Proceedings of the 8th International Workshop

VECoS 2014

Verification and Evaluation of Computer and Communication Systems

Bejaïa, September 29 - 30, 2014

Organized by

Department of Operation Research
Faculty of Exact Sciences, University of Bejaia
Research Unit LaMOS (Modeling and Optimization of Systems)

LAMOS Editions, 2014

VECoS 2014

Verification and Evaluation of Computer and Communication Systems

Verification and Evaluation of Computer and Communication Systems

Editors : Research Unit *LaMOS* Béjaia
Adresse : Unité de Recherche LaMOS
Université de Béjaia, Campus Targua Ouzamour, Béjaia, 06 000 (Algérie)
Ph/Fax : 213 34 21 51 88
E-Mail : lamos_bejaia@hotmail.com
http://www.lamos.org

© Publication of the Research Unit LaMOS, 2014.
All rights of translation, production and adaptation
Are reserved for all countries.

Legal Deposit : 4119 - 2014
ISBN : 978-9931-9140-3-7

Welcome to Bejaia!

It is our great pleasure to welcome you to Bejaia for the Eight International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2014) that will take place Monday, September 29th and Tuesday September 30th.

The International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS) continues its mission as one of the leading forum for the presentation of all aspects of verification, control and performance modeling and analysis of computer and communication systems.

We received 35 submissions. These submissions went through a rigorous review process; each submission was reviewed by at least 3 Program Committee members. The Program Committee members have selected 11 papers for publication. In addition to these eleven regular papers, six papers were selected as posters presentations.

This year the invited talks will be given by Saddek Bensalem (Grenoble), Carla Seatzu (Cagliari) and Bernd Heidergott (Amsterdam).

We are grateful to all members of the program committee, the organizing committee and to all referees for their hard work. We would also like to thank the Research unit LaMOS, and the Faculty of Exact Sciences - University of Bejaia for hosting the event.

Finally, we would like to thank the corporate sponsors and all participants at the Workshop.

We hope you will enjoy the VECoS 2014 edition!

Hassane Alla and Louiza bouallouche-Medjkoune

VECoS'2014 Co-Chairs

Bejaia, September 2014.

Summary

Preface.

Presentation.

Committees.

Invited Papers

Compositional Invariant Generation for Timed systems... 07

Saddek Bensalem, University Joseph Fourier, Grenoble (France)

Fault diagnosis of discrete event systems using Petri nets.....15

Carla Seatzu, University of Cagliari (Italia)

Towards a Statistical System Analysis.....19

Bernd Heidergott, Vrij Amsterdam University (The Netherlands)

Regular papers

Modelling and Verification

Towards Formal Modeling and Verification of Context-Aware Systems.....25

Taha Abdelmoutaleb Cherfia, Faïza Belala and Kamel Barkaoui:

Model-Checking Cloud Systems Using BigMC.....33

Hamza Sahli, Faiza Belala and Chafia Bouanaka

Diagnosis of Probabilistic Models using Causality and Regression.....43

Hichem Debbi

Visual specification language and automatic checking of business process 55

Outman El Hichami, Mohammed Al Achhab, Ismail Berrada and Badr Eddine El Mohajir:

Mapping OCL constraints into CTL-like logic and SML for UML validation.....65

Miloud Bennama and Thouraya Bouabana-Tebibel:

Dependability analysis

A µ-Calculus Framework for the Diagnosability of Discrete Event Systems.....79

Florent Peres and Mohamed Ghazel

Coping with Spoofed PS-Poll Based DoS Attack in IEEE.....91

Hocine Souilah, Baadache Abderrahmane and Bouallouche-Medjkoune Louiza:

Failure Detector-Ring Paxos Based Atomic Broadcast Algorithm.....97

Performance evaluation

Analytical Modeling of the IEEE 802.11e EDCA Network……..……..……105

Mohand Yazid, Sahki Nassim, Bouallouche-Medjkoune Louiza and Djamil Aïssani

Derivation of a Queueing Network Model for Structured P2P Architectures……..113

Zouweyna Mordji, Mourad Amad and Djamil Aïssani

Applying data fragmentation in IEEE 802.15.4: modeling and analysis under……...121

Mouloud Atmani, Djamil Aïssani and Yassine Hadjadj-Aoul

Poster Presentations

Enforcing Security Policies on Choreographed Services using Rewriting Techniques…… 131

Karim Dahmani and Mahjoub Langar

Bayesian networks for the evaluation of complex systems' availability……...139

El Hassene Ait Mokhtar, Radouane Laggoune and Alaa Chateauneuf

Observer design and feedback controller synthesis with observer in idempotent semiring……..143

Aldjia Nait Abdesselam, Radouane Kara and Jean Jacques Loiseau

Cross-layer energy-aware protocol for wireless sensor networks…….....147

Fares Kahlessenane, Bouallouche-Medjkoune Louiza and AÏssani Djamil

Comparison of Routing Protocols in Wireless Sensor Networks……..……..155

Samira Yessad, Louiza Bouallouche-Medjkoune and Djamil Aissani

Fairness Improvement of MAC in Wireless Ad Hoc Networks……..…163

Kamal Mehaoued, Larbi Sekhri and Malika Bourenane

Sponsors.

Author Index.

PRESENTATION

Verification and Evaluation of Computer and Communication Systems is a proceedings volume of selected papers presented at the Eight International Workshop VECOS (Bejaia, September 29 – 30, 2014).

The International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS) was created by an Euro-Maghrebian network of researchers in computer science. Its first edition, VECoS 2007, took place in Algiers, VECoS 2008 in Leeds, VECoS 2009 in Rabat, VECoS 2010 in Paris, and VECoS 2011 in Tunis, VECoS 2012 in Paris and VECoS 2013 in Florence. The aim of the VECoS workshop is to bring together researchers and practitioners, in the areas of verification, control, performance, quality of service, dependability evaluation and assessment, in order to discuss the state-of-the-art and the challenges in modern computer and communication systems in which functional and non-functional properties are strongly interrelated. Thus, the main motivation for VECoS is to encourage the cross-fertilization between the various formal verification and evaluation approaches, methods and techniques, and especially those developed for concurrent and distributed hardware/software systems. Beyond its technical and scientific goals, another main purpose of VECoS is to promote collaboration between participants in research and education in the area of computer science and engineering.

Topics

Topics of interest include:

- Model-checking
- Equivalence checking
- Abstraction techniques
- Compositional verification
- Parameterized verification
- Supervisory control
- Probabilistic verification
- Security protocols verification
- Performance and robustness evaluation
- Simulation techniques of discrete-event and hybrid systems
- Dependability assessment techniques
- QoS evaluation, planning and deployment
- Verification & validation of safety-critical systems
- RAMS (Reliability Availability Maintainability Safety) evaluation
- Certification standards for real-time systems

Application domains

Mobile and wireless networking, wireless sensor networks, communication protocols , telecommunication systems, ubiquitous systems, adaptive systems, real-time and embedded systems, programming languages, service oriented systems, workflow systems , web services, computer-supported collaborative work systems, flexible manufacturing systems, logistics systems, grid computing, massively parallel architectures, operations research.

Committees

Honorary Chairs
Pr Boualem Saïdani, Rector of Bejaia University
Pr Youcef Khelfaoui, Faculty of Exact Sciences, Bejaia University

General Chair
Pr Djamil Aïssani, LAMOS, University of Bejaïa, Algeria

Program Co-chairs
Pr Hassane Alla, GIPSA-Lab, Grenoble, France
Dr Louiza Bouallouche-Medjkoune, LAMOS, University of Bejaïa

Organizing Committee

Pr Adjabi Smail, Dr Semchedine Fouzi, Dr Baadache Abderahmane, Dr Laggoune Redouane, Kabyl Kamel, Khimoum Nordine, Dr Amad Mourad, Dr Boulfekhar Samra, Yessad samira, Larbi Ali, Bounouni Mehdi, Rebouh Nadjette, Atmani Mouloud, Bachiri Lina, Ouanteur Celia, Chelouah Leila, Touloum Soraya, Touche Nassim, Anzi Aicha, Madi Samia, Dairi Nassima, Roubeche Asma

VECoS Steering Committee

Hassane Alla , GIPSA Lab INPG Grenoble
Djamil Aissani, LAMOS, Université de Bejaia
Kamel Barkaoui_, CEDRIC CNAM Paris (Chair)
Hanifa Boucheneb, Veriform, Ecole Polytechnique de Montréal
Karim Djouani, LISSI UPEC, Vitry sur Seine
Mohamed Kaaniche, LAAS CNRS, Toulouse
Bruno Monsuez_, ENSTA - UIIS, Paris
Nihal Pekergin_, LACL UPEC, Créteil
Denis Poitrenaud, LIP6 UPMC, Paris
Tayssir Touili, LIAFA, Université Paris Diderot

Programme Committee of VECoS

- Djamil Aïssani, Research Unit LaMOS, University of Bejaia, Algeria
- Amar Aïssani, USTHB, Algiers, Algeria
- Yamine Ait Ameur, IRIT/ENSEEIHT Toulouse, France
- Otmane Ait Mohamed, Concordia University, Canada
- Hassane Alla, Univ Grenoble, France (co-chair)
- Kamel Barkaoui, CEDRIC Cnam Paris, France
- Faiza Belala, LIRE, UMC, Algeria
- Abdelfettah Belghith, ENSI, University of Manouba, Tunisia
- Belgacem Ben Hedia, LIST-CEA, France
- Saddek Bensalem, VERIMAG Grenoble, France
- Abdelmadjid Bouabdallah,Heudiasyc Lab, UTC, France

- Hanifa Boucheneb, École Polytechnique de Montréal, Canada
- Carla Ceatzu, University of Cagliari, Italy
- Tijani Chahed, Telecom SudParis, France
- Yufeng Chen, Xidian University, China
- Jean-Michel Couvreur, LIFO, Univ. Orléans, France
- Isabel Demongodin, LSIS Marseille, France
- Karim Djouani, LISSI, UPEC, France
- Laurence Duchien, LIFL, Lille, France
- Mohamed Escheikh, SysCom, ENIT, Tunisia
- Alessandro Fantecchi, Unifi, Italy
- Jean-Marc Faure, LURPA ENS Cachan, France
- Francesco Flammini, Ansaldo STS, Italy
- Mohamed Ghazel, INRETS, Villeneuve d'Ascq, France
- Latéfa Ghomri, Tlemcen University, Algeria.
- Bernd Heidergott, VU Amsterdam University, the Netherlands
- Serge Haddad, LSV ENS Cachan, Paris, France
- Malika Ioulalen, USTHB Alger, Algeria
- Mohamed Jmaïel, ENSI, Sfax, Tunisia
- Jorge Julvez, University of Zaragoza., Spain
- Mohamed Kaaniche, LAAS, Toulouse, France
- Nikolaï Kartashov, Université de Kiev, Ukraine
- Fabrice Kordon, LIP6 UPMC, France
- Matthieu Lemerre, LIST-CEA, France
- Rahim Kacimi, IRIT, Toulouse, France
- Mourad Maouche, Philadephia University, Jordan
- Louiza Bouallouche-Medjkoune, LaMOS, Bejaia University, Algeria (co-chair)
- Abdelhamid Mellouk, LISSI, UPEC, France
- Bruno Monsuez, ENSTA Paris, France
- Mohamed Mosbah, LaBRI , Bordeaux, France
- Nihal Pekergin, LACL,UPEC, France, France
- Olivier Perrin, INRIA-LORIA, Nancy, France
- Denis Poitrenaud, LIP6 Univ. Paris 6, France,
- Riadh Robbana, INSAT, Tunis, Tunisia
- Zaïdi Sahnoun, Université Constantine 2, Algeria
- Larbi Sekhri, Univ. Oran es Senia, Algérie
- Alice E. Smith, Auburn University, U.S.A.
- Natalia Sidorova, Technische universiteit Eindhoven, Nederlands
- Markus Siegle, Universität Munchen, Germany
- Thouraya Tebibel, ESI, Alger, Algeria
- Tayssir Touili, CNRS-LIAFA, France
- Farouk Toumani, LIMOS, Clermont-Ferrand II University, France
- Sadrine Vaton, Telecom Bretagne, Brest, France
- Karsten Wolf, Universitaet Rostock, Germany

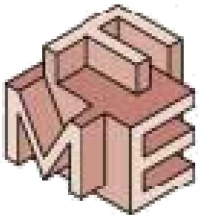
CONTACT

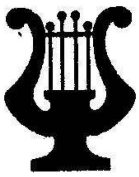
Research Unit LaMOS, University of Bejaia, Campus Targua Ouzamour, 06 000 Algeria
Tel : (213)34 21 08 00 Tel/Fax : (213)34 21 51 88
E-mail :lamos_bejaia@hotmail.com
http://www.lamos.org
http://www.univ-bejaia.dz
http://vecos.ensta-paristech.fr/2014/

Sponsors

Sponsors

VECoS 2014 will be held the 29th and 30th of September 2014 at the University of Bejaïa that is the main organizer together with the support of MeFoSyLoMa group, Formal Methods Europe, Cerist, and ATRST.





Author Index

AUTHOR INDEX

Abderrahmane Baadache 91
Alaa Chateauneuf 139
Aldjia Nait Abdesselam 143
Badr Eddine El Mohajir 55
Bernard Heidergott 19
Carla Seatzu 15
Chafia Bouanaka 33
Cherfia Taha Abdelmoutaleb 25
Djamil Aïssani 105, 113, 121, 147, 155
El Hassene Ait Mokhtar 139
Faiza Belala 33, 25
Fares Kahlessenane 147
Florent Peres 79
Hamza Sahli 33
Hichem Debbi 43
Hocine Souilah 91
Ismail Berrada 55
Jean Jacques Loiseau 143
Kamal Mehaoued 163
Kamel Barkaoui 25
Karim Dahmani 131
Larbi Sekhri 163
Louiza Bouallouche-Medjkoune 91, 105, 147, 155
Mahjoub Langar 131
Malika Bourenane 163
Miloud Bennama 65
Mohamed Ghazel 79
Mohammed Al Achhab 55
Mohand Yazid 105
Mouloud Atmani 121
Mourad Amad 113
Nadjette Rebouh 97
Nassim Sahki 105
Outman El Hichami 55
Radouane Kara 143
Radouane Laggoune 139
Saddek Bensalem 07
Samira Yessad 155
Thouraya Bouabana-Tebibel 65
Yassine Hadjadj-Aoul 121
Zouweyna Mordji 113

LaMOS Editions, 2014
ISBN : 978-9931-9140-3-7
Legal Deposit : 4119 - 2014

Achevé d'impression
THAIS Production . Béjaia
http://www.thaisprod.com/

Verification and Evaluation of Computer and Communication Systems is a proceedings volume of selected papers presented at the Eight International Workshop VECoS *(Bejaia, september 29 - 30, 2014)*.

The International Workshop on Verification and Evaluation of Computer and Communication Systems *(VECoS)* was created by an Euro-Maghrebian network of researchers in computer science. Its first edition, VECoS 2007, took place in Algiers, VECoS 2008 in Leeds, VECoS 2009 in Rabat, VECoS 2010 in Paris, and VECoS 2011 in Tunis, VECoS 2012 in Paris and VECoS 2013 in Florence.

The aim of the VECoS workshop is to bring together researchers and practitioners, in the areas of verification, control, performance, quality of service, dependability evaluation and assessment, in order to discuss the state-of-the-art and the challenges in modern computer and communication systems in which functional and non-functional properties are strongly interrelated.

Thus, the main motivation for VECoS is to encourage the cross-fertilization between the various formal verification and evaluation approaches, methods and techniques, and especially those developed for concurrent and distributed hardware/software systems.

Beyond its technical and scientific goals, another main purpose of VECoS is to promote collaboration between participants in research and education in the area of computer science and engineering.

With Usb memory card

ISBN 978-9931-9140-3-7

ISBN: 978 - 9931 - 9140 - 3 - 7
Dépot légal : 4119 - 2014