Report of the IEEE CSS TC on CACSD

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Date: 13 May 2010

Here is a summary of the activities of the TC during the first semester of 2010.

\*\*\* New name of the Technical Committee \*\*\*

The CACSD-TC has recently changed its name from Computer-Aided Control System

Design to Computational Aspects of Control System Design. This change reflects the

continuous evolution of the TC topics, which range from control numerics and

software and control engineering software

development to more general computational methods and algorithms for the design of

control systems.

\*\*\* New vice-chair of CACSD TC \*\*\*

Yasumasa Fujisaki has been recently appointed as Vice-Chair of the CACSD-TC.

In parallel, he has also been appointed by Graziano Chesi as Vice-Chair of the

recently formed TC on Systems with Uncertainty (SU-TC).

His main role is to facilitate and coordinate the collaboration between the two TCs

\*\*\* Collaboration with the SU TC

The CACSD-TC and the one of SU-TC share parallel interest, and their scope

partially overlap. For this reason, the two TCs have chosen to start a close

collaboration. This was initiated by organizing SU sessions during this year

CACSD-Symposium

\*\*\* Meeting \*\*\*

A joint meeting of the CACSD-TC and SU-TC was organized during the 2009 IEEE-CDC

in Shanghai. The meeting took place on Thursday December 17. Members of the two

TCs where invited. Around 25 people attended the meeting.

\*\*\* Webpage developments \*\*\*

A new webpage for the CACSD-TC is under development.

A first version of the homepage has been published online at the beginning of May.

The address is http://staff.polito.it/fabrizio.dabbene/TC-CACSD/

A redirect link to this new homepage has been added at the old address

http://www.laas.fr/cacsd/

(since this latter page still shows up first in a Google search).

Also, a common template for the various Action Group webpages is in preparation,

and will be distributed shortly to the AG Chairs, with the aim of obtaining a

uniform look and structure of all AG webpages.

\*\*\* 2010 CACSD Symposium \*\*\*

The 2010 CACSD Symposium will be held during the 2010 IEEE Multi-conference on

Systems and Control that will take place in Yokohama, Japan on September 8-10,

2010. The MSC website is http://www.mei.titech.ac.jp/msc10/index.htm.

The Symposium received around 100 submissions, between Invited and Contributed

Paper. The preliminary program has been announced on May 12.

The acceptance rate of the CACSD Symposium has been 72% (60% for Contributed

Papers and 89% for Invited Papers).

The conference is hosting a track on Systems with Uncertainty.

Plenary speaker for the Symposium will be Prof. M. Vidyasagar.

\*\*\* 2011 CACSD Symposium \*\*\*

The 2011 IEEE Multi-Conference on Systems and Control, that will be held

in Denver, Colorado, on September 28 - 30, 2011. MSC 2011, will includes

for the first time a Joint Symposium on Computer-Aided Control System Design

(CACSD) and Systems with Uncertainty (SU). The Program Chair of the

Joint CACSD-SU is Graziano Chesi.

\*\*\* Action Groups \*\*\*

Change of the chair of the AG on Interval Methods for Control -- Nacim Ramdani

takes over Josep Vehi.

\*\*\* Publications \*\*\*

Nikos Karampetakis (Chair of the AG on Symbolic Methods for Control) and

Krysztof Galkowski are organizing a special issue on Multidimensional

Systems for the Journal of Multidimensional Systems and Signal Processing.

A software-related publication has been recently published:

Benner, P., Kressner, D., Sima, V., Varga, A. (2010). Die

SLICOT-Toolboxen fur Matlab (The SLICOT Toolboxes for Matlab).

at-Automatisierungstechnik, 58(1), pp.15-25 /

DOI 10.1524/auto.2010.0814. Oldenbourg Wissenschaftsverlag.

\*\*\* Next meeting \*\*\*

I am planning a meeting of the CACSD-TC during the IEEE MSC in Yokohama.

Probably, the meeting will be held jointly with the SU-TC meeting.

\*\*\* Conference activities \*\*\*

Pieter Mosterman (chair of the AG on Hybrid Dynamic Systems) and Arkadiy

Turevskiy organized a panel session on "Designing Better Control Systems with

Computational Models" moderated by T. John Koo and panel members John Baras, Roger

Brockett, Christos Cassandras,

and John Glass at the 2009 IEEE Conference on Decision and Control.

Pieter Mosterman gave a keynote address: "Towards Computational Hybrid System

Semantics for Block Diagrams," Ecole d'hiver Francophone sur les Technologies de

Conception des Systmes embarquŽs HŽtŽrognes (fetch2010), Chamonix - Mont Blanc,

France, January 11-13, 2010

Pieter Mosterman gave a plenary presentation: "Towards Computational Hybrid

System Semantics for Time-Based Block Diagram Modeling," 3rd IFAC Conference on

Analysis and Design of Hybrid Systems (ADHS'09), Zaragoza, Spain, September 16-18, 2009

\*\*\* Projects \*\*\*

Giuseppe Calafiore (chair of the AG on PRMC) informed me that recently he has been

funded a national research project (PRIN) on themes that are strictly related to

the action group: The project title is ''Large-scale and distributed systems:

optimization, estimation and control, with applications''.

The project deals with parallel/distributed approaches for large-scale estimation

and optimization problems, and their applications.

While the mathematical formulation of such problems can itself be quite simple

(often linear/convex optimization), difficulties arise due to scale factors of

these problems in real-world situations, and/or to structural and communication

constraints. A first part of the project concentrates on the methodological study

of phenomena related to distributed estimation, optimization, localization etc. of

large-scale networks of communicating agents. A second part of the project is

aimed at developing enabling algorithms and techniques for some specific

engineering applications.

The activities from this project will lead to several outcomes such as software,

papers, maybe invited sessions and organization of a workshop.

\*\*\* Focus \*\*\*

Didier Henrion draw my attention on the OPTEC - Leuven's Optimization in Engineering

Center, whose research is closely related to the scope of CASCS.

I contacted Moritz Diehl, principal investigator of the center, asking him a

brief description of the center and its scope:

OPTEC was founded in 2005 as one of twelve centers of excellence of K.U. Leuven

and comprises about 60 researchers from 5 engineering departments that aim at

bridging the gap between the mathematical optimization community and real-world

engineering applications. Its focus is on continuous - convex and nonlinear -

optimization and on open-source software development. Its methodological research

is in the areas of dynamic and embedded optimization, data-driven modeling,

parameter estimation, optimization of structures, linear control system

design, and PDE constrained optimization. OPTEC methods are developed for

applications in mechanical, (bio)chemical, civil and electrical engineering. OPTEC

was recently awarded renewed funding until 2017.

On the Optec website, one can find a long list of control and optimization related

software: http://www.kuleuven.be/optec