Special Session Call for Papers

SMC2015 Special Session on Knowledge-based and Intelligent Control Solutions for Medical Cyber-Physical Systems

**Special Session organizer**

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**Important Dates**

**March 31, 2015:** Deadline for submission of full-length papers to special sessions.  
**June 01, 2015:** Acceptance/Rejection Notification.  
**July 31, 2015:** Final camera-ready papers due in electronic form.

**Submission**

Manuscripts for a Special Session should **NOT** be submitted in duplication to any other regular or special sessions and should be submitted to SMC 2015 main conference online submission system on SMC 2015 conference website.

All submitted papers of Special Sessions have to undergo the same review process (3 completed reviews per paper). The technical reviewers for each Special Session paper will be members of the SMC 2015 Program Committee and qualified peer-reviewers to be nominated by the Special Session organizers.

**Introduction**

Cyber-physical systems (CPS) are engineered systems that are built from, and depend upon, the seamless integration of computational algorithms and physical components. Advances in CPS will enable capability, adaptability, scalability, resiliency, safety, security, and usability that will far exceed the simple embedded systems of today. Traditional analysis tools are unable to cope with the full complexity of CPS or adequately predict system behavior. Medical CPS (including all rehabilitation robots, surgical aids, patient monitoring devices, hospital information systems, etc.) are becoming an integrated part of modern healthcare. However, from the technological point of view, there are still major barriers to make these experimental devices reliable, safe and affordable. The goal of the community is to advance science and technology, share best practices and know-how to overcome crucial issues concerning medical devices, software and systems. Major challenges affecting the design and integration could be overcome with the help of cutting-edge, customized control algorithms. Latest results in CPS control are to be presented at this special session.

**Indicative Topics/Areas**

Original contributions are sought in the areas including but not limited to:

- Applied control of Medical CPS  
- Knowledge based and intelligent control algorithms  
- Advanced control of human–machine interfaces for medical applications  
- Medical robot control  
- Human-centered robot control  
- Foundations for integration of medical device systems/models Component-based technologies for accelerated design and verifiable system integration  
- Enabling control technologies for future medical devices  
- Implantable regulatory devices, networked biosensors, tele-surgery, robotic surgery, physiologic signal QoS  
- Distributed control & sensing of networked medical CPS  
- Robust, verifiable, fault-tolerant control of medial CPS  
- Medical CPS Plug-and-Play: requirements for interoperability in the clinical environment  
- High-confidence medical CPS software development & assurance