

**IEEE Control Systems Society
Technical Committee on Healthcare and Medical Systems**

Minutes of the TC meeting on July 6, 2016 at the American Control Conference in Boston

Submitted by Caterina Scoglio, Chair
July 21, 2016

Attendees:

Caterina Scoglio	Kansas State University
Daniel Rivera	Arizona State University
Alexander Medvedev	Uppsala University
Clara Ionescu	Ghent University
Hisham ElMoaqet	University of Michigan
Narges Montazeri	Kansas State University
Guillaume Mercere	Université de Poitiers
Diego Regruto	Politecnico di Torino
Walid Djema	CentraleSupélec Paris
Carlo Novara	Politecnico di Torino
Warren Dixon	University of Florida
Cesar Martin	Arizona State University
Robert Gregg	University of Texas, Dallas
Ryan Zurakowski	University of Delaware

The meeting started at around 4:10 pm with participants introducing themselves.

The chair Caterina Scoglio presented the activities of the last six months and some options for future activities.

Past activities:

- The Article for CSM about our TC activities was published in the February 2016 issue, pages 11-12.
- Two invited sessions for ACC 2016 Boston have been successfully organized:
 - *Mathematical modeling of diseases and medical intervention effects.* (WeB12)
Organizers: Caterina Scoglio, Kansas State University, and Alexander Medvedev, Uppsala University Sweden. The proposed invited session aimed at demonstrating the diversity of mathematical techniques that are applied in modeling of diseases as well as the assessment of intervention therapies and strategies.
 - *Application of control theory in legged locomotion.* (ThC10) Organizers: Robert D. Gregg, University of Texas at Dallas, and Koushil Sreenath, Carnegie Mellon University. Co-Endorsed by the TC on Manufacturing Automation & Robotic Control. The goal of this invited session was to bring together leaders in control of legged locomotion, from the controls, dynamics and robotics communities, to foster a single session for

exchanging ideas to enable complex experimental systems to exhibit dynamic legged locomotion.

- One special session was also organized at ACC 2016 Boston:
 - *Role of controls and systems science in health-related research*. Organizers: Caterina Scoglio, Kansas State University, and Fahmida N. Chowdury, National Science Foundation. This session will consist of one introduction, four presentations, and a panel discussion with audience participation. The motivation for the session was that in the recent years, the scope of controls systems science has expanded considerably in the field of health-related research. This session served two purposes: (i) introduce the audience to examples of the application of control theory and related tools for health-related research, specifically for treatment and management of diabetes; (ii) present some funding opportunities in this type of multidisciplinary research.
- Concerning the IEEE CDC 2016, Las Vegas, we have submitted one invited session proposal:
 - *Automatic Control of Therapies*. Proposers: Alexander Medvedev, Uppsala University Sweden, Pasquale Palumbo, CNR-Italy, Caterina Scoglio, Kansas State University. This invited session on automatic control of medical procedures has attracted papers that deal with theoretical as well as practical challenges of the field. In particular, papers covering such aspects as therapeutically relevant control performance criteria, suitable controller design principles and system architectures, the safety of automatic control in medicine, implementation of predictive action, parameter and state estimation of biomedical systems for control are accepted contributions of this session.
- Our TC is also involved in the proposal for a special issue of the IEEE Transactions on Control Systems Technology, titled “*Control and data-driven modeling in biomedicine*”. Guillaume Mercere presented the initiative during the meeting. The special issue will be sponsored by three IEEE CSS Technical Committees:
 - Healthcare and Medical Systems
 - System Biology
 - System Identification and Adaptive ControlOnce the proposal is accepted, we plan to publicize the special issue extensively, starting at CDC2016. The special issue is expected to include about 22 high quality papers.

Future activities:

- Proposals for invited sessions for ACC 2017 Seattle will be collected in the next month before the deadline on September 19, 2016
 - *Data-driven modeling of diseases and medical intervention effects* was tentatively proposed by Medvedev, Rivera and Scoglio.
- Proposals for invited sessions for the inaugural 2017 IEEE Conference on Control Technology and Applications (CCTA), Hawaii, will be collected around January 2017 before the deadline on March 1, 2017.

Last topic we discussed was how to include more content on our TC webpage. All members are invited to send links of books, videos, and important articles that can illustrate and provide fundamental information on our TC research areas.

We plan to hold the next TC meeting during CDC 2016 in Las Vegas, December 12-14.