CCTA 2018
The next edition of CCTA will be organized by General Chair Jakob Stoustrup, from Aalborg University. CCTA 2018 will take place August 21–24, 2018 at The Scandic Hotel Copenhagen in Copenhagen, Denmark. More information on CCTA 2018 can be found at http://ccta2018.ieee.css.org/.

Steve Yurkovich

The 2017 Summer School on Sliding Mode Control

The 2017 International Summer School on Sliding Mode Control took place at the Institute of Automation and Control, Graz University of Technology, Austria, September 4–8, 2017. The summer school was organized by Martin Horn, Martin Steinberger (Graz University of Technology), and Leonid Fridman (Universidad Nacional Autónoma de México). It was supported by the IEEE Control Systems Society (CSS) Technical Committee on Variable Structure and Sliding Mode Control. The school is the first stage of preparation for the 15th International Workshop on Variable Structure Systems, which will take place in Graz, Austria, June 9–11, 2018 (see www.vss-graz.com).

The goal of the school was to promote basic techniques and recent results of sliding mode control and observation among students and researchers from Europe. The 22 participants came from universities and companies (Samsung SDI Battery systems, LAM Research, Virtual Vehicle, ...
and Joanneum Research) from Austria, Germany, and the United Kingdom.

In the first part, Martin Horn, Markus Reichhartinger, and Martin Steinberger gave an introduction to sliding mode control and observation. Antonella Ferrara (University of Pavia, Italy) presented an optimization approach to higher-order sliding mode concepts and their application in robotics, power engineering, and automotive systems. Bernard Brogliato (INRIA Grenoble, France) introduced the effects of explicit discretization of sliding mode controllers and presented an implicit discretization approach.

Jaime Moreno (Universidad Nacional Autónoma de México, México) focused on the design of higher-order sliding mode controllers. He presented a framework that takes advantage of the homogeneity property for Lyapunov-based controller design. Finally, Leonid Fridman gave an introduction to the theory and practice of sliding mode observers, the analysis of sliding mode controllers in the frequency domain, as well as the concept of the practical relative degree.

The summer school was partially supported by the IEEE CSS Outreach Fund to encourage female researchers to participate (five were in attendance). The organizers would like to thank the volunteers of the Institute of Automation and Control, Graz University of Technology, for the support during the summer school.

Martin Steinberger
Martin Horn
Leonid Fridman

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Vehicle Suspension Systems and Electromagnetic Dampers
by S. KASHEM, R. NAGARAJAH, and M. EKTESABI

This book describes the development of a new analytical full-vehicle model with nine degrees-of-freedom, which uses the modified skyhook strategy (SKDT) to control the full-vehicle vibration problem. The book addresses the incorporation of road bank angle to create a zero steady-state torque requirement when designing the direct tilt-control and the dynamic model of the full-car model. It also highlights the potential of the SKDT suspension system to improve cornering performance and paves the way for future work on the vehicle’s integrated chassis control system. Active tilting technology to improve vehicle cornering is the focus of numerous ongoing research projects. However, these projects typically do not consider the effect of road bank angle in the control system design, or in the dynamic model of the tilting standard passenger vehicles.