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Descriptional Complexity of Formal Systems

19th IFIP WG 1.02 International Conference, DCFS 2017
Milano, Italy, July 3–5, 2017
Proceedings

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Preface

The 19th International Conference of Descriptional Complexity of Formal Systems (DCFS 2017) was held in Milan during July 3–5, 2017. It was jointly organized by the Working Group 1.02 on Descriptional Complexity of the International Federation for Information Processing (IFIP) and by the Department of Computer Science (Dipartimento di Informatica) of the University of Milan (Università degli Studi di Milano).

Descriptional complexity is a field in computer science that deals with the size of all kinds of objects that occur in computational models, such as Turing machines, finite automata, grammars, splicing systems, and others. The topics of this conference are related to all aspects of descriptional complexity and include, but are not limited to:

- Automata, grammars, languages, and other formal systems; various modes of operations and complexity measures
- Succinctness of description of objects, state-explosion-like phenomena
- Circuit complexity of Boolean functions and related measures
- Size complexity of formal systems
- Structural complexity of formal systems
- Trade-offs between computational models and mode of operation
- Applications of formal systems – for instance in software and hardware testing, in dialogue systems, in systems modeling or in modeling natural languages – and their complexity constraints
- Co-operating formal systems
- Size or structural complexity of formal systems for modeling natural languages
- Complexity aspects related to the combinatorics of words
- Descriptional complexity in resource-bounded or structure-bounded environments
- Structural complexity as related to descriptional complexity
- Frontiers between decidability and undecidability
- Universality and reversibility
- Nature-motivated (bio-inspired) architectures and unconventional models of computing
- Blum static (Kolmogorov/Chaitin) complexity, algorithmic information

DCFS became an IFIP working conference in 2016, continuing the former Workshop on Descriptional Complexity of Formal Systems, which was a merger in 2002 of two other workshops: FDSR (Formal Descriptions and Software Reliability) and DCAGRS (Descriptional Complexity of Automata, Grammars and Related Structures). DCAGRS was previously held in Magdeburg (1999), London (2000), and Vienna (2001). FDSR was previously held in Paderborn (1998), Boca Raton (1999), and San Jose (2000). Since 2002, DCFS has been successively held in London, Ontario, Canada (2002), Budapest, Hungary (2003), London, Ontario, Canada (2004), Como, Italy (2005), Las Cruces, New Mexico, USA (2006), Nový Smokovec, High Tatras, Slovakia (2007), Charlottetown, Prince Edward Island, Canada (2008), Magdeburg,

Germany (2009), Saskatoon, Canada (2010), Gießen, Germany (2011), Braga, Portugal (2012), London, Ontario, Canada (2013), Turku, Finland (2014), Waterloo, Ontario, Canada (2015), and Bucharest, Romania (2016).

This volume contains the papers of the four invited talks and 20 contributed papers presented at DCFS 2017.

The invited talks have been given by:

- Jürgen Dassow (Otto von Guericke University, Magdeburg, Germany)
- Dora Giammarresi (University of Rome Tor Vergata, Italy)
- Stavros Konstantinidis (Saint Mary's University, Halifax/NS, Canada)
- Orna Kupferman (The Hebrew University, Jerusalem, Israel)

We are grateful to all invited speakers for accepting our invitation and for their excellent presentations.

The 20 contributed papers were selected by the Program Committee (PC) out of a total of 26 submissions, by a total of 54 authors from 21 countries (76.9% acceptance rate). The selection was made on the basis of at least three reviews per submission, considering originality, quality, significance, and presentation. We thank all authors who submitted their work for consideration to DCFS 2017. We wish to thank all PC members and external reviewers for their competent and timely handling of the submissions. The success of the scientific program is due to their hard work.

During the selection process and the preparation of these proceedings, we used the EasyChair conference management system, which provided excellent support. We wish to thank the editorial team at Springer, in particular Alfred Hofmann and Anna Kramer, for the efficient production of this volume.

We gratefully acknowledge the support of the University of Milan (Università degli Studi di Milano, Dipartimento di Informatica) and of the Italian Chapter of the European Association for Theoretical Computer Science (EATCS).

Special thanks for the website design and maintenance are due to Luca Prigioniero (University of Milan).

We hope that, as in the past, DCFS 2017 will be a scientifically most valuable and exciting event and, in particular, the starting point for new research and co-operations.

We look forward to seeing this year's participants and many others in Halifax at DCFS 2018!

July 2017

Giovanni Pighizzini
Cezar Câmpeanu

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