursday Morning, April 7

7:00  Registration & Continental Breakfast

Plenary Session

8:20  Welcome & Introduction
James Westwood and Karen Morgan
Conference Organizers

8:30  Panel: Exploring VR's Trajectory from the Nineties' Boom through Today's Renaissance and into the Future
Organizer:
Albert “Skip” Rizzo
Institute for Creative Technologies, USC

Moderator:
Walter Greenleaf
Stanford University

Panelists:
Tipatat Chennavasin
The Venture Reality Fund

Henry Fuchs
University of North Carolina

Karl Krantz
Silicon Valley Virtual Reality

Jacquelyn Ford Morie
All These Worlds, LLC

Albert “Skip” Rizzo
Institute for Creative Technologies, USC

Cosmo Scharf
Virtual Reality LA

10:00  Break

10:25  Moderator's Welcome

10:30  Creating a Real-Time Virtual Copy of the Radiation Therapy Treatment Room
Daniel Low
Radiation Oncology UCLA

11:00  HTC Vive and Oculus in Neurosurgery: Virtual Reality for Preoperative and Intraoperative Procedural Planning, and for Surgical Training
Neil Martin
Neurosurgery, UCLA Medical Center

11:30  Robotics, Navigation, and Image Guidance for Minimally Invasive Pediatric Interventions
Kevin Cleary
Children's National Health System

12:00  Break
Thursday Afternoon, April 7

Track 1

EDUCATION

1:25  Moderator's Welcome

1:30  Proficiency Based Progression Simulation Training as an ‘Outcome’ Based Approach to Graduate Medical Education and Training; What is It and How to Do It!
**Anthony Gallagher**  
ASSERT Centre, University College Cork, Ireland

1:45  Immersive Learning Experiences for Surgical Procedures  
**Henry Fuchs** and **Young-Woon Cha**  
Dept of Computer Science, University of North Carolina  
(with Mingsong Dou, Rohan Chabra, Federico Menozzi, Andrei State and Eric Wallen)

2:00  The Evolution of Medical Training Simulation in the U.S. Military  
**Amber Linde**  
JPC-1 Medical Simulation & Information Sciences Research Program  
(with Kevin Kunkler)

2:15  The Role of Game Elements in Online Learning within Health Professions Education  
**David Rojas**  
Wilson Centre, Faculty of Medicine, University of Toronto  
(with Bill Kapralos and Adam Dubrowski)

2:30  An Interactive 3D Virtual Anatomy Puzzle for Learning and Simulation - Initial Demonstration and Evaluation  
**Erik Messier**  
Kate Gleason College of Engineering, Rochester Institute of Technology  
(with Jascha Wilcox, Alexander Dawson-Elli, Gabriel Diaz and Cristian A. Linte)

2:45  Simulation-Based Training Must be More Than an Interesting Educational Experience  
**Anthony Gallagher**  
ASSERT Centre, University College Cork, Ireland

3:00  Discussion

3:15  Break


Organizers:

**Madeleine Abrandt Dahlgren**  
Linköping University

**Hans Rystedt**  
Gothenburg University

**Li Felländer-Tsai**  
Karolinska Institutet

Presentations:

**Collaborative Video-Analysis to Visualize Information Transformation in Medical Simulation**  
**Cecilia Escher**  
Karolinska Institutet  
**Li Felländer-Tsai**  
Karolinska Institutet

**Video-Enhanced Debriefing in Interprofessional Training of Nursing and Medical Students**  
**Hans Rystedt**  
Gothenburg University

**Bodies in Simulation: Exploring Sociomaterial Theory in Collaborative Video-Analysis**  
**Samuel Edelbring**  
Linköping University  
**Madelein Abrandt Dahlgren**  
Linköping University

5:00  Break
Thursday Afternoon, April 7

Track 2

IMAGING

1:25  Moderator’s Welcome

1:30  Multi-Kinect v2 Camera Based Monitoring System for Radiotherapy Patient Safety
Anand Santhanam
Dept of Radiation Oncology, University of California, Los Angeles
(with Yugang Min, Patrick Kupelian and Daniel Low)

1:45  Real Time Gabor-Domain Optical Coherence Microscopy for 3D Imaging
Jannick Rolland
The ODA Lab at The Inst of Optics, University of Rochester
(with Cristina Cavavesi, Patrice Tankam, Andrea Cogliati, Mara Lanis and Anand P. Santhanam)

COMPUTER-AIDED THERAPY

2:00  Validation of an Objective Assessment Instrument for Non-Surgical Treatments of Chest Wall Deformities
Mohammad Obeid
Modeling, Simulation and Visualization Engineering Dept, Old Dominion University
(with Nahom Kidane, Krzysztof J. Rechowicz, Salim Chemlal, Robert E. Kelly, and Frederic D. McKenzie)

2:15  The Virtual Pediatric Airways Workbench
Andinet Enquobahrie
Kitware, Inc.
(with Cory W. Quammen, Russell M. Taylor II, Pavel Krajcevski, Sorin Mitran, Richard Superfine, Brad Davis, Stephanie Davis and Carlton Zdanski)

2:30  A Toroidal Probe for Measuring Surgically Exposed Joint Centers
Randy Ellis
School of Computing, Queen's University
(with Brian J. Rasquinha, Kate S.M. Loe, Andrew W.L. Dickinson and John F. Rudan)

DISPLAYS

2:45  Avoiding Focus Shifts in Surgical Telementoring Using an Augmented Reality Transparent Display
Dan Andersen
Dept of Computer Science, Purdue University
(with Voicu Popescu, Maria Eugenia Cabrera, Aditya Shanghavi, Gerardo Gomez, Sherri Marley, Brian Mullis and Juan Wachs)

ROBOTICS

3:00  Towards the Implementation of an Autonomous Camera Algorithm on the da Vinci Platform
Shahab Eslamian
Dept of Electrical and Computer Engineering, Wayne State University
(with Luke A. Reisner, Brady W. King and Abhilash K. Pandya)

3:15  Discussion

3:30  Break

Organizers & Presenters:
Richard Satava
University of Washington
Jeffrey Levy
CaseNetwork

5:00  Break
Thursday Afternoon, April 7

Track 3

1:30 – 5:00

Independent Session: BioGears: An Open-Source Human Physiology Engine

Visit https://www.biogearsengine.com/mmvr for key data, including materials to download, before the session.

Organizers:

Rachel Clipp

Jeff Webb

Aaron Bray

Presentations:

BioGears: An Open-Source Human Physiology Engine Overview
Rachel Clipp

Using the Open-Source BioGears GUI
Rachel Clipp

Interacting with the BioGears API
Aaron Bray

BioGears Q&A and Help Session
Rachel Clipp

Thursday Evening, April 7

Posters & Mini-Lectures Reception

5:15 – 7:15

POSTERS

Posters will be set up Thursday morning and will be displayed through Saturday morning.

Poster presentations are listed starting on page 12.

During our Thursday evening reception, poster presenters will share their work with fellow attendees while enjoying refreshments.

MINI-LECTURES

Mini-lectures will be given adjacent the poster area during the Thursday evening reception. Some are stand-alone presentations while others supplement posters and demos. Each mini-lecture lasts just 5 minutes and the fast pace will be engaging.

5:25  Moderator’s Welcome

5:30  Development of a Generic Tubular Tree Structure for the Modeling of Orbital Cranial Nerves
Thomas Kaltofen
Research Unit Medical Informatics, RISC Software GmbH
(with Sara Ivcevic, Mathias Kogler and Siegfried Priglinger)

5:36  Four-Dimensional Imaging: Tracking Cancer Growth through Space and Time
Matthew Bramlet
Jump Trading Simulation and Education Center, University of Illinois School of Medicine
(with Beth Ripley and Justin Drawz)

5:42  Humanikins: Humanity Transfer to Physical Manikins
Salam Daher
Institute for Simulation & Training, The University of Central Florida
(with Gregory Welch)
5:48  Smart Camera: Using Computer Vision to Improve the Assessment of Medical Training
Matthew Hackett
Army Research Laboratory - Human Research and Engineering Directorate

5:54  Gunner Goggles: Implementing Augmented Reality into Medical Education
Nadir Bilici
Perelman School of Medicine, University of Pennsylvania
(with Leo Wang, Hao-Hua Wu and Rebecca Tenney-Soeiro)

6:00  Design and Construct Validity of a Proficiency-Based Stepwise Endovascular Curricular Training (PROSPECT) Program
Heidi Maertens
Dept of Thoracic and Vascular Surgery, Ghent University Hospital
(with Rajesh Aggarwal, Liesbeth Desender, Frank Vermassen and Isabelle Van Herzeele)

6:06  Project EPICSAVE - Enhanced ParamedIC Vocational Training w/ Serious Games and Virtual Environments
Jonas Schild
Institute of Visual Computing, Bonn-Rhein-Sieg University of Applied Sciences
(with Thomas Luiz, Klaus Runngaldier, Claus Kemp, and Markus Herkersdorf)

6:12  Interactive Rear-Projection Physical-Virtual Patient Simulators
Gregory Welch
College of Nursing; Dept of Computer Science and Institute for Simulation & Training, The University of Central Florida
(with Salam Daher, Jason Hochreiter and Laura Gonzalez)

6:18  Usage, Development and Refinement of a High-Fidelity Surgical Phantom for Examining Torso Exsanguination in Weightlessness and Multiple Sea States
Anthony LaPorta
Rocky Vista University LLC
(with A.W. Kirkpatrick, T. Hoang, E. Pierce, H. Tien, J. McKee, S. Brien, D. Louw, A. Skinner and R. Dee)

James Earl Cox III
Interactive Media and Game Design Program, School of Cinematic Arts, University of Southern California

6:30  Integrated Self-Management System for Improved Treatment of Asthma
Kristen Nguyen
Farus, LLC
(with Martin O. Culjat, Andrzej P. Mierzwa, Rahul S. Singh, Benson Fong and Rebecca Vanlandingham)

6:36  The Effect of Virtual Reality in Reducing Preoperative Anxiety in Patients Undergoing Arthroscopic Knee Surgery: A Randomized Controlled Trial
Anitra Robertson
Surgical Realities
(with Daniel Fick, Riaz JK Khan, Ramesh Rajan, Shanil Yapa, Hunter Hoffman and William B Robertson)

6:42  Study of Event Characterization in Wireless EEG Monitoring with EMOTIV
Wei Wang
Dept of Computer Science, San Diego State University
(with Chase Cabrera)

6:48  The Cost Effectiveness of Research: Are These Objective Measurements the Tools of the Future?
Anthony LaPorta
Rocky Vista University LLC
(with A. Man, C. McKinney, J. Snider, D. Robinson and L. Bezjian)
6:54  *USC Surgical View™ Surgical VR Simulator*

**Arjun Prakash**
USC Interactive Media & Games Division, University of Southern California

7:00  *Fully-Immersive 3D Multiplayer Training on $150 Laptops!*

**Randy Brown**

7:06  Adjourn
Friday Morning, April 8

7:30  Registration & Continental Breakfast

Plenary Session

8:30  Independent Session: Fidelity for Simulation in Healthcare: Pushing the Envelope

Organizers & Chairs:

Robert Sweet
University of Washington

David Hananel
University of Minnesota

Presentations:

Tissue Fidelity
Jack Norfleet
US Army Research Laboratory

Physiology Fidelity
Thomas Talbot
Inst for Creative Technologies, University of Southern California
Jeff Webb

Anatomic Fidelity
Sam Peterson
Vital Images, Inc.

9:50  Break

11:00  Assessment of Haptic Interaction for Home-Based Physical Tele-Therapy using Wearable Devices and Depth Sensors
Angelos Bampouitis
Digital Worlds Inst, University of Florida

11:20  Recovery of Function after Severe Spinal Cord Injury by Spinal Stimulation
Joel Burdick
Engineering & Applied Science, Caltech

11:50  Presentation of the 20th Satava Award

12:00  Break
Friday Afternoon, April 8

Track 1

SURGICAL SIMULATION

1:25  Moderator’s Welcome

1:30  Towards Surgeon-Authorised VR Training: The Scene-Development Cycle
   Jörg Peters
   Computer & Information Science & Engineering, University of Florida
   (with Saleh Dindar and Thien Nguyen)

1:45  Development and Evaluation of a Novel Pan-Specialty Virtual Reality Surgical Simulator for Smartphones
   Jean Nehme
   Touch Surgery Labs
   (with Ali N. Bahsoun and Andre Chow)

2:00  A Framework for Patient-Specific Spinal Intervention Simulation: Application to Lumbar Spinal Durotomy Repair
   Elvis Chen
   Robarts Research Inst & Western University
   (with Jonathan C. Lau, Lynn Denning, Stephen P. Lownie and Terry M. Peters)

2:15  A Methodological, Task-Based Approach to Procedure-Specific Simulations Training
   Yaki Setty
   3DSystems, Simbionix
   (with Oren Salzman)

2:30  Fabric Force Sensors for the Clinical Breast Examination Simulator
   Shlomi Laufer
   Dept of Surgery & Dept of Electrical Engineering and Computer Science, University of Wisconsin-Madison
   (with Kristen Rasske, Lauren Stopfer, Clair Kurzynski, Tim Abbott, Megan Platner, Joseph Towles and Carla M. Pugh)

2:45  Discussion

3:00  Break

   Nathan Delson
   Dept Mechanical and Aerospace Engineering, University of California, San Diego
   (with Yanisleidy Paez, Jorge Ruiz, Arman Vatanpur, Sina Kouchaki, Mohamad Ramzi bin Abdul Majid and Randolph Hastings)

SURGICAL METRICS

3:30  Objective Surgical Skill Differentiation for Physical and Virtual Surgical Trainers via Functional Near-Infrared Spectroscopy
   Arun Nemani
   Center for Modeling, Simulation, and Imaging in Medicine (CeMSIM), Rensselaer Polytechnic Institute
   (with Woojin Ahn, Denise Gee, Xavier Intes, Steven Schwartzberg, Meryem Yucel and Svranu De)

3:45  Asymmetry in Dominant / Non-Dominant Hand Performance Differentiates Novices from Experts on an Arthroscopy Virtual Reality Serious Game
   Robert Pedowitz
   Professor Emeritus, University of California
   (with Gregg Nicandri and Stefan Tuchschmid)

4:00  Virtual Airway Skills Trainer (VAST) Simulator
   Doga Demirel
   Dept of Computer Science, University of Central Arkansas
   (with Alexander Yu, Tansel Halic, Ganesh Sankaranarayanan, Adam Ryason, David Spindler, Kathryn L. Butler, Caroline Cao, Emil Petrusa, Marcos Molina, Dan Jones, Suhranu De, Marc DeMoya and Stephanie Jones)

4:15  Importance of Stereoscopy in Haptic Training of Novice Temporal Bone Surgery
   Bertram Unger
   Faculty of Health Sciences, University of Manitoba
   (with Bryan Tordon, Justyn Pisa and Jordan B. Hochman)

4:30  Discussion

4:45  Adjourn
Friday Afternoon, April 8

Track 2

VISUALIZATION

1:25  Moderator’s Welcome

1:30  Development of Four Dimensional Human Model that Enables Deformation of Skin, Organs and Blood Vessel System During Body Movement - Visualizing Movements of the Musculoskeletal System
Naoki Suzuki
Inst for High Dimensional Medical Imaging, The Jikei University School of Medicine
(with Asaki Hattori and Makoto Hashizume)

1:45  3D Physics-Based Registration of 2D Dynamic MRI Data
Raffaella Trivisonne
Inria Nancy, CNRS Strasbourg & IHU Strasbourg
(with Igor Peterlik, Stéphane Cotin and Hadrien Courtecuisse)

HAPTICS

2:00  A Unified Framework for Haptic Interaction in Multimodal Virtual Environments
Venkata Arikatla
Medical Computing Team, Kitware Inc.
(with Ricardo Ortiz, Suvranu De and Andinet Enquobahrie)

2:15  Does Virtual Haptic Dissection Improve Student Learning? A Multi-Year Comparative Study
Caroline Erolin
Centre for Anatomy and Human Identification (CAHID), University of Dundee
(with Clare Lamb, Roger Soames and Caroline Wilkinson)

2:30  Constrained Point-Based Framework with Efficient Mechanical Interaction for Virtual Surgery
Weixin Si
Dept of Computer Science and Engineering, The Chinese University of Hong Kong
(with Junliang Shan, Xiangyun Liao, Weiming Wang, Qiong Wang and Pheng-Ann Heng)

2:45  Discussion

3:00  Break

MODELING

3:15  Real-Time Ultrasound Simulation for Training of US-Guided Needle Insertion in Breathing Virtual Patients
Andre Mastmeyer
Inst of Medical Informatics, University of Luebeck
(with Matthias Wilms, Dirk Fortmeier, Julian Schröder and Heinz Handels)

3:30  GPU-Based Parallelized Solver for Large Scale Vascular Blood Flow Modeling and Simulations
Anand Santhanam
Dept of Radiation Oncology, University of California, Los Angeles
(with John Neylon, Joseph Eldredge, Joseph Terna, Erik Dutson and Peyman Benharash)

3:45  Development of a Soft Tissue Elastography Robotic Arm (STiERA)
Saurabh Dargar
Rensselaer Polytechnic Inst
(with Ali Cagdas Akyildiz and Suvranu De)

4:00  Discussion

4:15  Adjourn

Friday Evening, April 8

5:00 – 6:00

Independent Session: The Investment Outlook for Medical VR

Organizer & Moderator:

Walter Greenleaf
Stanford University

Panelists:

John Harris
JAZZ Venture Partners

Jack Young
QualComm Life Fund; dRX Capital
Saturday Morning, April 9

8:00  Registration & Continental Breakfast  

Track 1

REHABILITATION & MENTAL HEALTH

8:55  Moderator’s Welcome

9:00  Automatic Behavior Analysis During a Clinical Interview with a Virtual Human
Albert “Skip” Rizzo  
Inst for Creative Technologies & Dept of Psychiatry and School of Gerontology, University of Southern California  
(with Gale Lucas, Jonathan Gratch, Giota Stratou, Louis-Philippe Morency, Kenneth Chavez, Russ Shilling and Stefan Scherer)

9:15  Natural Language Understanding Performance and Use Considerations in a Virtual Medical Encounters
Thomas Talbot  
Keck School of Medicine & Inst for Creative Technologies, University of Southern California  
(with Nicolai Kalisch, Kelly Christoffersen, Gale Lucas and Eric Forbell)

9:30  Portable Virtual Reality for Assessment and Treatment of Burnout
Brenda Wiederhold  
Virtual Reality Medical Center; Interactive Media Institute  
(with Giuseppe Riva, Andrea Gaggioli and Mark D. Wiederhold)

9:45  Positive and Transformative Technologies for Active Ageing
Giuseppe Riva  
Ist Auxologico Italiano & Università Cattolica del Sacro Cuore, Milano  
(with Daniela Villani, Pietro Cipresso, Claudia Repetto, Stefano Triberti, Daniele Di Lemina, Alice Chirico, Silvia Serino and Andrea Gaggioli)

10:00  A Cost-Effective Virtual Environment for Simulating and Training Powered Wheelchair Manoeuvres
Nigel John  
Dept of Computer Science, University of Chester, UK  
(with Christopher J. Headleand, Thomas Day, Serban R. Pop and Panagiotis D. Ritsos)

10:15  Discussion

10:30  Break

10:45  Using Motion-Sensor Games to Encourage Physical Activity for Adults with Intellectual Disability
Dave Taylor  
Dept of Surgery and Cancer, Imperial College London  
(with Michael J. Taylor, Patricia Gamboa, Ivo Vlaev and Ara Darzi)

11:00  Computer Imagery and Neurological Rehabilitation: On the Use of Augmented Reality in Sensorimotor Training to Step Up Naturally Occurring Cortical Reorganization in Patients Following Stroke
Esteban Correa  
Colombia’s Center for Bioinformatics and Computational Biology - CBBC  
(with Esteban Correa-Agudelo, Carlos Ferrin, and Paulo Velez)

11:15  A Virtual Reality Game for Chronic Pain Management: A Randomized, Controlled Clinical Study
Weina Jin  
School of Interactive Arts and Technology, Simon Fraser University  
(with Amber Choo, Diane Gromala, Chris Shaw and Pamela Squire)

11:30  Usability Comparisons of Head-Mounted vs. Stereoscopic Desktop Displays in a Virtual Reality Environment with Pain Patients
Diane Gromala  
School of Interactive Arts and Technology, Simon Fraser University  
(with Xin Tong, Dimple Gupta and Pam Squire)

11:45  Discussion

12:00  Adjourn
Saturday Morning, April 9

Track 2

9:00  Independent Session: Introduction to Multi-Physics Simulation with SOFA. Join the Community!

Visit [https://www.sofa-framework.org](https://www.sofa-framework.org) for details.

Organizers & Presenters:

Hugo Talbot
Inria

Guillaume Paran
Inria

12:15  Adjourn

Poster Presentations

BRAIN-COMPUTER INTERFACE

Comparison Study on Emotional Response Identification with Brain Computer Interface

Chung Hyuk Park
Dept of Biomedical Engineering, School of Engineering and Applied Science, George Washington University
(with Ahmed Qureshi)

Study of Event Characterization in Wireless EEG Monitoring with EMOTIV

Wei Wang
Dept of Computer Science, San Diego State University
(with Chase Cabrera)

COMPUTER-AIDED THERAPY

Evaluation of RGP Contact Lens Fitting in Keratoconus Patients Using Hierarchical Fuzzy Model and Genetic Algorithms

Hossein Arabalibeik
Research Centre for Biomedical Technology and Robotics (RCBTR), Tehran University of Medical Sciences
(with Fatemeh Falahati Marvast, Fatemeh Alipour, Abbas Sheikhtaheri, Leila Nouri, Mehdi Soozande and Masood Yarmahmoodi)

Autonomous Patient Safety Assessment from Depth Camera Based Video Analysis

Francis Baek
Dept of Electrical and Computer Engineering, University of California, San Diego
(with Vikash Gilja)

Continuous Behavior Estimation with RGB-D Video in the Epilepsy Unit

Paolo Gabriel
University of California, San Diego
(with Daniel Friedman, Thomas Thesen and Vikash Gilja)

Estimating Motor Scores with Accelerometers in the Neuro ICU

John Hermiz
Electrical and Computer Engineering, University of California at San Diego
(with Jamie LaBuzetta, Navaz Karanjia and Vikash Gilja)
Normal Brain-Skull Development with Hybrid Deformable VR Models Simulation

**Jing Jin**
Biomedical Engineering, Western University
(with Sandrine de Ribaupierre and Roy Eagleson)

Integrated Self-Management System for Improved Treatment of Asthma

**Kristen Nguyen**
Farus, LLC
(with Martin O. Cuklat, Andrzej P. Mierzwa, Rahul S. Singh, Benson Fong and Rebecca Vanlandingham)

The Effect of Optical Marker Configuration on Tracking Accuracy in Image Guided Surgery

**Sehyung Park**
Center for Bionics, Korea Institute of Science and Technology (KIST)
(with Kinde Mekuria, Youngjun Kim, Hyunchul Cho, Deukhee Lee, Byung Hoon Lee, Ki-Mo Jang and Joon Ho Wang)

Virtual Reality System for the Assessment and Diagnosis of Vestibular Indicators of Soldier Operational Readiness (ADVISOR)

**Arthur Wollocko**
Charles River Analytics
(with Michael Jenkins, Scott Irvin and Mike Farry)

DISPLAYS

Immersion in Cardboard VR Compared to a Traditional Head-Mounted Display

**Ashfaq Amin**
School of Interactive Arts and Technology, Simon Fraser University
(with Diane Gromala)

3D Perception Technologies for Surgical Operating Theatres

**Luzie Schreiter**
Inst for Anthropomatics and Robotics (IAR) - Intelligent Process Control and Robotics (IPR), Karlsruhe Institute of Technology
(with Tim Beyl, Philip Nicolai, Jörg Raczkowsky and Heinz Wörn)

EDUCATION

Creating a Web Based Serious Game Module for Teaching Basic Life Support Protocol as a Complimentary Tool for Simulation Based Trainings in Healthcare

**M. Emin Aksoy**
CASE Center of Advanced Simulation and Education, Acibadem University
(with Dilek Kitapcioglu, Mehmet K. Ozkan and Feray Guven)

Development of a Web-Based 3D Module for Improved Neuroanatomy Education

**Lauren Allen**
Dept of Anatomy and Cell Biology, Western University
(with He Zhen Ren, Roy Eagleson and Sandrine de Ribaupierre)

Gunner Goggles: Implementing Augmented Reality into Medical Education

**Nadir Bilici**
Perelman School of Medicine, University of Pennsylvania
(with Leo Wang, Hao-Hua Wu and Rebecca Tenney-Soeiro)

Team Members’ Self-Efficacy Correlates to Situation Awareness in Simulation-Based Teamwork Training

**Johan Creutzfeldt**
CLINTEC & Center for Advanced Medical Simulation, Karolinska Institutet
(with Cecilia Escher, Li Felländer-Tsai and Leif Hedman)

Motivation and Patient Safety Attitudes in Hybrid Simulator-Based Teamwork Training for OR Teams

**Cecilia Escher**
CLINTEC, Karolinska Institutet
(with Ann Kjellin, Leif Hedman, Lisbet Meurling, Johan Creutzfeldt, Hans Rystedt and Li Felländer-Tsai)

Perturbed Communication in a Virtual Environment to Train Medical Team Leaders

**Marie-Hélène Ferrer**
French Armed Forces Biomedical Research Institute (IRBA)
(with Lauriane Huguet, Domitile Lourdeaux and Nicolas Sabouret)
Using Human in The Loop Simulation in Virtual and Mixed Reality for Medical Training
Aleshia Hayes
Indiana Purdue University
(with Charles E. Hughes)

The Impact of Structured Incentives on the Adoption of a Serious Game for Hand Hygiene Training in a Hospital Setting
Gerard Lacey
SureWash
(with Michael Corr, Helga Morrow, Ann McQueen, Fiona Cameron and Chris Connolly)

The Cost Effectiveness of Research: Are These Objective Measurements the Tools of the Future?
Anthony LaPorta
Rocky Vista University LLC
(with A. Man, C. McKinney, J. Snider, D. Robinson and L. Bezjian)

Loading Doses Are Not Based On Patient Race During Simulated Propofol Sedation
Samsun Lampotang
Dept of Anesthesiology; Center for Safety, Simulation & Advanced Learning Technologies, University of Florida
(with Nikolaus Gravenstein, David Erik Lizdas, Benjamin Lok and John Patrick Quarles)

The A-TEAM Program, An Easy Way to Verbalize Teamwork Behavior for Medical Students
Lisbet Meurling
CLINTEC, Karolinska Institutet
(with Carl-Johan Wallin, Leif Hedman, Cecilia Escher, Johan Creutzfeldt, Mini Ruiz and Li Felländer-Tsai)

Project EPICSAVE - Enhanced ParamedIC Vocational Training w/ Serious Games and Virtual Environments
Jonas Schild
Institute of Visual Computing, Bonn-Rhein-Sieg University of Applied Sciences
(with Thomas Luiz, Klaus Runggaldier, Claus Kemp, and Markus Herkersdorf)

Using Flipped Class to Enhance Medical Student’s Active Learning
Kuldeep Singh
Dept of Pediatrics, All India Institute of Medical Sciences
(with Pratibha Singh)

Using Flip Classroom in Reducing IMNCI Workshop Duration in Developing Country: A Pilot Study
Kuldeep Singh
Dept of Pediatrics, All India Institute of Medical Sciences
(with Pratibha Singh)

Student’s Perception Toward Objective Structured Clinical Examination (OSCE) as a Teaching Learning Tool
Pratibha Singh
Dept of Obstetrics & Gynecology, All India Institute of Medical Sciences
(with Kuldeep Singh and Pulkit Gehlani)

How e-Learning can Support Medical Professionals Preparing for Work Under Extreme Conditions
Linda Sonesson
Centre for Defence Medicine, Swedish Armed Forces
(with Kenneth D. Boffard, Lars Lundberg, Martin Rydmark and Klas Karlgren)

How Can Haptics Realism be “Gamed” to Learn Technical Medical Skills
Alvaro Uribe
Faculty of Arts, University of Waterloo
(with David Rojas, Bill Kapralos and Adam Dubrowski)

HAPTICS
Active and Passive Haptic Training Approaches in VR Laparoscopic Surgery Training
Takafumi Marutani
Ritsumeikan University
(with Toma Kato, Kazuyoshi Tagawa, Hiromi T. Tanaka, Masaru Komori, Yoshimasa Kurumi and Shigehiro Morikawa)

Development of Haptic Needle for VR-Based Injection Training System Using Simulated Patient
Kohei Nishio
Chiba University
(with Toshiyia Nakaguchi)
IMAGING

Reduced Imaging Rate in Liver Elastometry Using Shear Wave Interference Patterns
Hossein Arabalibeik
Research Centre for Biomedical Technology and Robotics (RCBTR), Tehran University of Medical Sciences
(with Mehdi Soozande and Seyed Moayad Alavian)

Four-Dimensional Imaging: Tracking Cancer Growth through Space and Time
Matthew Bramlet
Jump Trading Simulation and Education Center, University of Illinois School of Medicine
(with Beth Ripley and Justin Drawz)

Evaluation of Software Tools for Segmentation of Temporal Bone Anatomy
Kowther Hassan
Dept of Computer Science, University of Calgary
(with Joseph C. Dort, Garnette R. Sutherland and Sonny Chan)

Virtual Intraoperative Cholangiogram using WebCL
Alexander Yu
Dept of Computer Science, University of Central Arkansas
(with Doga Demirel, Tansel Halic and Sinan Kockara)

MODELING

An Approach for Automated Scene Management in Real-Time Medical Simulation Framework
Venkata Arikatla
Medical Computing Team, Kitware Inc.
(with Ricardo Ortiz, Tansel Halic, Sean Radigan, David Thompson, Suvranu De and Andinet Enquobahrie)

Pharmacokinetic and Pharmacodynamic Modeling in BioGears
Rachel Clipp
(with Jeff Webb, Cameron Thames, Zachary Swarm, Rodney Metoyer and Aaron Bray)

Hybrid Rendering Architecture for Realtime and Photorealistic Simulation of Robot-Assisted Surgery
Luzie Schreiter
Karlsruhe Institute of Technology
(with Sebastijan Müller, Andreas Bihlmaier, Stephan Irgenfried and Heinz Wörn)

Development of a Generic Tubular Tree Structure for the Modeling of Orbital Cranial Nerves
Thomas Kaltofen
Research Unit Medical Informatics, RISC Software GmbH
(with Sara Ivcevic, Mathias Kogler and Siegfried Priglinger)

Measurement of Temperature Dependent Apparent Specific Heat Capacity in Electrosurgery
Wafaa Karaki
Rensselaer Polytechnic Institute
(with Ali Akyildiz, Diana-Andra Borca Tasciuc and Suvranu De)

Multiscale Simulation of Insults and Interventions: The BioGears® Showcase Scenarios
Rodney Metoyer
(with B. Bergeron, R. Clipp, J. Webb, C. Thames, Z Swarm, J. Carter, Y. Gebremichael and J. Henegan)

Modeling Renal Behavior and Control in BioGears
M. Zachary Swarm
(with Jeff Webb, Rachel Clipp, Jenn Carter, M. Cameron Thames, Rodney Metoyer, Aaron Bray and David Byrd)

Dynamic Response to Heat Gain and Heat Loss in the BioGears Engine
M. Cameron Thames
(with Jeffrey Webb, Rachel Clipp, Jenn Carter, Zachary Swarm, Rodney Metoyer, Aaron Bray and David Byrd)
REGISTRATION & NAVIGATION

Personalized Guides for Registration in Surgical Navigation
Randy Ellis
School of Computing, Queen’s University
(with Andrew W.L. Dickinson, Brian J. Rasquinha and John F. Rudan)

REHABILITATION & MENTAL HEALTH

The Interactive Physical and Cognitive Exercise System (iPACES©): Pilot Study of In-Home Use of Memory Lane© with Older Adults Pairs
Cay Anderson-Hanley
The Healthy Aging & Neuropsychology Lab, Union College
(with Makenzie Michel, Marissa VanBrakle, Molly Maloney, Adrianna Ratajska, Kristina Striegnitz, Tobi Saulnier and Nicole Barcelos)

Automated Tracking and Quantification of Autistic Behavioral Symptoms Using Microsoft Kinect
Joon Young Kang
Depts of Neurology, Electrical Engineering, & Radiology, New York University School of Medicine
(with Ryunhyung Kim, Hyunsun Kim, Yeonjune Kan, Susan Hahn, Zehngrui Fu, Mamoon I. Khalid, Enja Schenck and Thomas Thesen)

Transcultural Telepsychiatry. Automated Translation & Speech Recognition Technologies
Alberto Odor
Health Informatics, University of California, Davis
(with Peter Yellowlees, Steven Chan, Michelle Parish, Glen Xiong, Andrés Sciolli and Shang Wei)

Hand VR Exergame for Occupational Health Care
Saskia Ortiz
Nueva Granada Military University
(with Alvaro Uribe-Quevedo and Bill Kapralos)

SafeHOME: Promoting Safe Transitions to the Home
Kevin Ponto
Wisconsin Insts for Discovery, University of Wisconsin-Madison
(with Markus Broecker, Ross Tredinnick, Gail Caspar and Patricia F. Brennan)

The Effect of Virtual Reality in Reducing Preoperative Anxiety in Patients Undergoing Arthroscopic Knee Surgery: A Randomized Controlled Trial
Anitra Robertson
Surgical Realities
(with Daniel Fick, Riaz JK Khan, Ramesh Rajan, Shanil Yapa, Hunter Hoffman and William B Robertson)

The Communication of Global Cardiovascular Risk by Avatars
Jorge Ruiz
Laboratory of E-learning and Multimedia Research, Bruce W. Carter Miami VAMC
(with Allen D. Andrade, Chandana Karanam, Dhurga Krishnamurthy Lorena Niño, Ramankumar Anam and Joseph Sharit)

Effects of an Avatar-Based Anti-Smoking Game on Smoking Cessation Intent
Jorge Ruiz
Miami VAHS GRECC & University of Miami
(with Allen D. Andrade, Thaer Idrees, Chandana Karanam and Ramankumar Anam)

Development of a Deployable HRV Assessment and Training System
Carmen Russoniello
Center for Applied Psychophysiology, East Carolina University
(with John Evans, Brenda Bart-Knauer, Matt Fish, Christiana Brown-Bochicchico, Laura Greemore and Mikayli Paluzzi)

Quantified-Self for Obesity: Physical Activity Behaviour Sensing to Improve Health Outcomes
Dave Taylor
Dept of Surgery and Cancer, Imperial College London
(with Jennifer Murphy, Mian Ahmad, Sanjay Purkayastha, Samantha Scholtz, Ramin Ramezani, Ivaylo Vlaev, Alexandra I.F. Blakemore and Ara Darzi)

SENSORS

Wearable Ultrasound Array for Point-of-Care Imaging and Patient Monitoring
Kristen Nguyen
Farus, LLC
(with Andrzej P. Mierzwa, Sean P. Huang, Martin O. Culjat and Rahul S. Singh)
A Motion Tracking and Sensor Fusion Module for Medical Simulation

Yunhe Shen
CREST, University of Minnesota
(with Fan Wu, Kuo-Shih Tseng, Ding Ye, John Raymond, Badrinath Konety and Robert Sweet)

A Capacitance-Based Sensor for Hemodialysis Cannulation Training: A Proof-of-Concept Study

Ravikiran Singapurug
IBIOE, Clemson University
(with Anand Jagannathan, Naren Nagarajan, Chris Moody, Guigen Zhang and David Cull)

SURGICAL SIMULATION

Developing Modularized Virtual Reality Simulators for Natural Orifice Transluminal Endoscopic Surgery (NOTES)

Wooin Ahn
Center for Modeling, Simulation and Imaging in Medicine, Rensselaer Polytechnic Institute
(with Denis Dorozhkin, Steven Schwartzberg, Daniel B. Jones and Suvranu De)

Accelerating Surgical Simulation Development via OpenSurgSim: Burr Hole Trainer

Ryan Beasley
SimQuest Solutions Inc
(with Haizhou Wang, Harald Scheirich, Wesley Turner, Gughan Sathyaseelan, Paul Novotny, Julien Lenoir and Timothy Kelliher)

Usage, Development and Refinement of a High-Fidelity Surgical Phantom for Examining Torso Exsanguination in Weightlessness and Multiple Sea States

Anthony LaPorta
Rocky Vista University LLC
(with A.W. Kirkpatrick, T. Hoang, E. Pierce, H. Tien, J. McKee, S. Brien, D. Louw, A. Skinner and R. Dee)

A New Design for Airway Management Training with Mixed Reality and High Fidelity Modeling

Yunhe Shen
CREST, University of Minnesota
(with David Hananel, Zichen Zhao, Daniel Burke, Crist Ballas, Jack Norfleet, Troy Reihsen and Robert Sweet)

Evaluation of Network-Based Minimally Invasive VR Surgery Simulator

Kazuyoshi Tagawa
Ritsumeikan Global Innovation, Ritsumeikan University
(with Hiromi T. Tanaka, Yoshimasa Kurumi, Masaru Kormori and Shigehiro Morikawa)

SURGICAL SIMULATION METRICS

An Examination of Metrics for a Simulated Ventriculostomy Part-Task

Ryan Armstrong
Biomedical Engineering, University of Western Ontario
(with Dayna Noltie, Roy Eagleson and Sandrine de Ribauipierre)

A Simulator for Measuring Forces During Surgical Knots

Shlomi Laufer
Depts of Surgery, Electrical Engineering, & Computer Science, University of Wisconsin-Madison
(with Imri Amiel, Jay N. Nathwani, Roy Mashiach, Rush S. Margalit, Rebeca D. Ray, Amitai Ziv and Carla M. Pugh)
A Novel Platform for Assessment of Surgical Suturing Skill: Preliminary Results
Ravikiran Singapogu
IBIOE, Clemson University
(with Tanmay Kavathekar, John Eidt, Richard Groff and Timothy Burg)

Effects of Hand Dominance and Postural Selection on Muscle Activities of Virtual Laparoscopic Surgical Training Tasks
Ka-Chun Siu
University of Nebraska Medical Center
(with Chun-Kai Huang, Ashley Boman, Anthony White, and Dmitry Oleynikov)

Investigating the Influence of Hand Dominance on Postural Sway During Traditional and Simulated Laparoscopic Surgical Skills Practice
Ka-Chun Siu
University of Nebraska Medical Center
(with Anthony White, Chun-Kai Huang and Dmitry Oleynikov)

SURGICAL SIMULATION VALIDATION
Improving the Acquisition of Basic Technical Surgical Skills with VR-Based Simulation Coupled with Computer-Based Video Instruction
David Rojas
Wilson Centre, Faculty of Medicine, University of Toronto
(with Bill Kapralos and Adam Dubrowski)

Evaluation of User Performance in Simulation-Based Diagnostic Cerebral Angiography Training
Oleksiy Zaika
Anatomy & Cell Biology, Schulich School of Medicine and Dentistry, University of Western Ontario
(with Ngan Nyugen, Mel Boulton, Roy Eagleson and Sandrine de Ribaupierre)

Thursday & Friday Afternoon
April 7 & 8

Demo Presentations
The Demo area will be active on Thursday and Friday afternoons, from 12 Noon to 5:00 PM. Many demos are displayed continuously on both days. Others have scheduled presentation times.

Note: Scheduled times include set-up and dismantle, which vary. Please visit the demo presenters to confirm when they will be ready to share their work.

THURSDAY SCHEDULED DEMOS
1:30 – 2:15
Touchable 3D Graphics for Patient and Family Education
David Sarno
Lighthaus Inc.

2:15 – 3:15
The Interactive Physical and Cognitive Exercise System (iPACES®)
Cay Anderson-Hanley
Union College

3:15 – 3:45
Fully-Immersive 3D Multiplayer Training on $150 Laptops!
Randy Brown

3:45 – 4:45
vizHOME: Using LiDAR to Create Point Cloud Representations of Home Interiors
Kevin Ponto
School of Human Ecology, Wisconsin Institutes for Discovery, University of Wisconsin-Madison
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenters/Institutions</th>
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<tbody>
<tr>
<td>1:30 – 3:15</td>
<td>Bioflight</td>
<td>Rik Shorten, Bioflight VR</td>
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<tr>
<td>3:15 – 5:00</td>
<td>S3PM – Synthesis and Simulation of Surgical Process Models</td>
<td>Guillaume Claude, IRISA / Inria, Pierre Jannin, INSERM, University of Rennes 1</td>
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<tr>
<td>12:00 – 5:00</td>
<td>Medical Modeling &amp; Simulation Innovation Center (MMSIC)</td>
<td>J. Harvey Magee and Lori DeBernardis, Telemedicine &amp; Advanced Technology Research Center (TATRC)</td>
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<tr>
<td>1:30 – 2:30</td>
<td>The Interactive Physical and Cognitive Exercise System (iPACES©)</td>
<td>C. Anderson-Hanley, Union College</td>
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<tr>
<td>1:00 – 4:45</td>
<td>Videolaryngoscopy Simulator</td>
<td>Nathan Delson, Dept Mechanical and Aerospace Engineering, University of California, San Diego</td>
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