# Preliminary Program

*As of January 9, 2016 *

## Thursday, April 7

<table>
<thead>
<tr>
<th>Morning Plenary</th>
<th>p. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Afternoon Sessions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Track 1</strong>: Education; <em>What You See is What You Get?</em></td>
<td>p. 2</td>
</tr>
<tr>
<td><strong>Track 2</strong>: Imaging, Computer-Aided Therapy, Displays, Robotics; <em>Fundamentals of Robotic Surgery &amp; Fundamentals of Robotic Gynecologic Surgery</em></td>
<td>p. 3</td>
</tr>
<tr>
<td><strong>Demo Presentations</strong></td>
<td>p. 15</td>
</tr>
<tr>
<td><strong>Evening Reception</strong></td>
<td>p. 4, 9, 14</td>
</tr>
</tbody>
</table>

## Friday, April 8

<table>
<thead>
<tr>
<th>Morning Plenary</th>
<th>p. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Afternoon Sessions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Track 1</strong>: Surgical Simulation, Surgical Metrics</td>
<td>p. 5</td>
</tr>
<tr>
<td><strong>Track 2</strong>: Visualization, Haptics, Modeling; <em>3D Measurement – Technologies and Practical Applications in Challenging Environments</em></td>
<td>p. 7</td>
</tr>
<tr>
<td><strong>Demo Presentations</strong></td>
<td>p. 14</td>
</tr>
</tbody>
</table>

## Saturday, April 9

<table>
<thead>
<tr>
<th>Morning Sessions</th>
<th>p. 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Track 1</strong>: Rehabilitation &amp; Mental Health</td>
<td></td>
</tr>
<tr>
<td><strong>Track 2</strong>: <em>Introduction to SOFA &amp; Migrate Your Contribution into SOFA!</em></td>
<td>p. 9</td>
</tr>
</tbody>
</table>

* This preliminary program is under construction. While we aim for stability, it may change to accommodate educational objectives, and logistical needs. Please return for updates.*
Thursday Morning, April 7

Plenary Session

8:30 – 12 Noon

Our opening session will feature invited speakers and panelists. It is currently under construction so please check back for updates.

Confirmed presenters and panelists include:

Tipatat Chennavasin  
Virtual Reality LA

Kevin Cleary  
Children’s National Health System

Henry Fuchs  
University of North Carolina

Walter Greenleaf  
Stanford University

Karl Krantz  
Silicon Valley Virtual Reality

Daniel Low  
Radiation Oncology UCLA

Neil Martin  
Neurosurgery, UCLA Medical Center

Jacquelyn Ford Morie  
All These Worlds, LLC

Albert “Skip” Rizzo  
Institute for Creative Technologies, USC

Cosmo Scharf  
Virtual Reality LA

Thursday Afternoon, April 7

Track 1

EDUCATION

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, Gabriel Diax and Cristian A. Linste)

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
Johanna Dahlberg
Linköping University
Madelein Abrandt Dahlgren
Linköping University

5:00  Adjourn

Thursday Afternoon, April 7

Track 2

IMAGING

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, Sergio Gaudio, Patrick Kupelian and Daniel Low)

1:45  Influence of Image Quality on Semi-Automatic 3D Reconstructions of the Lateral Skull Base for Cochlear Implantation
Frank Heckel
Fraunhofer Inst for Medical Image Computing MEVIS
(with Stephan Zidowitz, Thomas Neumuth, Mary Tittmann, Markus Pirlich and Mathias Hofer)

2:00  Real Time Gabor-Domain Optical Coherence Microscopy for 3D Imaging
Jannick Rolland
The ODALab at The Inst of Optics, University of Rochester
(with Cristina Cavavesi, Patrice Tankam, Andrea Cogliati, Mara Lanis and Anand P. Santhanam)

COMPUTER-AIDED THERAPY

2:15  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)

2:30  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)
2:45  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)

3:00 Discussion
3:15 Break

DISPLAYS

3:30 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)

3:45 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)


Organizers & Presenters:
Richard Satava
University of Washington

Jeffrey Levy
CaseNetwork

5:00 Adjourn

Thursday Evening, April 7
Poster Reception & Mini-Lectures
5:30 – 7:00

Posters will be set up on Thursday afternoon.
During our evening reception, poster presenters will share their work with fellow participants while enjoying refreshments. In addition, mini-lectures will be presented.

Posters presentations are listed starting on page 9.
Mini-lectures are listed on page 14.
Friday Morning, April 8

Plenary Session

8:30 – 12 Noon

Our second plenary session will feature invited speakers and panelists. It is currently under construction so please check back for updates.

Also, the 20th Satava Award will be given on Friday morning to one of this year’s presenters.

Confirmed presenters and panelists include:

David Hananel
CREST, University of Minnesota

Heinz Lemke
Institute for Technical Informatics, Technical University Berlin

Jack Norfleet
US Army Research Laboratory

Robert Sweet
Dept of Urology & CREST, University of Minnesota

Thomas Talbot
Institute for Creative Technologies, University of Southern California

Friday Afternoon, April 8

Track 1

SURGICAL SIMULATION

1:30 Towards Surgeon-Authored 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
3:15    Synthesis and Simulation of Surgical Process Models
        Guillaume Claude
        Institut National des Sciences Appliquées de Rennes, IRISA/INRIA
        (with Valérie Gouranton, Benoît Caillaud, Bernard Gibaud, Bruno Arnaldi and Pierre Jannin)

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

SURGICAL METRICS

3:45    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, Xavier Intes, Steven Schwartzberg and Suvranu De)

4:00    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)

4:15    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, Suvranu De, Marc DeMoya and Stephanie Jones)

4:30    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)

4:45    Discussion

5:00    Adjourn
Friday Afternoon, April 8

Track 2

VISUALIZATION

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)

2:00 Medical Record Visualization Based on Symptom Location of 2D Human Body
Yongji Jin
School of Electrical Engineering & Computer Science, University of Ottawa
(with Won-Sook Lee)

HAPTICS

2:15 A Unified Framework for Haptic Interaction in Multimodal Virtual Environments
Venkata Arikatla
Medical Computing Team, Kitware Inc.
(with Ricardo Ortiz, Suhranu De and Andinet Enquobahrie)

2:30 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)

2:45 Discussion

3:00 Break

3:15 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, Weiming Wang, Qiong Wang and Pheng-Ann Heng)

3:30 Automated Detection of Heterogeneity in Medical Tactile Images
Rozalia Solodova
Laboratory of Mechanoreceptor Diagnostics, Lomonosov Moscow State University
(with Vladimir Staroverov, Vladimir Galatenko, Alexey Galatenko, Evgeny Solodov, Alexey Antonov, Vladimir Budanov, Mikhail Sokolov and Viktor Sadovnichy)

MODELING

3:45 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)

4:00 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, Erik Dutson and Peyman Benharash)

4:15 Development of a Soft Tissue Elastography Robotic Arm (STIERA)
Saurabh Dargar
Rensselaer Polytechnic Inst
(with Ali Cagdas Akyildiz and Suhranu De)

4:30 Independent Session: 3D Measurement – Technologies and Practical Applications in Challenging Environments

Organizer & Presenter:

Paul Oberle
3D Infotech

5:00 Adjourn
Saturday Morning, April 9

Track 1

REHABILITATION & MENTAL HEALTH

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 Patient Encounter
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 Technologies for Active Ageing
Giuseppe Riva
Ist Auxologico Italiano & Università Cattolica del Sacro Cuore, Milano
(with Daniela Villant, Pietro Cipresso, Claudia Repetto, Silvia Serino, Stefano Triberti and Andrea Gaggioli)

10:00   Assessment of Haptic Interaction for Home-Based Physical Tele-Therapy using Wearable Devices and Depth Sensors
Angelos Bampoutsis
Digital Worlds Inst, University of Florida
(with Jose Alzate, Samantha Beekhuizen, Horacio Delgado, Preston Donaldson, Andrew Hall, Charlie Lago, Kevin Vidal and Emily J. Fox)

10:15   Discussion

10:30   Break

10:45   A Cost-Effective Virtual Environment for Simulating and Training Powered Wheelchairs Maneuoures
Nigel John
Dept of Computer Science, University of Chester, UK
(with Christopher J. Headleand, Thomas Day, Serban R. Pop and Panagiotis D. Ritsos)

11:00   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)

11:15   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
Juan Gomez
Colombia’s Center for Bioinformatics and Computational Biology - CBBC
(with Esteban Correa-Agudelo, Carlos Ferrin, and Paulo Velez)

11:30   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)

11:45   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 Chris Shaw)

12:00   Discussion

12:15   Adjourn
Saturday Morning, April 9

Track 2

9:00  Independent Session: Introduction to SOFA & Migrate Your Contribution into SOFA!

Organizers & Presenters:

Hugo Talbot  
INRIA

Stéphane Cotin  
INRIA

Frederick Roy  
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)

Simulation of Brain-Skull Development with Hybrid Deformable VR Models

**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. Culjat, 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)

**Telementoring to Teach Surgical Burn Management Technique**

**Ben Boedeker**
University of Nebraska Medical Center
(with David Boedeker, Alp Numanoglu and Todd Hall)

**A Demonstration of the Vitom to Provide Post Laceration Repair Follow Up Using Telemedicine Technology - A Useful Methodology for Far Forward Surgical Telementoring**

**Ben Boedeker**
University of Nebraska Medical Center
(with Kartik Shenoy, Michael Wadman, David Boedeker, Todd Hall and Chad Branecki)

**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)

**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)

**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, G. Adams, C. McKinney, J. Snider and D. Robinson)

**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)
INTELLIGENCE NETWORKS

Building the Digital Patient
C. Donald Combs
School of Health Professions, Eastern Virginia Medical School

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)

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)

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

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 Swarn, 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

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, F Zehngrui, Mamoon I. Khalid, Enja Schenck and Thomas Thesen)

Hand VR Exergame for Occupational Health Care

Saskia Ortiz
Nueva Granada Military University
(with Alvaro Uribe-Quevedo and Bill Kapralos)

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)

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 Schultz, Ramin Ramezani, Iraylo Vlaev, Alexandra I.F. Blakemore and Ara Darzi)

SENORS

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)

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)

A Motion Tracking and Sensor Fusion Module for Medical Simulation

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

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)

A Capacitance-Based Sensor for Hemodialysis Cannulation Training: Initial Results

Ravikiran Singapogu
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 Translumenal Endoscopic Surgery (NOTES)

**Woojin Ahn**  
Center for Modeling, Simulation and Imaging in Medicine, Rensselaer Polytechnic Institute  
(with Denis Dorozhkin, Steven Schwaitzberg, 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)

Junctional and Inguinal Hemorrhage Simulation: Tourniquet Master Training  

**Calvin Kwan**  
University of Wisconsin-Madison  
(with Shlomi Laufer, Montserrat Calixto Contreras, Peter Weyhrauch, James Niehaus and Carla Pugh)

A Multi-Layered Needle Injection Simulator  

**Shlomi Laufer**  
Depts of Surgery, Electrical Engineering, & Computer Science, University of Wisconsin-Madison  
(with Steve J. Kempton, Kimberly Maciolek, Aliyya Terry, Rebecca D. Ray, Carla M. Pugh and Ahmed M. Afifi)

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  

Development and Analysis of Psychomotor Skills Metrics for Procedural Skills Decay  

**Chembian Parthiban**  
Depts of Mechanical Engineering & General Surgery, University of Wisconsin-Madison  
(with Rebecca Ray, Drew Rutherford, Mike Zinn and Carla Pugh)

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 Ribaupierre)

Effects of Hand Dominance and Postural Selection on Muscle Activities of Virtual Laparoscopic Surgical Training Tasks  

**Chun-Kai Huang**  
Division of Physical Therapy, College of Allied Health Professions  
University of Nebraska Medical Center  
(with Ashley Boman, Dmitry Oleynikov and Ka-Chun Siu)

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 Mashiaich, 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)
Mini-Lecture Presentations

Mini-lectures will be given in the Poster area during the Thursday evening reception. Some are stand-alone presentations while others supplement posters. (All poster presenters are invited to give mini-lectures to accompany their posters.)

The Cost Effectiveness of Research: Are These Objective Measurements the Tools of the Future?
Anthony LaPorta
Rocky Vista University LLC

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

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

Integrated Self-Management System for Improved Treatment of Asthma
Kristen Nguyen
Farus, LLC

Gunner Goggles: Implementing Augmented Reality into Medical Education
Leo Wang
Perelman School of Medicine, University of Pennsylvania

Study of Event Characterization in Wireless EEG Monitoring with EMOTIV
Wei Wang
Dept of Computer Science, San Diego State University

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

An Analysis of Computer-Based Video Instruction vs Computer Generated Feedback for the Acquisition of Basic Technical Surgical Skills
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)
Demo Presentations

The Demo area will be active on Thursday and Friday afternoons. It will feature a mix of ongoing displays and scheduled presentations.

Demo schedule is under construction. Please return for updates.

**Osso VR: Orthopaedic Device Simulator**
*Justin Barad, Timothy Rapps and Jay Mattis*
Boston Children’s Hospital, Harvard Combined Orthopaedic Surgery Program

**vizHOME: Using LiDAR to Create Point Cloud Representations of Home Interiors**
*Dustin Brockberg and Kevin Ponto*
School of Human Ecology, Wisconsin Institutes for Discovery, University of Wisconsin-Madison

**S3PM – Synthesis and Simulation of Surgical Process Models**
*Guillaume Claude, Valérie Gouranton, Benoit Caillaud, Bruno Arnaldi and Florian Nouvialle*
IRISA / Inria
*Bernard Gibaud and Pierre Jannin*
INSERM, University of Rennes 1

**Videolaryngoscopy Simulator**
*Nathan Delson*
Dept Mechanical and Aerospace Engineering, University of California

**Touchable 3D Graphics for Patient and Family Education**
*David Sarno*
Lighthaus Inc.

**BioGears: An Open-Source Human Physiology Engine**
*Jeff Webb, Aaron Bray and Rachel Clipp*

**Virtual Reality Therapy System**
*Marat Zanov*
Virtually Better, Inc.