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of Automatic Control

ADHS'06

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Dip. di Ingegneria
Elettrica ed Elettronica

With the support of:



Università di Cagliari



Comune di Alghero

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Final Program

WEDNESDAY JUNE 7

8:45-09:00	Opening session	[room Oleandro]
9:00-10:40	WA1 – Observers for Hybrid Systems	[room Oleandro]
	Chairs: S. Di Gennaro, S. Pettersson	
WA1.1	Convergent design of switched linear systems, <i>R.A. van den Berg, A.Y. Pogromsky, J.E. Rooda</i>	
WA1.2	Observer design for a class of discrete time piecewise-linear systems, <i>A. Birouche, J. Daafouz, C. Iung</i>	
WA1.3	Designing switched observers for switched systems using multiple Lyapunov functions and dwell-time switching, <i>S. Pettersson</i>	
WA1.4	Critical states detection with bounded probability of false alarm and application to air traffic management, <i>M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo</i>	
9:00-10:40	WA2 - Continuous and Hybrid Petri Nets	[room Ginepro]
	Chairs: M.P. Fanti, M. Silva	
WA2.1	Tracking control of join-free timed continuous Petri net systems, <i>J. Xu, L. Recalde, M. Silva</i>	
WA2.2	On sampling continuous timed Petri nets: reachability "equivalence" under infinite servers semantics, <i>C. Mahulea, A. Giua, L. Recalde, C. Seatzu, M. Silva</i>	
WA2.3	Modelling distributed manufacturing systems via first order hybrid Petri nets, <i>M. Dotoli, M.P. Fanti, A.M. Mangini</i>	
WA2.4	Simulation of railway stations based on hybrid Petri nets, <i>F. Kaakai, S. Hayat, A. El Moudni</i>	
10:40-11:10	Coffee Break	
11:10-12:50	WB1 – Modeling and Simulation of Hybrid Systems	[room Oleandro]
	Chairs: G. Nicolescu, T. Suzuki	
WB1.1	Modeling an impact control strategy using HyPA, <i>P.J.L. Cuijpers, M.A. Reniers</i>	
WB1.2	Human skill modeling based on stochastic switched dynamics, <i>T. Suzuki, S. Inagaki, N. Yamada</i>	
WB1.3	Building efficient simulations from hybrid bond graph models, <i>C.D. Beers, E.-J. Manders, G. Biswas, P.J. Mosterman</i>	
WB1.4	Robust control strategies for multi-inventory systems with average flow constraints, <i>D. Bauso, F. Blanchini, R. Pesenti</i>	
11:10-12:50	WB2 - Control of Hybrid Systems 1	[room Ginepro]
	Chairs: J. Raisch, A. Casavola	
WB2.1	Hybrid constrained formation flying control of micro-satellites, <i>F. Bacconi, A. Casavola, E. Mosca</i>	
WB2.2	A gradient-based approach to a class of hybrid optimal control problems, <i>V. Azhmyakov, J. Raisch</i>	
WB2.3	Optimal mode-switching for hybrid systems with unknown initial state, <i>H. Axelsson, M. Boccadoro, Y. Wardi, M. Egerstedt</i>	
WB2.4	Beyond the construction of optimal switching surfaces for autonomous hybrid systems, <i>M. Boccadoro, M. Egerstedt, P. Valigi, Y. Wardi</i>	

12:50-14:30 **Lunch**

14:30-15:30	Plenary 1 Chattering Problem in Sliding Mode Control Systems, V. Utkin	[room Oleandro]
	Chair: A. Giua	

15:30-15:50 **Coffee Break**

15:50-17:30	WC1 - Structural Analysis and Approximation of Hybrid Systems (Invited)	[room Oleandro]
	Organizer and chair: E. De Santis; co-chair: H. Guéguen	
WC1.1	Approximate simulation relations for hybrid systems, <i>A. Girard, A.A. Julius, G.J. Pappas</i>	
WC1.2	Stabilizability based state space reductions for hybrid systems, <i>E. De Santis, M.D. Di Benedetto, G. Pola</i>	
WC1.3	Reachability computation for uncertain planar affine systems using linear abstractions, <i>O. Nasri, M.-A. Lefebvre, H. Guéguen</i>	
WC1.4	Exact differentiation via sliding mode observer for switched systems, <i>H. Saadaoui, M. Djemaï, N. Manamanni, T. Floquet, J.-P. Barbot</i>	

15:50-17:30	WC2 - Control of Hybrid Systems 2	[room Ginepro]
	Chairs: D. Corona, J.-J. Lesage	
WC2.1	Robust H-infinity control of uncertain discrete-time switching symmetric composite systems, <i>L. Bakule</i>	
WC2.2	The elevator dispatching problem: hybrid system modeling and receding horizon control, <i>K.S. Wesselowski, C.G. Cassandras</i>	
WC2.3	Robust piecewise linear sheet control in a printer paper path, <i>B. Bukkems, J. de Best, R. van de Molengraft, M. Steinbuch</i>	
WC2.4	Stabilization of max-plus-linear systems using receding horizon control - The unconstrained case, <i>I. Necoara, T.J.J. van den Boom, B. De Schutter, J. Hellendoorn</i>	

THURSDAY JUNE 8

8:35-10:40	TA1 - Stochastic Hybrid Systems	[room Oleandro]
	Chairs: P. Caines, F. Blanchini	
TA1.1	Online classification of switching models based on subspace framework, <i>K.M. Pekpe, S. Lecœuche</i>	
TA1.2	Functional abstractions of stochastic hybrid systems, <i>M.L. Bujorianu, H.A.P. Blom, H. Hermanns</i>	
TA1.3	Stochastic hybrid NETCAD systems for modeling call admission and routing control in networks, <i>Z. Ma, P.E. Caines, R. Malhame</i>	
TA1.4	Parameter identification for piecewise deterministic Markov processes: a case study on a biochemical network, <i>P. Kouretas, K. Koutoumpas, J. Lygeros</i>	
TA1.5	Using path integral short time propagators for numerical analysis of stochastic hybrid systems, <i>G. Lichtenberg, P. Rostalski</i>	

8:35-10:40	TA2 - Controller Design Based on Hybrid Models of Industrial Plants (Invited)	[room Ginepro]
	Organizers and chairs: S. Engell, O. Stursberg	
TA2.1	Challenges in start-up control of a heat exchange reactor with exothermic reactions; a hybrid approach, <i>S. Haugwitz, P. Hagander</i>	
TA2.2	Feedback stabilization of the operation of an hybrid chemical plant, <i>I. Simeonova, F. Warichet, G. Bastin, D. Dochain, Y. Pochet</i>	
TA2.3	A solar cooling plant: a benchmark for hybrid systems control, <i>D. Zambrano, C. Bordons, W. García-Gabín, E.F. Camacho</i>	
TA2.4	Timed discrete event control of a parallel production line with continuous output, <i>D. Gromov, S. Geist, J. Raisch</i>	
TA2.5	Dynamic optimization of an industrial evaporator using graph search with embedded nonlinear programming, <i>C. Sonntag, O. Stursberg, S. Engell</i>	

10:40-11:10 **Coffee Break**

11:10-12:50	TB1 - Diagnosis and Identification [room <i>Oleandro</i>] Chairs: J. Lunze, C. Seatzu
TB1.1	Using neural networks for the identification of a class of hybrid dynamic systems, <i>N. Messai, J. Zaytoon, B. Riera</i>
TB1.2	Fault tolerant control design for switched systems, <i>M. Rodrigues, D. Theilliol, D. Sauter</i>
TB1.3	Discrete-event modelling and fault diagnosis of discretely controlled continuous systems, <i>J. Lunze</i>
TB1.4	Use of an object oriented dynamic hybrid simulator for the monitoring of industrial processes, <i>N. Olivier, G. Hétreux, J.-M. Le Lann, M.-V. Le Lann</i>
11:10-12:50	TB2 - Applications of Hybrid Control (Invited) [room <i>Ginepro</i>] Organizers and chairs: A. Bemporad, F. Lamnabhi-Lagarrigue
TB2.1	Model predictive control of nonlinear mechatronic systems: an application to a magnetically actuated mass spring damper, <i>S. Di Cairano, A. Bemporad, I. Kolmanovsky, D. Hrovat</i>
TB2.2	Subtleties in the averaging of hybrid systems with applications to power electronics, <i>L. Iannelli, K.H. Johansson, U. Jönsson, F. Vasca</i>
TB2.3	Adaptive cruise controller design: a comparative assessment for PWA systems, <i>D. Corona, B. De Schutter</i>
TB2.4	Idle speed control - A benchmark for hybrid system research, <i>A. Balluchi, L. Benvenuti, M.D. Di Benedetto, T. Villa, A.L. Sangiovanni-Vincentelli</i>
12:50-14:30	Lunch
14:30-15:30	Plenary 2 [room <i>Oleandro</i>] Challenges and Opportunities for System Theory in Embedded Controller Design, A. Sangiovanni-Vincentelli Chair: C.G. Cassandras
15:30-15:50	Coffee Break
15:50-17:30	TC1 - Hybrid Simulation Tools: Principles, Challenges and Applications (Invited) [room <i>Oleandro</i>] Organizers and chairs: C.G. Cassandras, P. Mosterman
TC1.1	Simulation and verification of hybrid systems using Chi, <i>D.A. van Beek, J.E. Rooda, R.R.H. Schiffelers</i>
TC1.2	Hybrid system simulation with SIMEVENTS, <i>C.G. Cassandras, M.I. Clune, P.J. Mosterman</i>
TC1.3	HyVisual: a hybrid system modeling framework based on Ptolemy II, <i>E.A. Lee, H. Zheng</i>
TC1.4	TrueTime: simulation of networked computer control systems, <i>D. Henriksson, A. Cervin, M. Andersson, K.-E. Årzen</i>
TC1.5	CODIS - A framework for continuous/discrete systems co-simulation, <i>G. Nicolescu, F. Bouchhima, L. Gheorghe</i>
15:50-17:30	TC2 - Stability 1 [room <i>Ginepro</i>] Chairs: K. Camlibel, E. Usai
TC2.1	On the finite-time stabilization of a nonlinear uncertain dynamics via switched control, <i>G. Bartolini, A. Pisano, E. Usai</i>
TC2.2	Search for period-2 cycles in a class of hybrid dynamical systems with autonomous switchings. Application to a thermal device, <i>C. Quémard, J.-C. Jolly, J.-L. Ferrier</i>
TC2.3	Stabilizability of bimodal piecewise linear systems with continuous vector field, <i>K. Camlibel, M. Heemels, H. Schumacher</i>
TC2.4	Global input-to-state stability and stabilization of discrete-time piece-wise affine systems, <i>M. Lazar, W.P.M.H. Heemels</i>
17:30-18:30	Interactive Presentation of Hybrid Simulation Tools [room <i>Oleandro</i>]
20:00	Social Dinner (<i>Bus leaves Hotel Calabona at 19:30</i>)

FRIDAY JUNE 9

9:00-10:00	Plenary 3 – Optimal Control in Hybrid Systems, C. Iung	[room Oleandro]
	Chair: J. Zaytoon	
10:00-10:30	Coffee Break	
10:30-12:35	FA1 - Model Predictive Control	[room Oleandro]
	Chairs: A. Bemporad, W.P.M.H. Heemels	
FA1.1	Feasible mode enumeration and cost comparison for explicit quadratic model predictive control of hybrid systems, <i>A. Alessio, A. Bemporad</i>	
FA1.2	An efficient algorithm for predictive control of piecewise affine systems with mixed inputs, <i>S. Leirens, J. Buisson</i>	
FA1.3	Explicit model predictive control of the boost DC-DC converter, <i>A.G. Beccuti, G. Papafotiou, M. Morari</i>	
FA1.4	A new dual-mode hybrid MPC algorithm with a robust stability guarantee, <i>M. Lazar, W.P.M.H. Heemels</i>	
FA1.5	Robust model predictive control for piecewise affine systems subject to bounded disturbances, <i>J. Thomas, S. Oлару, J. Buisson, D. Dumur</i>	
10:30-12:35	FA2 - Stability 2	[room Ginepro]
	Chairs: P. Bolzern, C. Iung	
FA2.1	Stabilization of switched linear systems with unknown time varying delays, <i>L. Hetel, J. Daafouz, C. Iung</i>	
FA2.2	Stabilizing dynamic controller of switched linear systems, <i>S. Chaib, A. Benali, D. Boutat, J.-P. Barbot</i>	
FA2.3	Dynamic output feedback stabilization of continuous-time switched systems, <i>J.C. Geromel, P. Colaneri</i>	
FA2.4	Practical stabilization of discrete-time linear SISO systems under assigned input and output quantization, <i>B. Picasso, A. Bicchi</i>	
FA2.5	Box invariance of hybrid and switched systems, <i>A. Abate, A. Tiwari</i>	
12:35-14:10	Lunch	
14:10-16:15	FB1 - Verification and Safety	[room Oleandro]
	Chairs: S. Kowalewski, L. Ferrarini	
FB1.1	Performance verification of discrete event systems using hybrid model-checking, <i>B. Denis, J.-J. Lesage, Z. Juárez Orozco</i>	
FB1.2	Verification-integrated falsification of non-deterministic hybrid systems, <i>S. Ratschan, J.G. Smaus</i>	
FB1.3	An evaluation of two recent reachability analysis tools for hybrid systems, <i>I. Ben Makhlouf, S. Kowalewski</i>	
FB1.4	Safety and reliability analysis of protection systems for power systems, <i>L. Ferrarini, L. Ambrosi, E. Ciapessoni</i>	
FB1.5	A hybrid approach for safety analysis of aircraft systems, <i>E. Villani, P.E. Miyagi</i>	
14:10-16:15	FB2 - Abstraction Based Approaches to Hybrid Control	[room Ginepro]
	Chairs: T. Moor, T. Ushio	
FB2.1	Detecting and enforcing monotonicity for hybrid control systems synthesis, <i>D. Gromov, J. Raisch</i>	
FB2.2	Hybrid system control using an on-line discrete event supervisory strategy, <i>J. Millan, S. O'Young</i>	
FB2.3	Non-deterministic reactive systems, from hybrid systems and behavioural systems perspectives, <i>J.M. Davoren, T. Moor</i>	
FB2.4	Control-invariance of sampled-data hybrid systems with periodically clocked events and jitter, <i>Y. Tsuchie, T. Ushio</i>	
16:15	Closing Session	[room Oleandro]