Contents

Invited Talk

Programming with “Big Code” .................................................. 3
Eran Yahav

Compilers

Memory-Efficient Tail Calls in the JVM with Imperative
Functional Objects ................................................................. 11
Tomáš Tauber, Xuan Bi, Zhiyuan Shi, Weixin Zhang, Huang Li,
Zhenrui Zhang, and Bruno C.d.S. Oliveira

A Secure Compiler for ML Modules ................................. 29
Adriaan Larmuseau, Marco Patrignani, and Dave Clarke

Detection of Redundant Expressions: A Complete and Polynomial-Time
Algorithm in SSA .......................................................... 49
Rekha R. Pai

Separation Logic

Separation Logic with Monadic Inductive Definitions
and Implicit Existentials ...................................................... 69
Makoto Tatsuta and Daisuke Kimura

Tree-Like Grammars and Separation Logic ..................... 90
Christoph Matheja, Christina Jansen, and Thomas Noll

Static Analysis and Abstract Interpretation

Randomized Resource-Aware Path-Sensitive Static Analysis .......... 111
Tomasz Dudziak

Quadratic Zonotopes: An Extension of Zonotopes to Quadratic Arithmetics ................ 127
Assalé Adjé, Pierre-Loïc Garoche, and Alexis Werey

Abstraction of Optional Numerical Values ........................ 146
Jiangchao Liu and Xavier Rival
Hoare Logic and Types

Fault-Tolerant Resource Reasoning ........................................ 169
Gian Ntzik, Pedro da Rocha Pinto, and Philippa Gardner

Shifting the Blame: A Blame Calculus with Delimited Control .......... 189
Taro Sekiyama, Soichiro Ueda, and Atsushi Igarashi

Aliasing Control in an Imperative Pure Calculus ......................... 208
Marco Servetto and Elena Zucca

Functional Programming and Semantics

A Strong Distillery ............................................................... 231
Beniamino Accattoli, Pablo Barenbaum, and Damiano Mazza

From Call-by-Value to Interaction by Typed Closure Conversion ....... 251
Ulrich Schöpp

Kripke Open Bisimulation: A Marriage of Game Semantics and Operational Techniques ............................................ 271
Guilhem Jaber and Nicolas Tabareau

Model Checking

Automata-Based Abstraction for Automated Verification of Higher-Order Tree-Processing Programs ........................................ 295
Yuma Matsumoto, Naoki Kobayashi, and Hiroshi Unno

Decision Algorithms for Checking Definability of Order-2 Finitary PCF .... 313
Sadaaki Kawata, Kazuyuki Asada, and Naoki Kobayashi

Program Analysis - I

Uncovering JavaScript Performance Code Smells Relevant to Type Mutations ..................................................... 335
Xiao Xiao, Shi Han, Charles Zhang, and Dongmei Zhang

Analyzing Distributed Multi-platform Java and Android Applications with ShadowVM ............................................. 356
Haiyang Sun, Yudi Zheng, Lubomir Bulej, Stephen Kell, and Walter Binder

Medley

Quasi-Linearizability is Undecidable ......................................... 369
Chao Wang, Yi Lv, Gaoang Liu, and Peng Wu
Objects in Polynomial Time .................................................. 387  
Emmanuel Hainry and Romain Péchoux

Programming Models

Programming Techniques for Reversible Comparison Sorts ............... 407  
Holger Bock Axelsen and Tetsuo Yokoyama

Transactions on Mergeable Objects ........................................... 427  
Deepthi Devaki Akkoorath and Annette Bieniusa

A Sound Type System for Layer Subtyping and Dynamically Activated First-Class Layers .............................................................. 445  
Hiroaki Inoue and Atsushi Igarashi

Program Analysis - II

Bottom-Up Context-Sensitive Pointer Analysis for Java ..................... 465  
Yu Feng, Xinyu Wang, Isil Dillig, and Thomas Dillig

More Sound Static Handling of Java Reflection ................................. 485  
Yannis Smaragdakis, George Balatsouras, George Kastrinis,  
and Martin Bravenboer

Author Index ........................................................................... 505