

Vittorio Bilò, Antonio Caruso (Eds.)

ICTCS 2016

Seventeen Italian Conference on
Theoretical Computer Science

Lecce, Italy, September 7–9, 2016.
Proceedings.

ISSN 1613-0073

CEUR Workshop Proceedings, Volume 1720 (<http://ceur-ws.org/Vol-1720>)

Copyright @2016 for the individual papers by the papers'authors. Copying permitted for private and academic purpose. Re-publication of material from this volume requires permission by the copyright owners.

Editor's address:

Università del Salento

Dipartimento di Matematica e Fisica "Ennio De Giorgi"

Via per Arnesano, Campus Ecotekne

73100 Lecce, Italy.

antonio.caruso@unisalento.it, vittorio.bilo@unisalento.it

Preface

The Italian Conference on Theoretical Computer Science (ICTCS) is the annual conference organized by the Italian Chapter of the European Association for Theoretical Computer Science (EATCS). The scope of the meeting is fostering the cross-fertilization of ideas stemming from different areas of Theoretical Computer Science. Hence, it represents an occasion for meeting and exchanging ideas and for sharing experiences between researchers; it also provides an ideal environment where junior researchers and PhD students can meet senior researchers.

Topics of interest for ICTCS are: agents, algorithms, argumentation, automata theory, automated theorem proving, complexity theory, computational logic, computational social choice, concurrency, cryptography, discrete mathematics, distributed computing, dynamical systems, formal methods, game theory, graph theory, knowledge representation languages, model checking, process algebras, quantum computing, rewriting systems, security and trust, semantics, specification and verification, systems biology, types.

This volume contains papers presented at the 17th Italian Conference on Theoretical Computer Science (ICTCS'16), held in Lecce during September 7-9, 2016, together with abstracts of invited lectures by Giampaolo Bella (Università di Catania) and Gianluigi Greco (Università della Calabria). Two types of contributions were solicited: *regular papers* and *short communications*. The former consisted in full original papers, presenting novel results, not appeared or submitted elsewhere, while the latter encompassed extended abstracts of papers already appeared, or submitted, or to be submitted elsewhere; papers reporting on ongoing researches on which the authors wished to get feedback and possibly intended to be included in future publications; overviews of PhD-theses, research projects, and so on. We received a total of 35 submissions. Regular papers and short communications were reviewed by, respectively, three and two referees who judged them for originality, quality, correctness and consistency with the topics of the conference. Based on the referees' reports, the Program Committee decided to accept a total of 29 submissions: 15 regular papers and 14 short communications.

We would like to thank all the authors who responded to the call for papers and our invited speakers Giampaolo Bella and Gianluigi Greco.

Furthermore, we thank the members of the Program Committee and the subreferees for their excellent and qualified work.

We gratefully acknowledge sponsorship from the Università del Salento and its Department of Mathematics and Physics “Ennio De Giorgi”, the Fondazione Puglia, and the Italian Chapter of the European Association of Theoretical Computer Science.

Lecce
September 20, 2016

Vittorio Bilò
Antonio Caruso

Conference Organization

ICTCS'16 is organized by the department of Mathematics and Physics "Ennio De Giorgi", University of Salento in cooperation with the Italian chapter of EATCS.

Conference Chairs

Vittorio Bilò	Università del Salento
Antonio Caruso	Università del Salento

Program Committee

Luca Aceto	Reykjavik University
Stefano Bistarelli	Università di Perugia
Chiara Bodei	Università di Pisa
Andrea Clementi	Università "Tor Vergata" di Roma
Rocco De Nicola	IMT - School for Advanced Studies, Lucca
Mariangiola Dezani	Università di Torino
Michele Flammini	Università di L'Aquila
Giovanni Pighizzini	Università di Milano
Geppino Pucci	Università di Padova
Paola Vocca	Università della Tuscia

Additional Reviewers

Basile, Davide	García-Pérez, Álvaro	Padovani, Luca
Bedogni, Luca	Giuliodori, Paolo	Pasquale, Francesco
Ceccarello, Matteo	Goldwurm, Massimiliano	Pomello, Lucia
Crafa, Silvia	Knapik, Michał	Prencipe, Giuseppe
D'Angelo, Gianlorenzo	Leucci, Stefano	Proietti, Guido
D'Emidio, Mattia		Reiter, Fabian
Della Monica, Dario	Manea, Florin	Santini, Francesco
Deng, Yuxin	Mantaci, Sabrina	Sokolova, Ana
Fantozzi, Carlo	Massink, Mieke	Sproston, Jeremy
	Merro, Massimo	Stievenart, Quentin

Fell, Alexander	Miculan, Marino
Ferraioli, Diodato	Milazzo, Paolo
Ferrari, Gianluigi	Monaco, Gianpiero
Fiorentini, Camillo	Moscardelli, Luca
Francalanza, Adrian	Mukherjee, Manideepa
Gadducci, Fabio	Natale, Emanuele
Galletta, Letterio	Nenzi, Laura

Sponsoring Institutions

Dipartimento di Matematica e Fisica 'Ennio De Giorgi'
Fondazione Puglia

Table of Contents

ICTCS 2016

Preface	III
Content	VII

Invited Speakers

Cybersecurity's Way Forward: to get Beautiful or Invisible	1
<i>Gianpaolo Bella</i>	
Mechanisms with Verification and Fair Allocation Problems	8
<i>Gianluca Greco</i>	

Regular Papers

Non-Atomic One-Round Walks in Polynomial Congestion Games ..	11
<i>Cosimo Vinci</i>	
Conjunctive Query Answering via a Fragment of Set Theory	23
<i>Domenico Cantone, Marianna Nicolosi-Asmundo, and Daniele Francesco Santamaria</i>	
A variant of Turing machines with no control states and its connection to bounded temporal memory	36
<i>Domenico Cantone and Salvatore Cristofaro</i>	
Interval Temporal Logic Model Checking Based on Track Bisimilarity and Prefix Sampling	49
<i>Laura Bozzelli, Alberto Molinari, Angelo Montanari, Adriano Peron, and Pietro Sala</i>	
Types for Immutability and Aliasing Control	62
<i>Paola Giannini, Marco Servetto, and Elena Zucca</i>	
Runtime checks as nominal types	75
<i>Paola Giannini, Marco Servetto, and Elena Zucca</i>	

On the bisimulation hierarchy of state-to-function transition systems	88
<i>Marino Miculan and Marco Peressotti</i>	
A Locally Connected Spanning Tree Can Be Found in Polynomial Time on Simple Clique 3-Trees	103
<i>Tiziana Calamoneri, Matteo Dell’Orefice, and Angelo Monti</i>	
Gathering of Robots in a Ring with Mobile Faults	122
<i>Shantanu Das, Riccardo Focardi, Flaminia L. Luccio, Euripides Markou, Davide Moro, and Marco Squarcina</i>	
Improved Protocols for Luminous Asynchronous Robots	136
<i>Mattia D’Emidio, Gabriele Di Stefano, Daniele Frigioni, Alfredo Navarra</i>	
Active Spreading in Networks	149
<i>G. Cordasco, L. Gargano, and A. A. Rescigno</i>	
The cost of securing IoT communications	163
<i>Chiara Bodei and Letterio Galletta</i>	
A semantics for disciplined concurrency in COP	177
<i>Matteo Busi, Pierpaolo Degano, and Letterio Galletta</i>	
On Exchange-Robust and Subst-Robust Primitive Partial Words . .	190
<i>Ananda Chandra Nayak, Amit K. Srivastava and Kalpesh Kapoor</i>	
Disjunctive Probabilistic Modal Logic is Enough for Bisimilarity on Reactive Probabilistic Systems	203
<i>Marco Bernardo and Marino Miculan</i>	

Short Communications

Reversible Semantics in Session-based Concurrency	221
<i>Claudio Antares Mezzina and Jorge A. Pérez</i>	
Towards A Practical Model of Reactive Communication-Centric Software	227
<i>Jaime Arias, Mauricio Cano, and Jorge A. Pérez</i>	
Minimal and Reduced Reversible Automata	234
<i>Giovanna J. Lavado, Giovanni Pighizzini, and Luca Prigioniero</i>	

Relating paths in transition systems: the fall of the modal mu-calculus	240
<i>Catalin Dima, Bastien Maubert, and Sophie Pinchinat</i>	
An unifying framework for compacting Petri nets behaviors	245
<i>Giovanni Casu and G. Michele Pinna</i>	
Additional Winning Strategies in Two-Player Games	251
<i>Vadim Malvone and Aniello Murano</i>	
Deadlock analysis with behavioral types for actors.	257
<i>Vincenzo Mastandrea</i>	
On the Clustered Shortest-Path Tree Problem	263
<i>Mattia D'Emidio, Luca Forlizzi, Daniele Frigioni, Stefano Leucci, Guido Proietti</i>	
Influence Maximization in the Independent Cascade Model	269
<i>Gianlorenzo D'Angelo, Lorenzo Severini, and Yllka Velaj</i>	
A Mechanism Design Approach for Allocation of Commodities	275
<i>Stefano Bistarelli, Rosario Culmone, Paolo Giuliodori and Stefano Mugnoz</i>	
Merging Frequent Summaries	280
<i>Massimo Cafaro and Marco Pulimeno</i>	
On Maximal Chain Subgraphs and Covers of Bipartite Graphs	286
<i>Tiziana Calamoneri and Mattia Gastaldello and Arnaud Mary and Marie-France Sagot and Blerina Sinaimeri</i>	
Author Index	292

Author Index

A		M	
Arias Jaime	227	Malvone Vadim	251
B		Mararo Aniello	251
Bella Giampaolo	1	Markou Euripides	122
Bernardo Marco	203	Mary Arnaud	286
Bistarelli Stefano	275	Mastandrea Vincenzo	257
Bodei Chiara	163	Maubert Bastien	240
Bozzelli Laura	49	Mezzina Claudio Antares	221
Busi Matteo	177	Miculan Marino	88, 203
C		Molinari Alberto	49
Cafaro Massimo	280	Montanari Angelo	49
Calamoneri Tiziana	103, 286	Monti Angelo	103
Cano Mauricio	227	Moro Davide	122
Cantone Domenico	23, 36	Mugnoz Stefano	275
Casu Giovanni	245	N	
Cordasco Gennaro	149	Navarra Alfredo	136
Cristofaro Salvatore	36	Nayak Ananda Chandra	190
Culmone Rosario	275	Nicolosi-Asmundo Marianna	23
D		P	
D'Angelo Gianlorenzo	269	Pérez Jorge A.	221, 227
D'Emilio Mattia	136, 263	Peressotti Marco	88
Das Shantanu	122	Peron Adriano	49
Degano Pierpaolo	177	Pighizzini Giovanni	234
Dell'Orefice Matteo	103	Pinchinat Sophie	240
Di Stefano Gabriele	136	Pinna G. Michele	245
Dima Catalin	240	Prigioniero Luca	234
F		Proietti Guido	263
Focardi Riccardo	122	Pulimeno Marco	280
Forlizzi Luca	263	R	
Frangioni Daniele	136	Rescigno Adele A.	149
Frigioni Daniele	263	S	
G		Sagot Marie-France	286
Galletta Letterio	163, 177	Sala Pietro	49
Gargano Luisa	149	Santamaria Daniele Francesco	23
Gastaldello Mattia	286	Servetto Marco	62, 75
Giannini Paola	62, 75	Severini Lorenzo	269
Giuliodori Paolo	275	Sinaimeri Blerina	286
Greco Gianluca	8	Squaracina Marco	122
K		Srivastava Amit K.	190
Kapoor Kalpesh	190	V	
L		Velaj Yllka	269
Lavado Giovanna J.	234	Vinci Cosimo	11
Leucci Stefano	263	Z	
Luccio Flaminia L.	122	Zucca Elena	62, 75