Contents

Invited Presentations

Substructural Proofs as Automata ................................................. 3
   Henry DeYoung and Frank Pfenning

Verification and Analysis I

Learning a Strategy for Choosing Widening Thresholds
from a Large Codebase .......................................................... 25
   Sooyoung Cha, Sehun Jeong, and Hakjoo Oh

AUSPICE-R: Automatic Safety-Property Proofs for Realistic Features
in Machine Code ................................................................. 42
   Jiaqi Tan, Hui Jun Tay, Rajeev Gandhi, and Priya Narasimhan

Observation-Based Concurrent Program Logic for Relaxed Memory
Consistency Models .............................................................. 63
   Tatsuya Abe and Toshiyuki Maeda

Process Calculus

SPEC: An Equivalence Checker for Security Protocols .................... 87
   Alwen Tiu, Nam Nguyen, and Ross Horne

Binary Session Types for Psi-Calculi ....................................... 96
   Hans Hüttel

Static Trace-Based Deadlock Analysis for Synchronous Mini-Go ........ 116
   Kai Stadtmüller, Martin Sulzmann, and Peter Thiemann

Profiling and Debugging

AkkaProf: A Profiler for Akka Actors in Parallel and Distributed
Applications ........................................................................... 139
   Andrea Rosà, Lydia Y. Chen, and Walter Binder

A Debugger-Cooperative Higher-Order Contract System in Python ...... 148
   Ryoya Arai, Shigeyuki Sato, and Hideya Iwasaki
λ-Calculus

A Sound and Complete Bisimulation for Contextual Equivalence in λ-Calculus with Call/cc .......................................................... 171
  Taichi Yachi and Eijiro Sumii

A Realizability Interpretation for Intersection and Union Types. ............ 187
  Daniel J. Dougherty, Ugo de'Liguoro, Luigi Liquori, and Claude Stolze

Open Call-by-Value. ...................................................................... 206
  Beniamino Accattoli and Giulio Guerrieri

Type Theory

Implementing Cantor’s Paradise ........................................................ 229
  Furio Honsell, Marina Lenisa, Luigi Liquori, and Ivan Scagnetto

Unified Syntax with Iso-types. .......................................................... 251
  Yanpeng Yang, Xuan Bi, and Bruno C.d.S. Oliveira

Refined Environment Classifiers: Type- and Scope-Safe Code Generation with Mutable Cells ......................................................... 271
  Oleg Kiselyov, Yukiyoshi Kameyama, and Yuto Sudo

Verification and Analysis II

Higher-Order Model Checking in Direct Style ...................................... 295
  Taku Terao, Takeshi Tsukada, and Naoki Kobayashi

Verifying Concurrent Graph Algorithms ............................................ 314
  Azalea Raad, Aquinas Hobor, Jules Villard, and Philippa Gardner

Verification of Higher-Order Concurrent Programs with Dynamic Resource Creation ................................................................. 335
  Kazuhide Yasukata, Takeshi Tsukada, and Naoki Kobayashi

Programming Paradigms

Probabilistic Programming Language and its Incremental Evaluation ........ 357
  Oleg Kiselyov

ELIOM: A Core ML Language for Tierless Web Programming ................ 377
  Gabriel Radanne, Jérôme Vouillon, and Vincent Balat

Separation Logic

DOM: Specification and Client Reasoning ......................................... 401
  Azalea Raad, José Fragoso Santos, and Philippa Gardner
Decision Procedure for Separation Logic with Inductive Definitions
and Presburger Arithmetic .................................................. 423
Makoto Tatsuta, Quang Loc Le, and Wei-Ngan Chin

Completeness for a First-Order Abstract Separation Logic ............... 444
Zhé Hóu and Alwen Tiu

Author Index ................................................................. 465