Mohamed GHAZEL, IFSTTAR, Lille, France
Mohamed JMAIEL, DRC & ReDCAD, ENIS-University of Sfax, Sfax, Tunisia

VECoS'2016

Verification and Evaluation of Computer and Communication Systems

10th International Workshop

Tunis, Tunisia, October 6-7, 2016

Proceedings

©Copyright 2016 for the individual papers by the papers' authors. Copying permitted for private and academic purposes. This volume is published and copyrighted by its editors.

These proceedings are published online by the editors as Volume 1689 at
CEUR Workshop Proceedings
ISSN 1613-0073
http://ceur-ws.org/Vol-1689

PREFACE

These are the proceedings of the 10th International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS'2016) held the 6th and 7th of October 2016 at the Tunisia Polytechnic School that is the main organizer together with the support of Digital Research Center of Sfax, MeFoSyLoMa Group and Formal Methods Europe.

The International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS) was created by an Euro-Mediterranean 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, VECoS 2013 in Florence, VECoS 2014 in Bejaia and VECos 2015 in Bucharest.

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,the new developments and the challenges in modern computer and communication systems in which functional and extra-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, 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. We welcome contributions describing original research, practical experience reports and tool descriptions/demonstrations in the areas of verification, control, performance, quality of service and dependability evaluation.

The invited speakers for VECoS 2015 are: Eric Badouel from SUMO, IRISA Rennes and Serge Haddad from LSV, ENS Cachan, France.

We received 26 contributions which have been thoroughly reviewed for originality, significance and relevance (108 reviews in total). For each paper three to five reviews were made. The program committee has accepted 13 papers for full presentation.

Without support of our academic and corporate sponsors, the enormous effort of authors, reviewers, steering committee and the local organizational team this tenth workshop wouldn't provide such an interesting program. We would like to thank all these persons.

We also thank the authors for their submissions and the program committee members for their hard work.

October 2016 Mohamed GHAZEL and Mohamed JMAIEL

ORGANIZING COMMITTEE

Abichou Azgal, Tunisia Polytechnic School (**General Chair**)
Adel Benzina, Tunisia Polytechnic School (**Chair**)
Takoua Abdellatif, Tunisia Polytechnic School
Emna Kalai, Tunisia Polytechnic School
Hela Ben Salah, Tunisia Polytechnic School
Aymen Gammoudi, Tunisia Polytechnic School

STEERING COMMITTEE

Hassane Alla, GIPSA Lab, INPG Grenoble
Djamil Aissani, LAMOS, Université de Bejaia
Kamel Barkaoui, CEDRIC, CNAM Paris (**Chair**)
Hanifa Boucheneb, Ecole Polytechnique de Montréal
Francesco Flammini, Ansaldo STS, Milano
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

PROGRAM COMMITTEE

Takoua Abdellatif, EPT, Tunis
Djamil Aissani, LAMOS, Bejaia
Hassane Alla, GIPSA, Grenoble
Yamine Ait Ameur, IRIT/ENSEEIHT, Toulouse
Mohamed Faouzi Atig, Uppsala University
Kamel Barkaoui, Cedric Cnam, Paris
Faïza Belala, LIRE, IC2, Algeria
Saddek Bensalem, VERIMAG Grenoble, France
Adel Benzina, LESCN-EPT, Tunis
Mohamed Tahar Bhiri, ISIM, Sfax
Simon Bliudze, EPFL, Lausanne
Patrice Bonhomme, LI, University of Tours
Frédéric Boniol, ONERA, Toulouse
Abdelmadjid Bouabdallah, Heudiasyc Lab, Compiegne
Ahmed Bouajjani, LIAFA, Paris
Hanifa Boucheneb, Ecole Polytechnique de Montréal
Mahmoud Boufaida, LIRE Univ. Constantine 2
Florian Brandner, Telecom ParisTech
Awatef Hicheur Cairns, Cedric, Cnam, Paris
Annie Choquet-Geniet, LISI, Ensma, Poitiers
Feng Chu, IBISC, Evry
Gabriel Ciobanu, Romanian Academy, ICS, Iasi
Liliana Cucu-Grosjean, INRIA Paris-Rocquencourt
Isabel Demongodin, LSIS Marseille
Josée Desharnais, Université Laval, Quebec
Karim Djouani, LISSI UPEC, Créteil
Lamia Atma Djoudi, Synchrone Technologies, Paris
Mohammed Erradi, ENSIAS, Rabat
Mohamed Escheikh, ENIT,Tunis
Alessandro Fantecchi, Unifi, Italy
Francesco Flammini, Ansaldo STS, Milano
Fabio Gadducci, CSD, University of Pisa
Mohamed Ghazel, IFSTTAR, Lille (**co-chair**)
Khaled Ghedira, ANPR, Tunis
Latéfa Ghomri, University of Tlemcen
Mohamed Graiet, MIRACL, Monastir
Mohand-Said Hacid , LIRIS, Lyon
Serge Haddad, LSV ENS Cachan
Ahmed Hadj-Kacem, ReDCAD, Sfax
Imen Ben Hafaiedh, LIP2 ISI , Tunis
Belgacem Ben Hedia, LIST-CEA, Saclay
Bernd Heidergott, VU Amsterdam University
Malika Ioulalen, USTHB Alger
Mohamad Jaber, American University of Beirut
Ali Jaoua, C.E, Qatar University
Chadlia Jerad, ENSI, Tunis
Mohamed Jmaiel, DRC & ReDCAD, Sfax , Tunisia (**co-chair**)
Jorge Julvez, University of Zaragoza
Mohamed Kaaniche, LAAS, Toulouse
Kais Klai, LIPN , Villetaneuse
Ouajdi Korbaa, LI3, ISITCom, Sousse
Moez Krichen, Albaha University, KSA
Lars Michael Kristensen, Bergen University College, Bergen
Zhiwu Li, Xidian Univ, Xian
Gaiyun Liu, Xidian Univ., Xian
Mourad Maouche, Philadephia University, Amman
Louiza Bouallouche Medjkoune, LAMOS, Bejaia
Otmane Ait Mohamed, Concordia University, Montreal
Bruno Monsuez, ENSTA ParisTech, Saclay
Mohamed Mosbah, LaBRI, Bordeaux
Hassan Mountassir, LIFC University Franche-Comté
Ayoub Nouri, Cea Leti, Grenoble
Meriem Ouederni, IRIT, Toulouse
Mourad Oussalah, LINA, Nantes
Claire Pagetti, ONERA, Toulouse
Vladimir-Alexandru Paun, ENSTA ParisTech, Saclay
Nihal Pekergin, LACL, Créteil
Olivier Perrin, INRIA-LORIA, Nancy
Denis Poitrenaud, LIP6, Paris
Narjess Ben Rejeb, INSAT, Tunis
Ahmed Rezine, Linköping University
Riadh Robbana, INSAT, Tunis
Zaïdi Sahnoun, LIRE, Constantine
Zohra Sbaï, ENIT, Tunis
Carla Seatzu, University of Cagliari
Larbi Sekhri, Univ. es Senia, Oran
Ahmed Serhrouchni, Telecom ParisTech
Sofiene Tahar, Concordia University
Nicolae Tapus, University POLITEHNICA of Bucharest
Nadia Tawbi, Université Laval, Quebec
Thouraya Tebibel, ESI, Alger
Tayssir Touili, LIPN Villetaneuse
Farouk Toumani, LIMOS, Clermont-Ferrand
Ahlem Triki, VERIMAG Grenoble
Florin Popentiu Vladicescu, University of Oradea
Karsten Wolf, Universitaet Rostock
Habib Youssef, ISITCom Sousse
Belhassen Zouari, SupCom

CONTENTS

I Session: Probabilistic verification **7**

Exact and Approximate Diagnosis of Probabilistic Systems (***Invited talk***)
Serge HADDAD 9

Performance Evaluation of Complex Systems Using the SBIP Framework
Ayoub NOURI, *Marius* BOZGA, *Axel* LEGAY *and Saddek* BENSALEM 11

Statistical Model Checking of CSMA/CA in WSNs
Zohra HMIDI, *Laid* KAHLOUL, *Saber* BENHARZALLAH *and Cherifa* OTHMANE 27

Formal Probabilistic Analysis of Lifetime for a WSN-based Monitoring Application
Maissa ELLEUCH, *Osman* HASAN, *Sofiene* TAHAR *and Mohamed* ABID 43

II Session: Fault tolerance and performance evaluation **59**

Dynamic Feasibility Windows Reconfiguration For a Failure-Tolerant PFair Scheduling
Yves MOUAFO TCHINDA, *Annie* GENIET-CHOQUET *and Gaëlle* LARGETEAU-SKAPIN 61

On the Modeling and Performance Evaluation of Cloud Computing Centers Using M/G/c/c+r Queuing System
Assia OUTAMAZIRT, *Mohamed* ESCHEIKH, *Djamil* AÏSSANI, *Kamel* BARKAOUI *and Ouiza* LEKADIR . 77

Performance Study of Frame Aggregation Mechanisms in the New Generation WiFi
Mohand YAZID, *Louiza* BOUALLOUCHE-MEDJKOUNE *and Djamil* AÏSSANI 85

Using Model-Checking Techniques for Diagnosability Analysis of Intermittent Faults - A Railway Case-Study
Abderraouf BOUSSIF *and Mohamed* GHAZEL 93

III Session: Model-checking & test **105**

Specifying Weak Memory Consistency with Temporal Logic
Maximilian SENFTLEBEN *and Klaus* SCHNEIDER 107

A Model Based Approach to Combine Load and Functional Tests for Service Oriented Architectures
Afef JMAL MAALEJ *and Moez* KRICHEN 123

Relative Correctness: A Bridge Between Proving and Testing
Wided GHARDALLOU, *Nafi* DIALLO *and Ali* MILI 141

IV Session: Protocols and distrubuted systems **157**

Petri Net Synthesis from Labelled Transition Systems and from Languages (***Invited talk***)
Eric BADOUEL 159

ePassport Protocol on the Spi Calculus
Safa SAOUDI, *Souheib* YOUSFI *and Riadh* ROBBANA 161

Model-based Design and Formal Analysis of Arbitration Protocols on Multiple-Bus Architecture
Imene BENHAFAIEDH *and Maroua* BEN SLIMANE 177

Towards correct Evolution of Conversation Protocols
Sarah BENYAGOUB, *Meriem* OUEDERNI *and Yamine* AIT AMEUR 193