

# IEEE CSS TC SIAC and HSM meeting ACC 2019, Philadelphia, USA

Guillaume Mercère and Alexander Medvedev

<http://system-identification.ieeecss.org>  
<http://healthcare-and-medical-systems.ieeecss.org>



Philadelphia Marriott Downtown, Philadelphia  
Friday 12 July 2019



# Outline

- 1 Introduction
- 2 Reports on TC membership and general items
- 3 Report on recently completed/on-going activities
- 4 Discussion, brainstorming and new initiatives



# Round table

- Please introduce yourself (name, affiliation, research interests...)



# TC membership

- **Reminder:** IEEE-CSS bylaws state that membership in a TC is available to any member in good standing, upon request (CV + proof of IEEE membership).
- **Numbers:**
  - Currently, the TC-SIAC consists of 78 members.
  - Last TC-SIAC meeting at the 2018 CDC in Miami had 23 members in attendance.



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  - TC-HMS consists of 59 members (4 new 2019)
  - Last TC-HMS meeting at the 2018 CDC in Miami had 9 members in attendance.



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  - Let TC chair know in advance



# TC-SIAC: completed/on-going/future activities

- Control System Magazine column on SIAC has been published (in June).
- Conference organization of the 2019 Quantum Science, Engineering and Technology Conference (April 8-11 2019, Canberra, Australia)
  - General Chair: Daoyi Dong
- Conference organization of the 2019 Workshop on Linear Parameter Varying Systems (November 4-6, 2019, Eindhoven, The Netherlands)
  - General Chair: Roland Toth



- Invited sessions
  - 2019 Conference on Information Sciences and Systems (March 20-22, 2019)
    - Estimation and Learning in Stochastic Systems
    - Organizer: James Spall
  - 2019 American Control Conference
    - Analysis, Design, and Control of Systems in Neuroscience I and II (WeA06 and WeB06)
    - Organizers: Fabio Pasqualetti, Warren Dixon, Alexander Medvedev, Sergio Pequito
    - Human-closed loop system interactions for uncertain Systems
    - Organizers: Yildiray Yildiz and Tansel Yucelen

- Invited sessions
  - 2019 IFAC Symposium on Dynamics and Control of Process Systems, including Biosystems
    - Sensors, models and control algorithms in drug delivery systems
    - Organizers: Clara Ionescu and Julio E. Normet-Rico
  - 2019 Conference on Decision and Control
    - Theoretical foundations for the representation and identification of dynamic networks
    - Organizers: Sean Warnick and Paul van den Hof
    - Dynamics, control and information processing of quantum systems
    - Organizer: Daoyi Dong
- Workshops
  - Workshop on Nonlinear System Identification Benchmarks, April 10-12 2019, Eindhoven, The Netherlands
  - Organizer: Maarten Schoukens

- “New Trends in Modeling and Control of Hybrid Systems”
  - International Journal of Robust and Nonlinear Control
  - Guest Editors: Dario Piga and Alberto Bemporad
- “Learning From Adaptive Control Under Relaxed Excitation Conditions”
  - International Journal of Adaptive Control and Signal Processing
  - Guest Editors: Yongping Pan, Alexey Bobtsov, Mohamed Darouach, and Young-Hoon Joo



- “System Identification and Control in Biomedical Applications”
  - IEEE Transactions on Control Systems Technology
  - Guest Editors: Guillaume Mercère, Bayu Jayawardhana, Alexander Medvedev, Daniel E. Rivera, Caterina Scoglio
- “Recent Advances in Control and Verification for Hybrid Systems”
  - IET Control Theory and Application
  - Guest Editors: Dr. Weiming Xiang, Prof. Guisheng Zhai, Prof. Taylor T. Johnson, Prof. Simone Baldi, and Prof. Chengzhi Yuan

# TC-SIAC: special issues (cont'd)

- “Cross-fertilising research in nonlinear system identification between the mechanical, control and machine learning fields”
  - Mechanical Systems and Signal Processing
  - Guest Editors: Prof. Jean-Philippe Noël and Dr. Maarten Schoukens



# TC-HMS: activities since the last meeting

- Control System Magazine column on TC-HMS has been submitted.
- S. Pequito, A. Medvedev, F. Pasqualetti, W. Dixon organized two invited sessions "Analysis, Design, and Control of Systems in Neuroscience I-II", American Control Conference, Philadelphia, July 9-11, 2019
- Jin-Oh Hahn co-organized a Special Session on Wearable Sensor Informatics for Cardiopulmonary Monitoring at the IEEE Biomedical Health Informatics Conference (Chicago, IL), May 2019.
- Juergen Hahn, International Program Committee member of Systems Biology in Engineering (FOSBE) 2019
- Mathukumalli Vidyasagar, the General Chair of Indian Control Conference 2019



# TC-HMS: on-going activities

- A. Medvedev, S. Knorn, invited session proposal to CDC19 "Nonlinear modeling and estimation in biomedical systems"
- S. Pequito, A. Medvedev "Neuroscience and control: the emerging intersection", a workshop proposal for CDC19



# TC-HMS: awards and recognition

- Juergen Hahn is assigned Director of AIChE Computing and Systems Technology Division for 2019-2021
- Naira Hovakimyan received AIAA Pendray Aerospace Literature Award for 2019 for the book "L1 Adaptive Control Theory", published by SIAM in 2010, coauthored with Chengyu Cao
- Jin-Oh Hahn received the Outstanding Gemstone Mentor Award from the Gemstone Honors Program at the University of Maryland, May 2019.
- Mathukumalli Vidyasagar received Science and Engineering Research Board Distinguished Fellowship from the Government of India



# Discussion: new initiatives

- Special Issue of a journal on system identification and data-driven modeling in neuroscience. Relevant journals?
- A joint SIAC-HMS workshop at CDC20 highlighting the impact of estimation in medical applications
  - Different angles and end use: black-box, grey-box, individualized therapies, pharmacometrics, population modeling, machine learning, deep learning
  - Larger audience: open problems for theoreticians and new methods for practitioners
  - Interactive mode to keep the audience awake



- We have (and are still looking for)
  - collections of syllabi, presentations, and class notes in support of system identification and adaptive control topics,
  - peer-reviewed data and models,
  - software/algorithm depositories and virtual and/or interactive labs.
- Important to improve the web-page with
  - announcements of invited sessions, workshops, ....
  - a list of job opportunities,
  - recommended books and papers (links).