31st International Conference on Foundations of Software Technology and Theoretical Computer Science

FSTTCS 2011, December 12–14, 2011, Mumbai, India

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Preface

The 31^{st} international conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2011) was held at Indian Institute of Technology, Bombay from December 12 to December 14, 2011. This proceedings volume contains contributed papers and (extended) abstracts of invited talks presented at the conference.

FSTTCS is the annual flagship conference of the Indian Association for Research in Computing Science (IARCS). Over the past 31 years, the conference has consistently attracted top-quality submissions, and the legacy continued this year as well. There were a total of 116 submissions, with contributing authors from 32 countries, spanning 6 continents. Most of these were high-quality papers, and the competition for making it to the final list of accepted papers was very stiff. We wish to thank all authors of submitted papers for helping make FSTTCS such a competitive conference.

The program committee, in which we had the privilege of working with 30 distinguished colleagues from 13 countries, spent almost two months reviewing and discussing in great detail the strengths and weaknesses of submitted papers. The committee also sought help from 243 external reviewers, and was able to obtain a total of 447 reviews for the contributed papers. All papers within the scope of the conference had at least 3 expert reviews, and all but a few papers were evaluated by 4 independent reviewers. Multiple rounds of elimination and intense discussions and debates followed to help us narrow down the set of papers to be accepted. A total of 37 papers were finally selected for presentation at the conference. Several very good papers had to be left out of this list owing to stiff competition. Our thanks to all members of the program committee for lending their valuable time, expertise and acumen for this significant task. Without their inputs, hard work and detailed critical comments, it would not have been possible to maintain the high standards that FSTTCS has set for itself over the years. We would also like to take this opportunity to thank all external reviewers for their detailed comments and critical assessment of papers.

Six eminent computer scientists readily agreed to travel from different parts of the world to deliver invited talks at the conference. We would like to thank Susanne Albers, Phokion G. Kolaitis, John C. Mitchell, Madhu Sudan, Moshe Y. Vardi and Umesh V. Vazirani for enriching the conference with their invited talks and with their participation. It has been our privilege to have them as part of FSTTCS 2011.

Paper submission, reviewing and program committee discussion for the conference were managed using EasyChair. We wish to thank Andrei Voronkov and the entire EasyChair team for making this excellent service available to us, and for ensuring that the reviewing, discussion and paper management processes went smoothly.

We would like to thank IIT Bombay and its administration for allowing us to use the facilities of the institute for hosting this prestigious conference in its premises. We would like to thank staff, students, post-doctoral research scholars and faculty colleagues of the Dept. of Computer Science and Engineering at IIT Bombay for pitching in myriad ways to help make the organization of the conference a success. Our special thanks go to Hrishikesh Karmarkar for ensuring that several organizational issues that threatened to spiral out of control, were eventually tamed in time. We would like to thank our student system administrators, Prajish Prasad and Jagadish M., for helping with networking and all computer system related issues. The team of project "ekalavya" at IIT Bombay, under the guidance of Prof. D.B. Phatak, readily agreed to record the proceedings of the conference, and make the recordings available in open source under a Creative Commons license. We would like to thank the

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entire “ekalavya” team for lending us such a big helping hand. It is also our pleasure to acknowledge the financial support we received from IARCS and from four additional sponsors for FSTTCS 2011. These additional sponsors were: Google India Pvt. Ltd., Dept. of Computer Science and Engineering at IIT Bombay, Tata Consultancy Services and IBM India Pvt. Ltd. The institutional members of IARCS, whose contributions help support various activites of IARCS, including FSTTCS, are Geodesic Ltd., Microsoft Research India and Sasken Communication Technologies Ltd.

In addition to the technical program of the main conference, two satellite events were co-located with FSTTCS 2011. These included a pre-conference workshop on Finite and Algorithmic Model Theory and a post-conference workshop on Breakthroughs in Theoretical Computer Science. The workshop on Finite and Algorithmic Model Theory featured Anuj Dawar, Phokion G. Kolaitis, Emanuel Kieroński, Dietmar Berwanger, Benjamin Rossman and R. Ramanujam as speakers. The workshop on Breakthroughs in Theoretical Computer Science had Manindra Agrawal, Naveen Garg, Sanjeev Khanna, Aleksander Mądry, Jaikumar Radhakrishnan, Madhu Sudan, Umesh V. Vazirani, Amit Kumar and Nisheeth Vishnoi as speakers. Our thanks to all invited speakers of the two workshops for adding to the richness and diversity of the technical program.

As in the past few years, the proceedings of FSTTCS 2011 is being published as a volume in the LIPIcs series under a Creative Commons license, with free online access to all, and with authors retaining rights over their contributions. We wish to thank the editorial board of LIPIcs for agreeing to publish the current proceedings as a LIPIcs volume. Our special thanks to Marc Herbstritt for answering our deluge of questions pertaining to publishing and editing issues clearly and promptly. We gratefully acknowledge his help and the help of the entire team in the LIPIcs editorial office in preparing the final version of the proceedings.

Supratik Chakraborty and Amit Kumar
Mumbai, December 2011

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