

2010 Seventh International Conference on the Quantitative Evaluation of Systems

(QEST 2010)

**Williamsburg, Virginia, USA
15 – 18 September 2010**



**IEEE Catalog Number: CFP10348-PRT
ISBN: 978-1-4244-8082-1**

Seventh International Conference on the Quantitative Evaluation of Systems

QEST 2010

Table of Contents

Message from the General Co-chairs.....	ix
Message from the Program Committee Co-chairs.....	x
Chairs and Committees.....	xii
Technical Program Committee.....	xiii
External Reviewers.....	xiv

Invited Talk 1

The Role of Quantitative Models in Building Scalable Cloud Infrastructures	3
<i>Joseph L. Hellerstein</i>	

Session 1: Probabilistic Model Checking

Model Checking Multivariate State Rewards	7
<i>Bo Friis Nielsen, Flemming Nielson, and Hanne Riis Nielson</i>	
Information Hiding in Probabilistic Concurrent Systems	17
<i>Miguel E. Andrés, Catuscia Palamidessi, Peter van Rossum, and Ana Sokolova</i>	
Symblicit Calculation of Long-Run Averages for Concurrent Probabilistic Systems	27
<i>Ralf Wimmer, Bettina Braitting, Bernd Becker, Ernst Moritz Hahn, Pepijn Crouzen, Holger Hermanns, Abhishek Dhama, and Oliver Theel</i>	
DTMC Model Checking by SCC Reduction	37
<i>Erika Ábrahám, Nils Jansen, Ralf Wimmer, Joost-Pieter Katoen, and Bernd Becker</i>	

Session 2: Performance Evaluation and Queuing Theory

A Phase-Type Representation for the Queue Length Distribution of a Semi-Markovian Queue	49
<i>Benny Van Houdt</i>	
A Prediction Model for Software Performance in Symmetric Multiprocessing Environments	59
<i>Jens Happe, Henning Groenda, Michael Hauck, and Ralf H. Reussner</i>	

An Evaluation of Entropy Based Approaches to Alert Detection in High Performance Cluster Logs	69
<i>Adetokunbo Makanju, A. Nur Zincir-Heywood, and Evangelos E. Milios</i>	
DSPN-Tool: A New DSPN and GSPN Solver for GreatSPN	79
<i>Elvio Amparore Gilberto and Susanna Donatelli</i>	
A Toolbox for Component-Wise Bounds for Steady-State Distribution of a DTMC	81
<i>Ana Bušić and J. M. Fourneau</i>	
PSI2: Envelope Perfect Sampling of Non Monotone Systems	83
<i>Ana Bušić, Bruno Gaujal, Gaël Gorgo, and Jean-Marc Vincent</i>	
Session 3: Distribution Fitting	
ProFiDo - The Processes Fitting Toolkit Dortmund	87
<i>Falko Bause, Peter Buchholz, and Jan Kriege</i>	
Fitting Markovian Arrival Processes by Incorporating Correlation into Phase Type Renewal Processes	97
<i>Falko Bause and Gábor Horváth</i>	
Canonical Form Based MAP(2) Fitting	107
<i>Levente Bodrog, Peter Buchholz, Jan Kriege, and Miklós Telek</i>	
Invited Talk 2	
Reflections on the Numerical Solution of Markov Chains	119
<i>William J. Stewart</i>	
Session 4: Compositional Probabilistic Model Checking	
Compositional Design Methodology with Constraint Markov Chains	123
<i>Benoît Caillaud, Benoît Delahaye, Kim G. Larsen, Axel Legay, Mikkel L. Pedersen, and Andrzej Wąsowski</i>	
Compositional Verification of Probabilistic Systems Using Learning	133
<i>Lu Feng, Marta Kwiatkowska, and David Parker</i>	
Automatic Compositional Reasoning for Probabilistic Model Checking of Hardware Designs	143
<i>Jayanand Asok Kumar and Shobha Vasudevan</i>	
MC4CSLTA: An Efficient Model Checking Tool for CSLTA	153
<i>Elvio Amparore Gilberto and Susanna Donatelli</i>	
Abstraction and Model Checking in the PEPA Plug-In for Eclipse	155
<i>Michael J. A. Smith</i>	
Model Checking Randomized Algorithms with Java PathFinder	157
<i>Xin Zhang and Franck van Breugel</i>	

Session 5: Foundations

p-Automata: New Foundations for Discrete-Time Probabilistic Verification	161
<i>Michael Huth, Nir Piterman, and Daniel Wagner</i>	
The Measurable Space of Stochastic Processes	171
<i>Luca Cardelli and Radu Mardare</i>	
Hybrid Semantics for PEPA	181
<i>Luca Bortolussi, Vashti Galpin, Jane Hillston, and Mirco Tribastone</i>	
AWPS - Simulation Based Automated Web Performance Analysis and Prediction	191
<i>Martin Pinzger and Gabriele Kotsis</i>	
SABRE: A Tool for Stochastic Analysis of Biochemical Reaction Networks	193
<i>Frederic Didier, Thomas A. Henzinger, Maria Mateescu, and Verena Wolf</i>	
Meddly: Multi-terminal and Edge-Valued Decision Diagram Library	195
<i>Junaid Babar and Andrew Miner</i>	

Session 6: Markov Decision Processes

Reasoning about MDPs as Transformers of Probability Distributions	199
<i>Vijay Anand Korthikanti, Mahesh Viswanathan, Gul Agha, and YoungMin Kwon</i>	
Time-Bounded Reachability Probabilities in Continuous-Time Markov Decision Processes	209
<i>Martin R. Neuhäuser and Lijun Zhang</i>	
Timed Branching Processes	219
<i>Ashutosh Trivedi and Dominik Wojtczak</i>	

Session 7: Solution Techniques

Transient Analysis of Generalised Semi-Markov Processes Using Transient Stochastic State Classes	231
<i>András Horváth, Lorenzo Ridi, and Enrico Vicario</i>	
Automating the Mean-Field Method for Large Dynamic Gossip Networks	241
<i>Rena Bakhshi, Jörg Endrullis, Stefan Endrullis, Wan Fokkink, and Boudewijn Haverkort</i>	
Rare Event Simulation for Highly Dependable Systems with Fast Repairs	251
<i>Daniël Reijnsbergen, Pieter-Tjerk de Boer, Werner Scheinhardt, and Boudewijn Haverkort</i>	

Session 8: Applications 1

Quantifying Opacity	263
<i>Béatrice Bérard, John Mullins, and Mathieu Sassolas</i>	
Fortuna: Model Checking Priced Probabilistic Timed Automata	273
<i>Jasper Berendsen, David N. Jansen, and Frits Vaandrager</i>	
Searching for Heavy Tails in Web Robot Traffic	282
<i>Derek Doran and Swapna S. Gokhale</i>	

On the Theory of Stochastic Processors292
Parasara Sridhar Duggirala, Sayan Mitra, Rakesh Kumar, and Dean Glazeski

Tutorials

From Systems to Components: Constructive Methods for Product-Form
Solutions305

Andrea Marin and Maria Grazia Vigliotti

Quantitative Evaluation of Security Metrics306

William H. Sanders

Scalable Differential Analysis of Large Process Algebra Models307

Mirco Tribastone

Reliability Models308

Larry Leemis

Author Index309