Report of the IEEE CSS TC on CACSD

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Here is a summary of the activities of the TC during the first semester of 2012.

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

The TC-CACSD had a formal meeting on Wednesday, December 14, during the 2011 Joint IEEE Conference on Decision and Control and European Control Conference, held in Orlando.

\*\*\* TC-CACSD webpage and Action Groups

The webpage for TC-CACSD, published online in August 2010 at the address http://staff.polito.it/fabrizio.dabbene/TC-CACSD/, has undergone continuous updates. In particular, a new Software section has been added to the webpage. Aim of the page is to list in a concise way the available software tools for control system design. For each software, a brief description is reported, together with pointers to the related software webpages.

The Action Group on "AG on Interval Methods for Control" has changed is name into "AG on Interval Methods".

\*\*\* CACSD Symposia \*\*\*

The following motions, suggested by the the TC-CACSD and TC-SU chairs, have been approved by the CSS BoG:

- "To held the Joint CACSD-SU Symposium ever three years,

during MSC, starting from MSC 2013 in India"

- "To go back to the simpler name: CACSD Symposium, instead

of Joint CACSD-SU Symposium"

Hence, no CACSD Symposia will be held this year. The next CACSD Symposium will be hald at 2013 MSC in Hylderabad.

The program chair of this symposia is Prof. Constantino Lagoa, PennState Unversity.

\*\*\* Workshops, Invited Sections and Schools

- The chair of the Action Group on "Symbolic Methods for Control," Nikos Karampetakis, together with prof. Biswa Datta, organized an invited session â€œComputational Methods for Control Systemsâ€ on 1rst International Conference on Communications, Computing and Control Applications, Hammamet, Tunisia, March 3-5, 2011.

- They are also organizing an invited session â€œComputational Methods for Control Systemsâ€ on 2nd International Conference on Communications, Computing and Control Applications, Marseilles, France, September 12-14, 2012

- The chair of the Action Group on "Interval Methods," Nacim Ramdani, informs on the following activities:

. The annual workshop on Interval method (SWIM) will be held in Oldenburg (http://hs.informatik.uni-oldenburg.de/swim2012/).

. A special session on "Robust estimation of uncertain systems" (where interval methods are used) has been proposed at IEEE CDC 2012 by Tarek RaÃ¯ssi & Denis Efimov.

. Another special session on "Interval Analysis and Estimation" is accepted for IFAC SYSID 2012. It is organized by Michel Kieffer.

- On June 20-21 the TC Chair Fabrizio Dabbene will held a two days course on "Randomized Algorythms in Systems in Control" at the IVth traditional school on "Management, Information and Optimization," (Ð¢Ñ€Ð°Ð´Ð¸Ñ†Ð¸Ð¾Ð½Ð½Ð°Ñ Ð¨ÐºÐ¾Ð»Ð° "Ð£Ð¿Ñ€Ð°Ð²Ð»ÐµÐ½Ð¸Ðµ, Ð¸Ð½Ñ„Ð¾Ñ€Ð¼Ð°Ñ†Ð¸Ñ Ð¸ Ð¾Ð¿Ñ‚Ð¸Ð¼Ð¸Ð·Ð°Ñ†Ð¸Ñ") in Zvenigorod (Moscow region): https://sites.google.com/site/traditionalschool/. The school is organized by the Russian Academy of Science and is devoted to young Russian students in Systems & Control.

\*\*\* Publication activities \*\*\*

- The chairs of the TC-CACSD (F. Dabbene) and the chair of the TC on System Identification and Adaptive Control (D. Rivera), together with D. Regruto of Politecnico di Torino, are the Guest Editors of a Special Issue on "Relaxation methods in identification and estimation problems" for the IEEE Transactions on Automatic Control. The deadline for submission to the special issue is October 1st, 2012. The call for paper can be found at the IEEE TAC website (http://www.nd.edu/~ieeetac/special.html) and is reported here for ease of reading:

Special Issues on "Relaxation Methods in Identification and Estimation Problems" - Deadline October 1, 2012.

The subject of system identification has a long history, and it still remains one of the most active fields of research in the control community. In the literature at large, particular attention has been devoted in recent years to the convexification of estimation problems, and convexification has become one of the major topics in system identification. A number of different approaches have recently emerged in the optimization community to address the problem of approximating the global solution of some classes of nonconvex optimization problems. The common idea behind all these approaches is to construct specific convex relaxations, which are guaranteed to converge, under proper assumptions and conditions, to the global optima of the original nonconvex problem.

The aim of this special issue is to twofold: first, to highlight the fact that many challenging open problems in system identification and estimation can be reliably addressed via a convexification/relaxation approach; secondly, to show that the interplay between the optimization and the control communities can suggest new exciting research directions in identification and estimation problems. The topics relevant to this special issue include (but are not limited to) the following relaxation approaches to linear and nonlinear identification and estimation problems: LMI/SDP relaxations, L1-based sparsification approaches, probabilistic/randomized methods, rank/nuclear-norm minimization.

Guest Editors:

Diego Regruto - Politecnico di Torino

Fabrizio Dabbene - CNR-IEIIT

Daniel E. Rivera - Arizona State University

The chair of the Action Group on "Symbolic Methods for Control," N. Karampetakis, together with prof. Krysztof Galkowski are Guest Editors of the special issue on Multidimensional Systems for the Journal of Multidimensional Systems and Signal Processing (http://www.springerlink.com/content/n66x72x88260641t/)- Prof. Sandor Veres of the AG on "Interval Methods" edited a special issue on "Bounding methods for state and parameter estimation," in the Int. J. Adapt. Control Signal Process. 2011; 25:189â€“190. Most papers focus on interval uncertainty, and develop interval methods in the broad sense