

# 6<sup>th</sup> Workshop on Medical Cyber-Physical Systems (Medical CPS)

Medical Device Interoperability, Safety, and Security Assurance

<http://workshop.medcps.org>

The Medical CPS workshop provides a forum for the presentation of research and development covering all aspects of *High Confidence Medical Devices, Software, and Systems (HCMDSS)*, which is essential to support innovative, networked *Medical Device (MD)* systems to improve safety and efficiency in health care. The past five workshops have enjoyed a healthy participation of 35-40 attendees, and have provided a working forum for medical device specialists, including researchers, developers, and caregivers, from clinical environments, industry, research laboratories, academia, and government with the goal of advancing science, technology, and practice to overcome crucial issues with medical devices, software, and systems and challenges facing the design, manufacture, certification, and use of medical devices. This workshop features medical device and clinical experts from all over the world.

The topics to be covered in the workshop will range across all aspects of medical device software modeling and synthesis for safety, assurance, security and control, including but not limited to:

- *High Confidence Medical Device Software Development & Assurance*: Component-based methodologies; design and implementation, verification, validation and testing; robustness and fault-tolerance; system integration and interoperability of heterogeneous systems; closed-loop control; systems of systems; requirements solicitation and capture; clinical data management, and data security
- *Modeling & Simulation of operational scenarios*: modeling of failures in medical devices; caregivers, and patients behavior modeling; high fidelity organ/patient models for design & testing; Pharmacokinetic and Pharmacodynamic (PK-PD) models; machine learning models
- *Embedded, Real-Time, Networked HCMDSS*: Architecture, platform, middleware, resource management, QoS (Quality of Service) in HCMDSS, dynamic interoperation in HCMDSS, including MD PnP (Plug-and-Play) operation, distributed control
- *Enabling Technologies for Future Medical Devices*: telemedicine, biosensor technologies, implantable devices, energy harvesting and remote powering devices, medical ultrasound systems, robotic surgery, physiologic signal QoS (Quality of Service)
- *Medical practice*: User-centric design; use & misuse of MD; risk understanding, and management of failures; medical guidelines and regulations
- *Certification of HCMDSS and MD Interoperability*: Regulatory fundamentals, laws, CE marking, FDA approval, pre-clinical testing, clinical evaluation, regulations applicability, incremental certification, role of design tools, approval of non-deterministic and self-adaptive MD systems

## Organizers:

1. Prof. Roozbeh Jafari, University of Texas in Dallas, [rjafari@utdallas.edu](mailto:rjafari@utdallas.edu)
2. Dr. Alena Simalatsar, RiSD, Ecole Polytechnique Federal de Lausanne (EPFL), [alena.simalatsar@epfl.ch](mailto:alena.simalatsar@epfl.ch)
3. Prof. Rahul Mangharam, University of Pennsylvania, [rahulm@seas.upenn.edu](mailto:rahulm@seas.upenn.edu)

## Steering Committee:

- Julian M. Goldman      Massachusetts General Hospital/Harvard Medical School
- Paul Jones              FDA

- Insup Lee                      University of Pennsylvania
- Sandy Weininger              FDA

### **Important Dates**

Submission Deadline (Papers)	February, 20th, 2015
Submission Deadline (Posters)	March 15th, 2015
Notification	March 5rd, 2015
Camera Submission	March 17th, 2015
Early Registration	March 7th, 2015
Workshop	April 13th, 2015

### **Logistics:**

Workshop format: Two invited speakers, up to 8 peer-reviewed papers, and concluding community discussion. 35-40 participants.

### **Paper Submission:**

Authors are invited to submit papers by February 20th, 2015 (short papers 4-6 pages, full papers 8 -10 pages) and posters by March 15th, 2015 via [easychair.org](http://easychair.org). Papers should prepare their papers using LaTeX and the ACM style file. Submissions must be original and should not have been published previously or be under consideration for publication while being evaluated for this workshop.

All accepted papers will be published in the SIGBED Review newsletter. By submitting to the workshop the authors are granting permission for ACM to publish in print and digital formats for the newsletter and the ACM archive. The copyright for papers appearing in the proceedings remains with authors.

### **Program Committee**

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