MISS

McLeod Institute of Simulation Sciences

Center of Marseilles

MISS-LSIS

France

***Annual Report of the McLeod Institute of Simulation Sciences
at Marseille
LSIS: « Laboratoire des Sciences de L'Information et des Systèmes »***

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Preamble –

With the establishment of the McLeod Institute of Simulation Sciences, LSIS Marseille creates a center of excellence in computer simulation. Through the creation of the Institute the LSIS Marseille recognizes a unique opportunity to develop a widely recognized institute engaging in state the art simulation research and instructional activities by virtue of a critical mass of exceptional faculty available to contribute to this effort. The establishment of the Institute provides a mechanism through which faculty from various disciplines and their students and associates can bring their talents to bear in the general area of computer simulation or can seek help with the application of simulation to new areas.

Brief Presentation of LSIS

Set up in January 2002 as a Mixed Research Unit (UMR CNRS 6168), LSIS employs 150 researchers and doctoral students from the 3 Universities of Aix-Marseille, the École Nationale Supérieure des Arts et Métiers (ENSAM) and the CNRS (the French national centre of scientific research). Thanks to the composition of its workforce, the research activities at the Laboratory cover several areas of IT and automation.

The Laboratory consists of 5 research teams:

• **COSI: Control and Simulation** (design of knowledge-based systems - modelling and simulation - industrial automation).
• **IMS: Engineering, Mechanics, Systems** (integrated and cooperative design and engineering - machines and intelligent systems).
• **InCA: Inference, Constraints and Applications** (logical representation of knowledge and simulation of reasoning in IT systems - automatic demonstration and constraint satisfaction).
• **INCOD: Distributed Information and Knowledge** (design, cooperation, integration of component-based information systems, multi-agent simultion - security and cognition).
• **LXAO: Computer-aided Modelling, Design and Reconstruction** (modelling and control of forms - segmentation and recognition of forms - coherence of geometrical models).

The LSIS thus fully subscribes to information and communication sciences and technologies. If the mission of the Laboratory is to develop fundamental and theoretical research into IT and automation, its preliminary activities are inseparable from research carried out at the request of the socio-economic world (involving production systems, transport, medical imaging, computer-aided design and manufacturing, mechanical engineering and geomatics as key applications).

At LSIS the main purpose of this research is firstly to come up with new basic concepts to develop models of real systems and secondly, to define analysis and design methods for artificial systems. Such research culminates in the definition of methods and tools designed to increase the flexibility, reactivity and reliability of companies offering goods or services. Besides such single-discipline activities, a number of interdisciplinary projects are underway, with researchers and laboratories working in fields relating to the human and social sciences or life sciences.
From the 2002-2003 academic year the development of international relationships has attracted several doctoral students from abroad (numerous new theses on a co-tutorship basis, new agreements with countries of North and South America, Eastern Europe, Northern Africa and Asia).

The LSIS is also a driving force behind training through research, due to its intense involvement in numerous university courses, in particular, at three engineering colleges: École Nationale Supérieure des Arts et Métiers at Aix-en-Provence (ENSAM), École Supérieure d'Ingénieurs de Luminy (ESIL) and Polytech'Marseille. Such involvement in the training of engineers and professional education naturally endows the Laboratory with a culture of transfer to the industrial sector, something that makes it easier for its doctoral students to find a place in the world of work, for example.

Members :

ANDRIEN Karine	PhD student
BELLEMARE Marc-Emmanuel	Ass. Prof.
BOUCELMA Omar	Prof.
BOUCHE Philippe	PhD student
BULOT Rémy	Prof.
CAUSSANEL Jean	Ass. Prof.
CHANE Frédéric	Ing.
CHAMBELLAND Jean-Christophe	PhD student
CHARBONNEAU Philippe	Ing.
CLOUCHOUX Cédric	PhD student
COULON Olivier	researcher
DANIEL Marc	Prof.
ESPINASSE Bernard	Prof.
ESSID Mehdi	PhD student
FRYDMAN Claudia	Prof.
GIAMBIASI Norbert	Prof.
HAMRI Maâmar El-Amine	PhD student
LAUGIER Franck	Ing.
LE GOC Marc	Ass. Prof
LOSCHMANN Ronald	Ass. Prof
MAVROMATIS Sébastien	Ass. Prof.
MERCANTINI Jean-Marc	Ass. Prof.
MUSTAFA Alaa	PhD student
NAAMANE Aziz	Ass. Prof.
NOURA Hassan	Prof.
OULADSINE Mustapha	Prof.
OUNNAR Fouzia	Ass. Prof.
PAILLET Jean-Luc	Ass. Prof.
PUJO Patrick	Ass. Prof.
RAFFIN Romain	Ass. Prof.
RAMADOUR Philippe	Ass. Prof.
REMY Eric	Ass. Prof.
RICHARD Sébastien	PhD student
SANTONI Charles	Ass. Prof.
SEQUEIRA Jean	Prof.
SERMENT Julien	PhD student
TORRES Lucile	Ass. Prof.
TRANVOUEZ Erwan	Ass. Prof.
ZACHAREWICZ Grégory	PhD student
ZANNI Cécilia	PhD student

I-   Research activities & Projects

a- Medical Imaging

Our works deal with 3D medical imaging, in collaboration with industrial partners and with medical specialists. Our goal is to be able to provide supports for diagnosis and surgical planning (virtual endoscopy, CAD/CAM for surgery, …)

b- Scientific Visualization and Simulation

We focus on the concept of "Augmented Reality" but we are also highly involved in an "Interactive Immersion" program (Virtual Reality) in the frame of the IFR Marey Institute, with the development of a simulator to analyze team sport strategies (Simulfoot: 3D representation and analysis of sport scenes)

From Images to Simulation, using Geometrical and Animation Models for the Understanding of Complex 3D Scenes

c- Image Synthesis and Virtual Sculpture

The goal of this research axis is to provide a "Virtual Sculpture" environment for artists so that they can interact with a model without any direct links with the machine. This project especially needs the design of ergonomic simulation tools.

d- Diagnosis of Dynamical Systems

Our objectives are the study and the development of techniques for the diagnostic and control of dynamic complex systems. The research activities deal with model-based and knowledge-based diagnosis and with fault-tolerant control techniques. Theoretical and practical aspects of these topics are developed.

Model based approaches

The objective is to develop control and diagnosis methods for industrial processes in order to optimize their operation in an environment subjected to disturbances. The analysis and the synthesis of the continuous dynamic systems constitute our investigation fields. We have developed many techniques for diagnosis and control of linear and nonlinear systems by using either the neural networks or the Lyapunov approach. Our privileged applications are directed towards the vehicles and more particularly the motorization and dynamics.

Work in progress

Inter-teams Projects are in progress and co-supervision of Phd-Theses are considered within each project:

- study and development of fault detection and isolation methods for the electric components of a helicopter and analysis of their performances (in collaboration with Eurocopter).
- Design of an aid for diagnosis system and vehicle driving (in collaboration with IMRA/TOYOTA).
In this project we deal with the following problems:
- Diagnosis of the rotors of helicopters: analysis of the vibratory signatures by neural networks. (Project with Eurocopter).
- Neural networks for diagnosis: application to the predictive analysis of failures in very high speed pins. The industrial partners concerned by this work are: PCI (Process Conception Ingénierie), and RENAULT AUTOMATION COMAU.
  - Aid for diagnosis aiming at improving the safety and optimizing the costs of maintenance (project with EUROCOPTER).

Knowledge based approaches

The ELP project (Event, Language and Probabilities for Discrete Event Perception) is relevant to alarm correlation, supervision, diagnostic techniques and knowledge acquisition for monitoring dynamic process like industrial production tools. The ELP framework considers a monitored process like a discrete event processing system that transform the flow of sensor data in a discrete event flow (discrete event perception). Because the discrete event flow contains information about the process behavior, discovering this information can improve the knowledge about the process behavior. But this idea stumble over to 2 basic questions: where is the information? And how to represent it? The ELP project tackles these questions through the "ELP Signature" concept, a representation of a faulty scenario in the ELP graphical language. An ELP signature is a graph of discrete event types connected with temporal constraints. The notion of discrete event type is used as a way to deal with the filtering problem of irrelevant discrete events. The ELP signatures are extracted from discrete events logs with an algorithm developed on the basis of the Markov Chain and Poisson Process Theories. The pertinence of an ELP signature is validated from the analysis of the frequency of the discrete event sequence occurrences that satisfy the logical and the temporal constraints of the signature. To this aim, an ELP signature is operationnalized with DEVS automata so that a DEVS simulator is used in order to recognize the sequences occurrences that are compatible with the ELP signature. This ELP Framework is implemented in a Java environment called the "ELP Laboratory" that offers a set of tools dedicated to the ELP signature discovering process. This approach is currently used for designing the diagnosis function of the Sachem system of the Arcelor

ST-MICROELECTRONICS Project

The methods developed in the framework of a multiannual contractual collaboration with the company STMicroelectronics are based on fault modelling and simulation with the aim of providing tools for the the fault diagnostic of a manufacturing production chain of electronic circuits.

The originality of the research activities dealing with this problem consists of integrating three levels of modelling:
  Ø Knowledge based level,
  Ø Discrete event systems
  Ø Continuous systems

e- Generalization of the concept of discrete event models: G-DEVS

Traditional discrete event abstractions approximates the input, output, and state trajectories of dynamical systems through piecewise constant segments. For processes that defy accurate modeling through piecewise constant segments, we have defined GDEVS, a Generalized Discrete
Event Specification, wherein the trajectories are organized through piecewise polynomial segments. The utilization of arbitrary polynomial functions for segments promises higher accuracies in modeling continuous processes as discrete event abstractions. Different applications of the G-DEVS formalism have been realized (cell models, logic gates, bond graphs ….)

f- Agent Based Simulation for decision-making support

Our research contributions cover methodological support to the design and development of agent based models as well as software engineering support by developing agent/simulation frameworks facilitating the building of Agent Based Decision Support systems. Identified application domains involve human influenced eco-systems, socio-technical systems as found in industrial engineering, and socio-economical systems. Our past and current research activities have covered:
    * Multicriteria decision support methods and techniques for a group of decision-makers,
    * Simulation of different repair solution strategies applied to workshop rescheduling,
    * Simulation of management scenarii of human influenced ecosystems (supported by the SIMFONYC project with the DESMID an ecological and social science laboratory),
    * Simulation of a supply chain activities recently reinforced by collaboration with the CENTOR (Quebec - Canada) laboratory specialised in networking organizations.

Results from these researches have shown that decision support systems by simulation involves: (i) Integration of the decision maker in the simulation process; (ii) Methodology for agent modelling of complex systems and (iii) Multiagent simulation framework reducing the design-to-implementation phase of agent model and integrating the simulation tool user needs.

The importance of this multidisciplinary research is confirmed by international congresses or workshops dedicated to agent-based simulation. Among these we can cite for example Agent Based-Simulation (ABS), created in 2000 in which we participate actively since 2002. We were also responsible of the agent-based simulation workshop of the ESS'01 international congress. We are also active nationally through our participation to the MIMOSA workgroup whose objective is to define and develop a generic agent-based simulation development framework.

g-"SIMPORT" project

The objective of this project consists to specify and to realize a system of workflow management and simulation, which is suitable for intermodal transport of freight and refering to port activities. This project lies in modelling and simulating all the economic actors in a port. SIMPORT is a decision system (allowing the activity evaluation) and a prevision system (helping to investing planning) that gives economic informations about any actor of the freight intermodal transport.

The SIMPORT project is realized by the team of the common laboratory LSIS-TRANSSIM, it began in september 2003 for 18 months long. It is financed by the european community (FEDER - Fonds Social Européen).

h- IEPAL project

IEPAL is a flexible educational program for engineering students interested in current and emerging advances in research and technology as applied to Logistics and Supply Chain Management. There is a growing demand for individuals who have theoretical fundamentals and practical expertise in new strategic technologies for logistics. In particular, an increasing number of enterprises are in need of people who can successfully integrate Modeling & Simulation, Networking, E-Commerce in their supply chain management and logistics for enabling technologies that guarantee overall competitiveness. These rapid changes make it necessary to integrate fundamentals provided during engineering studies with fundamentals of these new techniques. In addition, there is a need to augment the study of logistic operations with practical exercises, industrial case studies and direct experience with real companies involved in globalization, providing students and faculty with a broader base of contacts and opportunities to initiate international working relationships. IEPAL will directly support these lofty ambitions. The aspirations of IEPAL are to integrate regular existing courses with specific intensive seminars that expose the student to real world challenges. Initially, the start-up phase of IEPAL will be based on seminars devoted both to undergraduates and graduate students as an addition to regular course work. After the first three-year experience the IEPAL goal is to review and integrate regular programs and be a reference for creating new courses that can become part of and strengthen the regular curriculum. The first year of the project is devoted to exchanges of faculty in order to prepare the detailed didactic materials, structures and procedures. In the second and third year student programs will become operative and the courses will begin using both remote teaching, company experiences and student mobility.
IEPAL involves six Universities (3 in Europe and 3 in USA) and two Consortiums (1 USA and 1 EU, each one representing over 150 companies interested in logistics).

Subject	Type	Description	Reference	Year
Image processing	Project	Simulfoot: 3D representation and analysis of sport scenes	Marseille Center	2004
Workflow management and simulation	Project	Simport: specification and ralization of a system of workflow management and simulation, suitable for intermodal transport of freight and relative to port activities.	Marseille Center	2004
Simulation for education programs	Project	IEPAL: integration of regular existing courses in current and emerging advances in research and technology as applied to Logistics and Supply Chain Management with specific intensive seminars that expose the student to real world challenges	Marseille Center	2004
Modeling and Simulation of air terminals	Project	Engineering departments of the air bases. The goal of the project is to constitute a tool for simulation of flows of passenger, luggage, guides and freight in air terminals in order to evaluate their capacity	Marseille Center	2004
Simulation and fault diagnosis	Project	Simulation and fault diagnostic in the manufacturing of electronic circuits. This project is led in collaboration with STMicroelectronics and funded by the Region Provence-Alpes-Côte d'Azur	Marseille Center	2004
Agent Based Supply Chain Simulation	Project	Proposal of a methodological, modelling and implementation framework for agent based simulation of socio-technical systems. Concepts are first tested and validated on Supply Chain organisations. This Research Work developed in collaboration with the CENTOR laboratory (Laval University, Quebec, CANADA).	Marseille Center	2004
Agent Based Simulation of human influenced ecosystems	Project	Propose an agent-based simulation framework enabling decisional, operational and physical behaviours in the case of the water management of the Camargue ecosystem (ex: negotiation process to define salinity level, realized through pumping facilities	Marseille Center	2004

		modifying in turn the ecosystem state). Project in collaboration with the DESMID-CNRS Laboratory, and the Camargue Ecological Protection Agency and financed by the PACA Regional Council (SIMFONHYC Project)		
DEVS simulator for monitoring and fault diagnosis	Project	ELP: Event, Language and Probabilities for Discrete Event Perception) is relevant to alarm correlation, supervision, diagnostic techniques and knowledge acquisition for monitoring dynamic process like industrial production tools. This project was conducted in collaboration with a steel company "ARECLOR".	Marseille Center	2004

II-   International Cooperations & Exchanges

In the framework of international collaboration with other laboratories, the LSIS has welcomed recently invited researchers (one month or more) in the fields of modeling and simulation:

Fatima TURNEL (one year)
Universiét de Campina Grande - Brésil
Full Professor

Luca Console – May 2004
Dipartamento di informatica
Università di Torino - Italy
Full Professor of Computer Science, Università di Torino, Facoltà di Lettere e Filosofia

Maximiliano Cristea – May 2004
National University of Rosario – Argentina

Gabriel Wainer – June 2003
Carlton University - Canada
Department of Systems and computer engineering

Fernando Barros – June 2003
Universidade de Coimbra, Pólo II
Dept. Eng. Informática, P-3030 Coimbra, Portugal

Robert Signorile – June 2003
Boston College (BC) - USA
Computer Science Department

Nick Szirbik – April 2003
Department Information & Technology
Faculty of Technology Management, Eindhoven University of Technology, Netherland

Dr. Selma Limam Mansar –june 2004
Senior lecturer in Business Systems
 Department of Computing, Communications Technology and Mathematics
 London Metropolitan University

Dr Barbara Catania – june 2004
Università di Genova

Prof. John Barron
Dept. of Computer Science
 Univ. of Western Ontario
 London, Ontario, Canada

Stéphane Bressan
School of Computing, National University of Singapore

Nicola Olivetti
professeur au Département d'Informatique et membre du Logic Programming and Automated Reasoning Group de l'Université de Turin (Italie)

Sonia Bergamaschi
Database Group, Dipartimento di Ingegneria dell'Informazione
 Facoltà di Ingegneria, Università di Modena e Reggio Emilia

Priscilla Elfrey
Kennedy Space Center
 IT/C1, Florida 32899

Hung VO TRUNG
Université de Danang, Vietnam

Nick Szirbik
Department Information & Technology, Faculty of Technology Management
 Eindhoven University of Technology, Netherland

Paolo Bresciani
SRA division, IRST - Istituto pre La Ricerca Scientifica e Tecnologica, Trento, Italy

Gerd Wagner
Department Information & Technology, Faculty of Technology Management
 Eindhoven University of Technology, Netherland

Brahim CHAIB-DRAA
Professeur titulaire
 groupe DAMAS (Dialogues, Agents et Systèmes Multi-agents)
 Département d'informatique et de génie logiciel
 Université Laval, Québec - Canada.

III- - Scientific Activities and Conferences

organization or co-organization of conferences

Agent-Based Simulation,
May 3-5 2004, Lisbon, Portugal.
http://www.scs-europe.org/conf/abs2004/

I3M: Internation Mediterranean Modeling Multiconference,
October 28-31 2004, Genoa, Italy.
http://www.liophant.org/i_m_scs/i3m2004/

Symposium « The Competitive Intelligence and Industrial Vision in the 21st century «
(SIT : Shanghai Institute of Technology) - Shanghai – 13 et 14 octobre 2003

Symposium Techniques Avancées et Stratégies Innovantes en Modélisation et Commandes
Robustes des Processus Industriels –Martigues- France - september 2004 (organisation : ISA
& LSIS)

IFAC AVCS'04 2004"International Conference on
Advances in Vehicle Control and Safety"
Genova-Italy, October 28-31 2004

IV- Center Publications

S. Mavromatis, J. Baratgin, J. Sequeira. Reconstruction and simulation of soccer sequences. *In MIRAGE 2003*, *INRIA Rocquencourt, Paris*, March 2003.

S. Mavromatis, J. Baratgin, J. Sequeira. Analyzing team sport strategies by means of graphical simulation. *In ICISP 2003, International Conference on Image and Signal Processing*, *Agadir (Maroc)*, June 2003.

G. Poplu, J. Baratgin, S. Mavromatis, H. Ripoll. What kinds of processes underlie decision making in soccer simulation? An implicit-memory investigation, *in: International Journal of Sport and Exercise Psychology*, *vol. 1*, *n° 4*, *pp. 390-405*, 2003.

H. Ripoll, J. Baratgin. Les déterminants cognitifs de l'organisation spatiale du joueur de sports collectifs : application à la simulation, *in: Agir dans l'espace*, *Maison des Sciences de l'Homme*, *Bullier, J. & Thinus-Blanc, C.*, 2004.

N. Franchesquin, B. Espinasse, J. Serment, others. Modelling and Simulation of the hydraulic management of the Camargue ecosystem with a multi-agent system. *In: ICAMES*, *Istanbul, Turkey*, May 2003.

W. Jumpamule, J.L. Paillet, N. Giambiasi. Using Simulation for the Validation of High Level Specifications of Control Systems. *In: Journal of Intelligent & Robotic Systems*, *vol. 38, n° 3/4, pp. 345-375*, December 2003. Kluwer Acad. Publ., Netherlands.

V. Riccardi, P. Pujo, C. Frydman. DEVS Modelling For The Proactive Control By Simulation Of Kanban Production Lines. *In The International Workshop on Modeling & Applied Simulation (MAS 2003), Italy*, 2-4 October 2003.

M. Mercantini, R. Loschmann, E. Chouraqui. Modélisation et similation d'un système à risques multiples suivant une approche cognitive. *In Atelier Risque et Intelligence Artificielle - Plateforme AFIA. Laval, France*, 1-4 July 2003.

O. Labarthe, E. Tranvouez, A. Ferrarini, B. Espinasse, B. Montreuil, ``A Heterogeneous Multi-Agent Modelling for Distributed Simulation of Supply Chains", in: *First International Conference on Applications of Holonic and Multi-Agent Systems (HoloMAS 2003)*, Prague, Czech Republic, 1-3 september 2003.

N. Franchesquin, B. Espinasse, J. Serment, ``Coordination for contract realisation in the hydraulic management of the Camargue", in: *ABS4, Agent Based Simulations*, Montpellier, France, april 2003

B. Montreuil, O. Labarthe, ``Interactive Distributed Multi-Agent Modeling and Simulation of Customer-Centric Demand and Supply Chains", in: *INFORMS 2004, Conference on Operations Research / Management Sciences Practice*, Cambridge, Massachusetts, USA, 25-27 April 2004

O. Labarthe, B. Montreuil, A. Ferrarini, B. Espinasse, Modélisation multi-agents pour la simulation de chaînes logistiques de type personnalisation de masse, in: *MOSIM 04, 5eme Conférence Francophone de Modélisation et Simulation*, Nantes, France, 1-3 Septembre 2004.

F. Ounnar, P. Pujo, L. Mekaouche, N. Giambiasi. Decentralized Self Organized Control of a Partnership Network in an Intelligent Supply Chain. In: IMS International Forum 2004: Global Challenges in Manufacturing, Italy, May 2004.

E. Soulier, J. Caussanel. Organiser une base de documents narratifs pour supporter l'échange d'expérience. In: Coopération et Organisation numérique, numéro spécial de la revue Documents Numériques, Hermès, January 2004.

M. Le Goc, C. Frydman. The Discrete Event Concept as a Paradigm for the "Perception Based Diagnosis" of Sachem. In: Journal of Intelligent & Robotic Systems, pp. 1-26, February 2004. Kluwer Academic Publishers.

M. Le Goc, P. Bouché. Towards a Discrete Event Formalization of Sachem's Perception Based Monitoring. In: MMM'04, 11th IFAC Symposium on Automation in Mining, Mineral and Metal Processing, Nancy, France, 8-10 September, 2004.

P. Pujo, M. Pedetti, N. Giambiasi. Relocation of a flow-shop, without interrupting the production: optimization by DEVS modelisation and simulation. In: SCSC2004, Summer Computer Simulation Conference, San Jose, California, USA, 25-29 July 2004.

C. Frydman, A. Hamri, L. Torres. Airport Modeling using CommonKADS. In: SCSC2004, Summer Computer Simulation Conference, San Jose, California, USA, 25-29 July 2004.

F. Chane, N. Giambiasi, J.L. Paillet. From DEVS Model to Timed Automata. In: SERP'04, International Conference on Software Engineering Research and Practice, Las Vegas, Nevada, USA, 21-24 June 2004.

G.A. Wainer, N. Giambiasi. Accurate Modeling and Simulation of Heart Tissue Using GDEVS/CELL-DEVS. In: MSV'04, International Conference on Modeling, Simulation and Vizualization Methods, Las Vegas, Nevada, USA, 21-24 June 2004.

C. Frydman, L. Torres, S. Ghedira. Using DEVS for an Extended UML. In: SERP'04, International Conference on Software Engineering Research and Practice, Las Vegas, Nevada, USA, 21-24 June 2004.

G. Grosset, M. Ouladsine. Diagnosis of multi-variable systems using neural networks. In: IEEE SCS "Signaux, Circuits et Systèmes" (IEEE SCS'04), Monastir, Tunisie, 18-21 March 2004.

A. Naamane, N. Giambiasi. Logic Gate Modeling and Simulation using Generalized Discrete Event Specifications : G-DEVS. In: SCI2004, 8th World Multiconference on Systemics, Cybernetics and Informatics, Orlando, Florida, USA, 18-21 July 2004.

A. Hamri, C. Frydman, L. Torres. Using DEVS for Simulation of CommonKADS Specified Systems: an Airport Application. In: HMS2004, 8th International Workshop Harbour, Maritime & Multimodal Logistics Modelling and Simulation, Rio de Janeiro, Brésil, 16-18 September 2004.

G. Moraru, D. Brun-Picard, M. Ouladsine, S. Mas. Diagnostic et maintenance prédictive des UGV. In: 3ème ASSISES Machines et Usinage Grande Vitesse, Clermont Ferrand, 10-11 March 2004.

F. Ounnar, P. Ladet. Consideration of machine breakdown in the control of flexible production systems. In: International Journal of Computer Integrated Manufacturing System, vol. 17, n° 1, pp. 69-82, 2004.

M. El Adel, M. Ouladsine, H. Noura. Design Lyapunov Controller for Vehicle Dynamics. In: International Acta Electrotechnica, vol. 45, n° 1, pp. 19-24, 2004.

C. Zanni, M. Le Goc, C. Frydman. A Three Dimensional Framework for Comparing Knowledge-Based Diagnosis Applications. In: MONET Workshop on Model Based Systems at ECAI 2004, European Conference on Artificial Intelligence, Valence, Espagne, 2004.

M.A. Hamri, C. Frydman, L. Torres. Specifying and Validating Reactive Systems with CommonKADS Methodology. In: KES03, 7th International Conference on Knowledge-Based Intelligent Information & Engineering Systems & Allied Technologies, University of Oxford, United Kingdom, September 3-5 2003.

M. El Adel, M. Ouladsine. On Decentralized Adaptative Control of MIMO Interconnected Systems. In: IEEE International Symposium on Intelligent Control, The Westin Galleria, Texas, USA, October 2003.

A. Naamane, N. Giambiasi. Logic Gate Modeling and Simulation using Generalized Discrete Event Specifications: G-DEVS. In: ESM'03, European Simulation Multiconference, Napoly, Italy, October 2003.

M. El Adel, M. Ouladsine, H. Noura. Design Lyapunov Controller For Vehicle Dynamics. In: ELECTROMOTION'03, 5th International symposium on Advanced Electromechanical Motion Systems, Marrakech, Morocco, November 2003.

M. El Adel, M. Ouladsine, L. Radouane. Predictive Steering control Using Laguerre Series Representation. In: CCA'03, IEEE Conference on Control Application, Istanbul, Turkey, June 2003.

A. Garrido De Ceita, L. Torres, C. Frydman. Specification and Validation of Knowledge-Based Systems. in: SCSC'03, Summer Computer Simulation Conference, Montreal, Canada, July 20-24 2003.

G. Blanc, J.L. Paillet, N. Giambiasi. A correspondence between DECM and Event Graphs. In: SCSC'03, Summer Computer Simulation Conference, Montreal, Canada, July 2003.

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A. Naamane, K. Sia. Bond graph: a suitable tool for fault diagnosis. In: ICMBM'03, Phoenix, Arizona, janvier 2003.

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N. Giambiasi, J.L. Paillet, F. Chane. From Timed Automata to DEVS Models. In: WSC'03, New Orleans, December 2003.

J.F. Le Maitre. Virtual Reality: Toward a New Approach of Automatic Control Theory. In: ISMCR'03, 13th International Symposium on Measurement and Control in Robotics, Madrid, Spain, December 2003. Key Note Paper.

S. Nicolas, J.F. Le Maitre. Using Physical Modelling and Multi-Agents System for Virtual Reality Simulator and Robot Prototype Design. In: ISMCR'03, 13th International Symposium on Measurement and Control in Robotics, Madrid, Spain, December 2003.

E. Soulier, J. Caussanel. HyperStoria: acquire, represent, understand and share experiences by the way of narration. In: Workshop on Narration and Knowledge Management, European Institute for advanced Studies in Management, EIASM, Bruxelles, December 2003.

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J.C. Carmona, M. Ouladsine, M. El Adel. L1 Prediction error System Identification: a modified AIC rule. In: SYSID'03, 13th IFAC Symposium on System Identification, Rotterdam, The Netherlands, August 2003.

M. El Adel, M. Ouladsine, J.C. Carmona. Adaptative Laguerre Time Scaling Factor in Predictive Control. In: SYSID'03, 13th IFAC Symposium on System Identification, Rotterdam, The Netherlands, August 2003.

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Patrick Pujo, Maurice Pillet. Duality between control and quality", in: QUALITA 2003, Nancy, France, 2003.