

Preface

The Foundations of Software Technology and Theoretical Computer Science conference (FST TCS) is a well-established annual event in the theoretical computer science community. The conference provides a forum for researchers to present interesting new results in several areas of theoretical computer science. The conference is now in its twentieth year and has continued to attract high-quality submissions and reputed invited speakers.

This year's conference attracted 141 submissions (of which 5 were withdrawn) from over 25 countries. Each submission was reviewed by at least three referees, with most receiving more than four reviews. The Program Committee met in New Delhi on 5 and 6 August 2000, with many members participating electronically over the Internet. The discussions continued over the Internet for several days and we finally selected 36 papers for presentation at the conference and inclusion in the proceedings. We thank the Program Committee for their superlative efforts in finding top quality reviewers and working extremely hard to ensure the quality of the conference. We also thank all our reviewers for providing detailed and informative feedback about the papers. Rich Gerber's START program greatly simplified managing the submissions and the PC work.

We are grateful to our six invited speakers, Peter Buneman, Bernard Chazelle, Allen Emerson, Martin Grötschel, José Meseguer, and Philip Wadler for agreeing to speak at the conference and for providing written contributions that are included in the proceedings.

With the main conference this year, there are two satellite workshops — on *Recent Advances in Programming Languages* and on *Computational Geometry*.

FST TCS is being hosted this year by the Indian Institute of Technology, Delhi, after a hiatus of eight years. We thank the Organizing Committee for their efforts and several others who have been generous with their time and energy in assisting us — Mohammed Sarwat, Kunal Talwar, Surender Baswana, Rohit Khandekar, and Harsh Nanda, in particular.

We express our gratitude for the financial and other support from the various sponsors, IBM India Research Laboratory, New Delhi, in particular. We also thank TCS (TRDDC), Tata Infotech, Silicon Automation Systems, Cadence Design Systems, IIT Delhi, and others.

We also thank the staff at Springer-Verlag, especially Alfred Hofmann, for making the production of these proceedings flow very smoothly.

December 2000

Sanjiv Kapoor
Sanjiva Prasad

Organization

FST TCS 2000 is organized by the Department of Computer Science, IIT Delhi, under the aegis of the Indian Association for Research in Computer Science (IARCS).

Program Committee

Pankaj Agarwal (*Duke*)
Manindra Agrawal (*IIT, Kanpur*)
Tetsuo Asano (*JAIST*)
Vijay Chandru (*IISc, Bangalore*)
Rance Cleaveland (*Stony Brook*)
Anuj Dawar (*Cambridge*)
Sampath Kannan (*U Penn*)
Sanjiv Kapoor (*IIT, Delhi*) (**Co-chair**)
Kamal Lodaya (*IMSc, Chennai*)
Madhavan Mukund (*CMI, Chennai*)
Gopalan Nadathur (*Minnesota*)
Seffi Naor (*Bell Labs and Technion*)
Tobias Nipkow (*TU Munich*)
Luke Ong (*Oxford*)
C. Pandu Rangan (*IIT, Chennai*)
Paritosh Pandya (*TIFR*)
Benjamin Pierce (*U Penn*)
Sanjiva Prasad (*IIT, Delhi*) (**Co-chair**)
Sridhar Rajagopalan (*IBM, Almaden*)
Abhiram Ranade (*IIT, Bombay*)
Dave Sands (*Chalmers*)
A. Prasad Sistla (*U Illinois, Chicago*)
Michiel Smid (*Magdeburg*)
Mandayam K. Srivas (*SRI*)

Organizing Committee

Sandeep Sen (*IIT, Delhi*) (**Chair**)
Naveen Garg (*IIT, Delhi*) (**Treasurer**)
S.N. Maheshwari (*IIT, Delhi*)

Referees

Mark Aagaard	Juergen Dingel	Pat Hill
Parosh Abdulla	Gilles Dowek	Yoram Hirshfeld
Andreas Abel	Deepak D'Souza	Joshua Hodas
Luca Aceto	Phan Minh Dung	Haruo Hosoya
Bharat Adsul	Bruno Dutertre	Alan Hu
Salvador Lucas Alba	Sandro Etalle	Michaela Huhn
Eric Allender	Leonidas Fegaras	Graham Hutton
Rajeev Alur	Sandor Fekete	Costas Iliopoulos
Roberto Amadio	Amy Felty	Anna Ingolfsdottir
Henrik R. Andersen	Gerard Ferrand	Mathew Jacob
Andre Arnold	Rudolf Fleischer	Radha Jagadeesan
Anish Arora	Wan Fokkink	R. Jagannathan
S. Arun-Kumar	Phyllis Frankl	David Janin
Amitabha Bagchi	Lars-Ake Fredlund	Alan Jeffrey
Paolo Baldan	Ari Freund	Thierry Jeron
Chitta Baral	Daniel Fridlender	Somesh Jha
Franco Barbanera	Jan Friso Groote	Felix Joachimski
Adi Ben-Israel	Philippa Gardner	Bengt Jonsson
Stefan Berghofer	Naveen Garg	Charanjit Jutla
Karen Bernstein Jeffrey	Paul Gastin	Kyriakos Kalorkoti
Pushpak Bhattacharya	Simon Gay	Ravi Kannan
Ingrid Biehl	Yael Gertner	Deepak Kapur
Somenath Biswas	F. Geurts	S. Sathya Keerthi
Marcello Bonsangue	Neil Ghani	Ravindra Keskar
V. S. Borkar	John Glauert	Sanjeev Khanna
E. Boros	Ganesh Gopalakrishnan	Moonjoo Kim
Ahmed Bouajjani	Andy Gordon	Kamala Kirthivasan
Julian Bradfield	R. Govindarajan	Barbara König
Roberto Bruni	Bernd Grobauer	Jochen Konemann
Didier Caucal	Gopal Gupta	Goran Konjevod
Supratik Chakraborty	Peter Habermehl	Guy Kortsarz
Manuel Chakravarty	Thomas Hallgren	Marc van Kreveld
Bernadette Charron	Mikael Hammar	Ajay Kshemakalyani
Andrea Corradini	Ramesh Hariharan	Herbert Kuchen
Flavio Corradini	Tero Harju	V. S. Anil Kumar
Jean-Michel Couvreur	James Harland	K. Narayan Kumar
Mary Cryan	Sariel Har-Peled	S. Ravi Kumar
Geir Dahl	Reinhold Heckmann	Vijay Kumar
Mads Dam	Nevin Heintze	Orna Kupferman
Vincent Danos	Fergus Henderson	Jim Laird
Alex Dekhtyar	Rolf Hennicker	Charles Lakos
Rocco De Nicola	Jesper G. Henriksen	Leslie Lamport
Deepak Dhar	Andreas Herzig	Cosimo Laneve
Catalin Dima	Michael Hicks	Kung-Kiu Lau

Bill Leal	Francois Pessaux	Priti Shankar
Xavier Leroy	Antoine Petit	Anil Shende
Christos Levcopoulos	Ion Petre	Bruce Shepherd
Jean-Jacques Levy	Frank Pfenning	Rajeev Shorey
Patrick Lincoln	Jean-Eric Pin	Amir Shpilka
C. E. Veni Madhavan	Amir Pnueli	R. K. Shyamasundar
P. Madhusudan	Bernard Pope	Joseph Sifakis
Meena Mahajan	Ernesto Posse	Robert de Simone
Anil Maheshwari	K. V. S. Prasad	Arindama Singh
Jean-Yves Marion	T. K. Prasad	Gurdip Singh
Narciso Mart-Oliet	Femke van Raamsdonk	D. Sivakumar
John Matthews	J. Radhakrishnan	G. Sivakumar
Guy McCusker	N. Raja	Milind Sohoni
B. Meenakshi	Sriram Rajamani	Oleg Sokolsky
Ron van der Meyden	C. R. Ramakrishnan	S. Sridharan
Adam Meyerson	Rajeev Raman	Y. N. Srikant
Tiusanen Mikko	R. Ramanujam	Aravind Srinivasan
Jon Millen	K. Rangarajan	Mark-Oliver Stehr
Dale Miller	S. Srinivasa Rao	Andrew Stevens
Swarup Mohalik	Julian Rathke	Charles Stewart
Faron Moller	Laurent Regnier	Colin Stirling
Remi Morin	Jakob Rehof	Chris Stone
Ben Moszkowski	M. Rodriguez-Artalejo	K. G. Subramanian
Shin-Cheng Mu	W.-P. de Roever	K. V. Subrahmanyam
Supratik Mukhopadhyay	Suman Roy	V. R. Sule
Ketan Mulmuley	Abhik Roychoudhury	Eijiro Sumii
Andrzej Murawski	Oliver Ruething	S. P. Suresh
Anca Muscholl	Jan Rutten	Carolyn Talcott
Alan Mycroft	Mark Ryan	Prasad Tetali
Lee Naish	Peter Ryan	Hendrik Tews
Kedar Namjoshi	Andrei Sabelfeld	Denis Therien
Y. Narahari	Thomas Santen	P. S. Thiagarajan
Giri Narasimhan	A. Sanyal	Hayo Thielecke
Tom Newcomb	Andre Schiper	Henk van Tilborg
Joachim Niehren	Thomas Schreiber	Mikko Tiusanen
Martin Odersky	Friedrich Schroerer	Philippas Tsigas
David von Oheimb	Nicole Schweikardt	John Tucker
Atsushi Ohori	Jonathan P. Seldin	Frits Vaandrager
Friedrich Otto	Peter Selinger	Kasturi Varadarajan
Linda Pagli	Sandeep Sen	Moshe Vardi
Catuscia Palamidessi	Sanjit Seshia	Vasco T. Vasconcelos
Prakash Panangaden	Anil Seth	Helmut Veith
Marina Papatriantafilou	Peter Sewell	Santosh Vempala
Michel Parigot	J. Shahabuddin	S. Venkatesh
Lawrence C. Paulson	Natarajan Shankar	R. Venugopal

Oleg Verbitsky

V. Vinay

Sundar Vishwanathan

Mahesh Viswanathan

Walter Vogler

Igor Walukiewicz

Pascal Weil

Herbert Wiklicky

Thomas Wilke

Harro Winkel

James Worrell

Eric van Wyk

Kwangkeun Yi

Clement Yu

Shiyu Zhou