

4th Health Care Engineering Systems Symposium

Monday, September 11, 2017

8:30 am – 4:30 pm

Chancellor Ballroom, I Hotel, Champaign, IL

PROGRAM

- 8:30 – 9:00 AM** **Breakfast and Registration**
Lobby
- 9:00 – 9:15 AM** **Welcome and Opening Remarks**
Kesh Kesavadas
John Vozenilek
Andreas Cangellaris
Steve Hippler
- 9:15 – 9:30 AM** **Rohit Bhargava**
Introducing the New Cancer Center at the University of Illinois
- 9:30 – 10:15 AM** **Jump ARCHES Review**
Kesh Kesavadas
John Vozenilek
- Jump ARCHES Collaborations**
1. Health Data Analytics
Joerg Heintz & OSF counterparts
 2. TBD
Matthew Bramlet
- 10:15 – 11:15 AM** **Session I**
Medical Simulation Technologies: Devices & Software
Deborah Thurston, Moderator
1. Aging-in-Place: Design of Technologies to Support Health and Autonomy
Wendy Rogers
 2. Automated pipeline from the MRI scanner to the 3D printer for the heart
Brad Sutton
 3. Multi-Robot Minimally Invasive Single Port Laparoscopic Surgery
Nick Toombs
 4. Project: Development of a Robotic Forearm to Simulate Abnormal Muscle Tone Due to Brain Lesions
Elizabeth Hsiao-Weckler

5. Interactive Technology Support for Patient Medication Self-Management
Daniel Morrow
6. Augmented Reality for Image Guided Surgery
Victor Gruev
7. ASPIRE: Automation Supporting Prolonged Independent Residence for the Elderly
Venanzio Cichella

11:15 – 11:30 AM

Break

11:30 AM – 12:30 PM

Session II

Medical Simulation Technologies: Devices & Software

Elizabeth Hsiao-Wecksler, Moderator

1. Surgical planning via preoperative surgical repair of a next generation 3D, patient specific, cardiac mimic.
Rashid Bashir
2. Simulator for training extra corporeal membrane oxygenation
Pramod Chembrammel (also Demo)
3. Movement impairment characterization and rehabilitation for dystonic cerebral palsy using robotic haptic feedback in virtual reality
Citlali Lopez-Ortiz
4. Readmission Risk Estimation Technology Acceptance and Practitioner Use
Deborah Thurston
5. Multi-Model Medical Image Understanding
Honghui Shi
6. Simulation of postural dysfunction in Parkinson's disease
Manuel Hernandez
7. AI Driven Health Analytics and Systems
Ravishankar Iyer

12:30 – 2:00 PM

Lunch - Quad Room and Lobby

The Afternoon Session is Open to the public from 2:00-4:30 pm

Interactive Medical Simulation Expo

Supported by SimNEXT

Technology Room and Alma Mater Room

1. Movement impairment characterization and rehabilitation in cerebral palsy using robotic haptic feedback in virtual reality
Citlali Lopez-Ortiz, Sara McKeeman, Reika McNish, Nathaniel Speidel
2. Endotracheal Intubation in Virtual Reality
Na-Teng Hung
3. Dr. Babel Fish: A Machine Translator to Simplify Providers' Language
Tarek Sakakini
4. Multiplayer Authoring tools
Chu Lingzhi
5. Sepsis Treatment in VR
Saleh Raghib
6. Mixed Reality Goggles for Image Guided Surgery
7. Bio-inspired Multi Near Infrared Fluorescence System for Image Guided Surgery
Victor Gruev
8. Novel Interactive Presentation Software Mentimeter Perceived as Accessible, Beneficial, and Helpful for Exam Preparation by Medical Students
Ahmad Kashif
9. Safety and Reliability of Surgical Robots via Simulation
Xiao Li
10. Jump ARCHES Summer project: Virtual Reality system for medical education and surgical planning
Kesh Kesavadas, Matthew Bramlet, Steve Lavalle
11. Simulator for training extra-corporeal membrane oxygenation
12. Augmented reality as a medical diagnosis and surgery planning tool
13. Robotic hand with tactile sensing for neurorehabilitation
Pramod Chembrammel
14. Minimally Invasive Robot
Fanxin Wang

15. Biogears - virtual physiology engine
Pavithra Rajeswaran
16. Pneumatic Ergonomic Crutches with Soft-robotic Actuator
Chenzhang Xiao
17. Design and Evaluation of a passive Hydraulic Training Simulator for Elbow Spasticity
Yinan Pei
18. Multi-Robot Minimally Invasive Single Port Laparoscopic Surgery
Nick Toombs
19. Position, Velocity, Resistance Meter (PVRM) for Quantifying Joint Behavior – will be shown by
Leo Song
Elizabeth Hsiao-Weckslar
20. Haptic Rehab
Shrey Pareek
21. Medical Applications of Augmented Reality
Jackie Chen

3:00 – 3:15 PM	Introduction to ARCHES Funding Mechanism Chancellor Room
3:15 – 4:00 PM	Collaborator Matching Sessions Chancellor Room
3:30 – 4:30 PM	Reception opens Lobby

Poster Exhibits

2:00 – 4:30 PM

Lobby

1. Patient-specific cardiovascular simulation for enhanced health monitoring and treatment planning
Hadi Meidani
2. Architected Atomically-Thin Materials for Advanced Biomedical Devices
SungWoo Nam
3. Enabling Technologies for Blood Flow Simulation in Patient-Specific Models
Soonpil Kang-Arif Masud
4. Visualizing Human Embryonic Development of the Heart's Outflow Tract
Christina Sidorowych
5. Plasmonic "Ojogel" for Detecting Corneal Integrity Post Glaucoma Surgery
Santosh Misra
6. Synthesizing the Medical Literature
Jodi Schneider
7. Hierarchical, dual scale structures of atomically thin MoS₂ for tunable wetting
Jonghyun Choi
8. Home-based Automatic Fall Risk Assessment
Jacob Sosnoff
9. 3D Printed Infant Hearts for Pre-Operative Planning
Lauren Grant
10. Medical Best Practice Guidance System
Lui Sha