DCDS'07

IFAC

Program of the

1st IFAC Workshop on Dependable Control of Discrete Systems

LURPA · ENS CACHAN · UNIVERSITÉ PARIS-SUD 11 · INRETS · INRIA · ministère éducation nationale enseignement supérieur recherche · ministère délégué à la recherche · CNRS CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE · see · GdR MACS

Wednesday 13

Opening session	9:00 – 9:15

Plenary I	9:15 – 10:15

Chair: T. L. Johnson (GE Research)

Contribution to the dependability and safety of power plant control systems using formal methods
S. Couffin (Alstom)

Coffee Break   10:15 – 10:45

WM1	10:45–12:15
Fault tolerant supervisory control	

Chair: M. Fabian (Chalmers University of Technology)

WM1-1 Actuator failure in decentralized supervisory control systems, *D. Thorsley, D. Teneketzis*

WM1-2 Optimal discrete controller synthesis for modeling fault-tolerant distributed systems, *E. Dumitrescu, A. Girault, H. Marchand, E. Rutten*

WM1-3 Fault-tolerant supervisory control of discrete event systems: formalisation and existence results, *Q. Wen, R. Kumar, J. Huang, H. Liu*

WM2	10:45–12:15
Diagnosis of DES	

Organizers: N. Rakoto (École des Mines de Nantes) and S. Takai (Wakayama University)

Chair: N. Rakoto (École des Mines de Nantes)

WM2-1 Efficient diagnosability test for state-based diagnosis of discrete event systems, *T. C. S. Huang, R. H. S. Kwong*

WM2-2 Reliable distributed fault diagnosis using redundant diagnosers, *J. A. Lizárraga, E. López-Mellado, A. Ramírez-Treviño, E. Ruiz-Beltrán*

WM2-3 Probabilistic fault diagnosis in discrete event systems with incomplete models, *T. M. Whiteford, R. Kwong*

Lunch   12:15 – 13:45

WA1	13:45–15:15
Model–based dependability analysis	

Chair: B. Lennartson (Chalmers University of Technology)

WA1-1 Binary decision diagrams in network reliability analysis, *A. Bobbio, R. Terruggia*

WA1-2 Conflicts and projections, *R. Malik, H. Flordal, P. N. Pena*

WA1-3 Post and pre-initialized stopwatch Petri nets, *A. Allahham, H. Alla*

WA2	13:45–15:15
Supervisory control	

Chair: R. Kumar (Iowa State University)

WA2-1 Synthesis of supervisors for parameterized and infinity non-regular discrete event systems, *C. de Oliveira, J. E. R. Cury, C. A. A. Kaestner*

WA2-2 Toward a framework for integrated supervisory and logic control, *K. Åkesson, M. Sköldstam*

WA2-3 Synthesis of control structures for hierarchical control with flexible marking, *A. E. C. da Cunha, J. E. R. Cury*

Coffee Break   15:15 – 15:45

WA3	15:45–17:15
State estimation and identification of DES I	

Organizers: A. Giua (University of Cagliari) and C. Hadjicostis (University of Illinois at Urbana-Champaign)

Chairs: A. Giua (University of Cagliari) and C. Hadjicostis (University of Illinois at Urbana-Champaign)

WA3-1 A protocol for distributed state estimation in discrete event systems, *W. Qiu, R. Kumar*

WA3-2 Optimal sensor selection for structural observability in discrete event systems modeled by Petri nets, *Y. Ru, C. N. Hadjicostis*

WA3-3 Marking estimation of Petri nets with arbitrary transition labelling, *M. P. Cabasino, A. Giua, C. Seatzu*

WA4	15:45–17:15
Safety and availability improvement	

Chair: G. Frey (University of Kaiserslautern)

WA4-1 Formal failure models, *F. Ortmeier, M. Güdemann, W. Reif*

WA4-2 Qualitative analysis of the BDSPN model through its associated discrete Petri net, *K. Labadi, L. Amodeo, H. Chen*

WA4-3 A methodology for weapon system availability assessment, incorporating failure, damage and regeneration, *M. Monnin, B. Iung, O. Sénéchal*

Thursday 14

Chair: G. Morel (Nancy-Université)

Principles of discrete event system modeling and formal methods for transport safety and automation
E. Schnieder (Technische Universität Braunschweig)

Coffee Break   10:00 – 10:30

TM1   10:30–12:30
Probabilistic modeling and analysis

Chair: P. Aknin (INRETS Arcueil)

TM1-1   Probabilistic timed automata for modeling networked automation systems, *J. Greifeneder, G. Frey*

TM1-2   Analytical performance evaluation of small flow lines with shared buffer, *D. Ferrari, A. Matta*

TM1-3   Hidden Markov random field, an application to railway infrastructure diagnosis, *E. Côme, L. Bouillaut, P. Aknin, L. Oukhellou*

TM1-4   Parameter estimation in reliability modeling of distributed detection systems, *Q. Long, M. Xie, S. H. Ng*

TM2   10:30–12:30
Formal fault tree analysis

Organizers: L. Grunske (University of Queensland),
　　　　　Y. Papadopoulos (University of Hull) and
　　　　　J.M. Roussel (ENS Cachan)

Chairs: Y. Papadopoulos (University of Hull) and
　　　　J.-M. Roussel (ENS Cachan)

TM2-1   Pandora 2: the time of priority-OR gates, *M. Walker, Y. Papadopoulos*

TM2-2   Algebraic modelling of temporal fault trees with priority and gates, *G. Merle, J.-M. Roussel*

TM2-3   Analysis of timing properties of electrical power system protection, *M. Lukowicz, J. Magott, P. Skrobanek*

TM2-4   Experiments in model based safety analysis: flight controls, *R. Bernard, J.-J. Aubert, P. Bieber, C. Merlini, S. Metge*

Lunch   12:30 – 14:00

TA1   14:00–15:30
State estimation and identification of DES II

Organizers: A. Giua (University of Cagliari) and C. Hadjicostis (University of Illinois at Urbana-Champaign)

Chairs: M. Pia Fanti (Politecnico di Bari) and C. Hadjicostis (University of Illinois at Urbana-Champaign)

TA1-1   Observer design for Max-Plus-Linear systems, *L. Hardouin, C. A. Maia, B. Cottenceau, M. Lhommeau*

TA1-2   Real time identification of discrete event systems by Petri nets, *M. Dotoli, M. P. Fanti, A. M. Mangini*

TA1-3   A mathematical programming approach for the identification of timed Petri nets, *T. Bourdeaud'huy, P. Yim*

TA2   14:00–15:30
Fault detection and isolation

Chair: M.-O. Cordier (INRIA Rennes)

TA2-1   Detection of changes by observer in timed event graphs and time stream event graphs, *P. Declerck*

TA2-2   Discovery of intermingled event patterns in discrete monitoring data, *X. Wang, T. L. Johnson*

TA2-3   Generic determination of fault models for FDI purposes, *M. Roth, S. Klein, L. Litz*

Coffee Break   15:30 – 16:00

TA3   16:00–17:30
Reconfiguration of DES

Organizers: E. Lopez-Mellado (CINVESTAV Unidad Guadalajara) and E. Niel (INSA de Lyon)

Chair: E. Niel (INSA de Lyon)

TA3-1   An online fault detection and avoidance framework for distributed systems, *P. Zhao, Y. Lu, M. A. Jafari, A. Amini*

TA3-2   Operation modes handling in distributed automation systems, *S. Panjaitan, G. Frey*

TA3-3   Reconfiguration of discretely controlled hybrid systems for changing specification, *T. H. Tran, O. Stursberg, S. Engell*

TA4   16:00–17:30
Fault detection and diagnosis

Chair: L. Litz (University of Kaiserslautern)

TA4-1   Unconditional decentralized structure for the fault diagnosis of discrete event systems, *A. Philippot, M. Sayed-Mouchaweh, V. Carré-Ménétrier*

TA4-2   Intermittent fault diagnosis: a diagnoser derived from the normal behaviour, *S. Soldani, M. Combacau, A. Subias, J. Thomas*

TA4-3   Observability of a class of switched linear systems, *G. Ramírez-Prado, A. Ramírez-Treviño, J. Ruiz-León*

Banquet   at 20:00

Friday 15

Plenary III	9:00 – 10:00

Chair: J. McDermid (University of York)

Stochastic models and methods for the safety and dependability analysis of DES
A. Bobbio (Universita del Piemonte Orientale)

Coffee Break　　　　　　　　　　　　　　　　　　**10:00 – 10:30**

FM1	10:30–12:30
Dependable controllers design	

Chair: F. Ortmeier (University of Augsburg)

FM1-1　Impact of complexity on logic controller design, *A. Dandachi, S. Lohmann, S. Engell*

FM1-2　Using SysML for identification and refinement of machinery safety properties, *D. Evrot, J.-F. Pétin, G. Morel, P. Lamy*

FM1-3　Prospects for model-based testing of discrete safety systems, *P. Salaün, F. Chériaux, D. Trognon*

FM1-4　Development process for dependable high-performance controllers using Petri nets and FPGA Technology, *F. Wagner, P. Münch, S. Liu, G. Frey*

FM2	10:30–12:30
State estimation of hybrid systems	

Organizers and chairs: A. Giua (University of Cagliari) and C. Hadjicostis (Univ. of Illinois at Urbana-Champaign)

FM2-1　Mode estimation techniques for switching discrete-time linear systems, *A. Alessandri, M. Baglietto, G. Battistelli*

FM2-2　Observability of discrete time linear switching systems, *E. De Santis, M. D. Di Benedetto, G. Pola*

FM2-3　Continuous and discrete state estimation for a class of hybrid nonlinear systems, *H. Yang, V. Cocquempot, B. Jiang*

FM2-4　Particle Petri net-based estimation in hybrid systems to detect inconsistencies, *C. Lesire, C. Tessier*

Closing session	12:30 – 13:00

Lunch　　　　　　　　　　　　　　　　　　**13:00 – 14:00**