

3rd Summit on Advances in Programming Languages

SNAPL 2019, May 16–17, 2019, Providence, RI, USA

Edited by

Benjamin S. Lerner

Rastislav Bodík

Shriram Krishnamurthi



Editors

Benjamin S. Lerner

Northeastern University, USA
benjamin.lerner@gmail.com

Rastislav Bodík

University of California Berkeley, USA
bodik@cs.washington.edu

Shriram Krishnamurthi

Brown University, USA
sk@cs.brown.edu

ACM Classification 2012

Software and its engineering → General programming languages; Software and its engineering → Semantics

ISBN 978-3-95977-113-9

Published online and open access by

Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany. Online available at <https://www.dagstuhl.de/dagpub/978-3-95977-113-9>.

Publication date

July, 2019

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <https://portal.dnb.de>.

License

This work is licensed under a Creative Commons Attribution 3.0 Unported license (CC-BY 3.0):
<https://creativecommons.org/licenses/by/3.0/legalcode>.



In brief, this license authorizes each and everybody to share (to copy, distribute and transmit) the work under the following conditions, without impairing or restricting the authors' moral rights:

- Attribution: The work must be attributed to its authors.

The copyright is retained by the corresponding authors.

Digital Object Identifier: 10.4230/LIPIcs.SNAPL.2019.0

ISBN 978-3-95977-113-9

ISSN 1868-8969

<https://www.dagstuhl.de/lipics>

LIPICs – Leibniz International Proceedings in Informatics

LIPICs is a series of high-quality conference proceedings across all fields in informatics. LIPICs volumes are published according to the principle of Open Access, i.e., they are available online and free of charge.

Editorial Board

- Luca Aceto (*Chair*, Gran Sasso Science Institute and Reykjavik University)
- Christel Baier (TU Dresden)
- Mikolaj Bojanczyk (University of Warsaw)
- Roberto Di Cosmo (INRIA and University Paris Diderot)
- Javier Esparza (TU München)
- Meena Mahajan (Institute of Mathematical Sciences)
- Dieter van Melkebeek (University of Wisconsin-Madison)
- Anca Muscholl (University Bordeaux)
- Luke Ong (University of Oxford)
- Catuscia Palamidessi (INRIA)
- Thomas Schwentick (TU Dortmund)
- Raimund Seidel (Saarland University and Schloss Dagstuhl – Leibniz-Zentrum für Informatik)

ISSN 1868-8969

<https://www.dagstuhl.de/lipics>

■ Contents

| | |
|--|------------|
| Preface <i>Benjamin S. Lerner, Rastislav Bodík, and Shriram Krishnamurthi</i> | 0:vii |
| Regular Papers | |
| Overparameterization: A Connection Between Software 1.0 and Software 2.0 <i>Michael Carbin</i> | 1:1–1:13 |
| Blame Tracking and Type Error Debugging <i>Sheng Chen and John Peter Campora III</i> | 2:1–2:14 |
| What is a Secure Programming Language? <i>Cristina Cifuentes and Gavin Bierman</i> | 3:1–3:15 |
| From Theory to Systems: A Grounded Approach to Programming Language Education <i>Will Crichton</i> | 4:1–4:9 |
| From Macros to DSLs: The Evolution of Racket <i>Ryan Culpepper, Matthias Felleisen, Matthew Flatt, and Shriram Krishnamurthi</i> . | 5:1–5:19 |
| The Dynamic Practice and Static Theory of Gradual Typing <i>Michael Greenberg</i> | 6:1–6:20 |
| A Golden Age of Hardware Description Languages: Applying Programming Language Techniques to Improve Design Productivity <i>Lenny Truong and Pat Hanrahan</i> | 7:1–7:21 |
| Version Control Is for Your Data Too <i>Gowtham Kaki, KC Sivaramakrishnan, and Suresh Jagannathan</i> | 8:1–8:18 |
| The Next 700 Semantics: A Research Challenge <i>Shriram Krishnamurthi, Benjamin S. Lerner, and Liam Elberty</i> | 9:1–9:14 |
| Toward Domain-Specific Solvers for Distributed Consistency <i>Lindsey Kuper and Peter Alvaro</i> | 10:1–10:14 |
| A Tour of Gallifrey, a Language for Geodistributed Programming <i>Mae Milano, Rolph Recto, Tom Magrino, and Andrew C. Myers</i> | 11:1–11:19 |
| Formal Verification vs. Quantum Uncertainty <i>Robert Rand, Keshu Hietala, and Michael Hicks</i> | 12:1–12:11 |



■ Preface

This is the third running of the **S**ummit o**N** **A**dvan**C**es in **P**rogramming **L**anguages (SNAPL), a relatively new venue for the programming languages community. The goal of SNAPL is to complement existing conferences by discussing big-picture questions. After the first two events, held in 2015 and 2017, we hope to continue evolving the venue into a place where our community comes to enjoy talks with inspiring ideas, fresh insights, and lots of discussion. Open to perspectives from both industry and academia, SNAPL values innovation, experience-based insight, and vision. Not affiliated with any other organization, SNAPL is organized by the PL community for the PL community. We planned to hold SNAPL every two years in early May. After two runnings in Asilomar, California, we decided to hold the third SNAPL in Providence, RI, USA, hoping that the East Coast location will make the conference more accessible to attendees from Europe.

SNAPL has drawn on the elements from many successful meeting formats such as the database community's CIDR conference, the security community's NSPW workshop, and others, and continues to evolve its own particular flavor. The focus at SNAPL is not primarily on papers but rather on talks and interaction. Nevertheless, a short paper is the primary medium by which authors request and obtain time to speak. A good SNAPL entry, however, does not have the character of a regular conference submission — we already have plenty of venues for those. Rather, it is closer to the character of an invited talk, encompassing all the diversity that designation suggests: visionary ideas, progress reports, retrospectives, analyses of mistakes, calls to action, and more. Thus, a SNAPL submission should be viewed more as a “request to give an invited talk.”

Overall, the submissions suggest SNAPL remains an interesting and valuable venue. We have received 21 submissions and decided to accept twelve. The program will also include talks by members of the program committee. We look forward to discussions that will hopefully be as lively as in the previous instances of SNAPL.

Benjamin S. Lerner, Rastislav Bodík, and Shriram Krishnamurthi
May, 2019



