34th European Conference on Object-Oriented Programming

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Robert Hirschfeld
Tobias Pape
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Contents

Preface

Robert Hirschfeld ................................................................. 0:ix

Message from the General Chair

Christian Hammer ............................................................... 0:xi–0:xii

Message from the Artifact Evaluation Chairs

Lisa Nguyen Quang Do and Manuel Rigger ...................................... 0:xiii–0:xiv

Objects and a Changing World: Foreword by the President of AITO

Eric Jul ................................................................................. 0:xv

Organization

................................................................. 0:xvii–0:xviii

List of Authors

................................................................. 0:xix–0:xxi

List of Reviewers

................................................................. 0:xxiii–0:xxvii

Regular Papers

Sound Regular Corecursion in coFJ

Davide Ancona, Pietro Barbieri, Francesco Dagnino, and Elena Zucca .... 1:1–1:28

Perfect Is the Enemy of Good: Best-Effort Program Synthesis

Hila Peleg and Nadia Polikarpova ........................................ 2:1–2:30

Blame for Null

Abel Nieto, Marianna Rapoport, Gregor Richards, and Ondřej Lhoták .... 3:1–3:28

Static Race Detection and Mutex Safety and Liveness for Go Programs

Julia Gabet and Nobuko Yoshida ............................................. 4:1–4:30

Reconciling Event Structures with Modern Multiprocessors

Evgenii Moiseenko, Anton Podkopaev, Ori Lahav, Orestis Melkonian, and Viktor Vafeiadis ........................................... 5:1–5:26

Don’t Panic! Better, Fewer, Syntax Errors for LR Parsers

Lukas Diekmann and Laurence Tratt ....................................... 6:1–6:32

K-LIYVM: A Relatively Complete Semantics of LLVM IR

Liyi Li and Elsa L. Gunter ................................................... 7:1–7:29

Space-Efficient Gradual Typing in Coercion-Passing Style

Yuya Tsuda, Atsushi Igarashi, and Tomoya Tabuchi ............................ 8:1–8:29

Multiparty Session Programming With Global Protocol Combinators

Keigo Imai, Rungana Neykova, Nobuko Yoshida, and Shoji Yuen .................. 9:1–9:30

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Designing with Static Capabilities and Effects: Use, Mention, and Invariants (Pearl)
C. S. Gordon ................................................................. 10:1–10:25

Owicki-Gries Reasoning for C11 RAR
Sadegh Dalvandi, Simon Doherty, Brijesh Dongol, and Heike Wehrheim .......... 11:1–11:26

A Semantics for the Essence of React
Magnus Madsen, Ondřej Lhoták, and Frank Tip ........................................... 12:1–12:26

Test-Case Reduction via Test-Case Generation: Insights from the Hypothesis Reducer (Tool Insights Paper)

A Semantics for the Essence of React
Magnus Madsen, Ondřej Lhoták, and Frank Tip ........................................... 12:1–12:26

Model-View-Update-Communicate: Session Types Meet the Elm Architecture
Simon Fowler ................................................................. 14:1–14:28

Static Analysis of Shape in TensorFlow Programs
Sifis Lagouvardos, Julian Dolby, Neville Grech, Anastasios Antoniadis, and Yannis Smanoudakis ............................................................. 15:1–15:29

Value Partitioning: A Lightweight Approach to Relational Static Analysis for JavaScript
Benjamin Barslev Nielsen and Anders Møller .............................................. 16:1–16:28

Static Type Analysis by Abstract Interpretation of Python Programs
Raphaël Monat, Abdelraouf Ouadsnaout, and Antoine Miné ........................ 17:1–17:29

Reference Mutability for DOT
Vlastimil Dort and Ondřej Lhoták ............................................................. 18:1–18:28

Tackling the Awkward Squad for Reactive Programming: The Actor-Reactor Model
Sam Van den Vonder, Thierry Renaux, Bjarno Oeyen, Joeri De Koster, and Wolfgang De Meuter ................................................................. 19:1–19:29

A Framework for Resource Dependent EDSLs in a Dependently Typed Language (Pearl)
Jan de Muijner-Hughes, Edwin Brady, and Wim Vanderbauwhede ......................... 20:1–20:31

Data Consistency in Transactional Storage Systems: A Centralised Semantics
Shale Xiong, Andrea Cerone, Azalea Raad, and Philippa Gardner ......................... 21:1–21:31

Putting Randomized Compiler Testing into Production (Experience Report)

Lifting Sequential Effects to Control Operators
C. S. Gordon ................................................................. 23:1–23:30

Flow-Sensitive Type-Based Heap Cloning
Mohamad Barbar, Yulei Sui, and Shiping Chen ........................................... 24:1–24:26

Scala with Explicit Nulls
Abel Nieto, Yaoqi Zhao, Ondřej Lhoták, Angela Chang, and Justin Pu ...................... 25:1–25:26

A Type-Directed Operational Semantics For a Calculus with a Merge Operator
Xuejing Huang and Bruno C. d. S. Oliveira .............................................. 26:1–26:32
Row and Bounded Polymorphism via Disjoint Polymorphism

Ningning Xie, Bruno C. d. S. Oliveira, Xuan Bi, and Tom Schrijvers .......... 27:1–27:30

A Trusted Infrastructure for Symbolic Analysis of Event-Driven Web Applications

Gabriela Sampaio, José Fragoso Santos, Petar Maksimović, and Philippa Gardner ............................................. 28:1–28:29

The Duality of Subtyping

Bruno C. d. S. Oliveira, Cui Shaobo, and Baber Rehman ......................... 29:1–29:29

Safe, Flexible Aliasing with Deferred Borrows

Chris Fallin .............................................................................. 30:1–30:26

Abstracts of “Science of Computer Programming” Journal-first Papers

Reshape Your Layouts, Not Your Programs: A Safe Language Extension for
Better Cache Locality

Alexandros Tasos, Juliana Franco, Sophia Drossopoulou, Tobias Wrigstad, and
Susan Eisenbach ................................................................. 31:1–31:3

A Big Step from Finite to Infinite Computations

Davide Ancona, Francesco Dagnino, Jurriaan Rot, and Elena Zucca ............. 32:1–32:2

Abstracting Gradual References

Matías Toro and Éric Tanter ..................................................... 33:1–33:4
ECOOP is a conference about programming. Originally its focus was on object orientation, but now it looks at a much broader range of programming topics. Areas of interest include the design, implementation, optimization, analysis, and theory of programs, programming languages, and programming environments. The conference welcomes innovative and creative solutions to real problems, evaluations that provide new insights into existing solutions, and reproduction studies.

This year ECOOP received 71 submissions categorized by their authors as research papers, tool insight papers, reproduction studies, experience reports, pearls, or brave new ideas. Papers were evaluated based on originality, significance, evidence, and clarity. After careful and thorough review following a light double-blind, identify-the-champion process, 30 of them were accepted by the Program and External Review Committees. Papers written by committee members received extra reviews by the rest of the committee. While some papers received up to six reviews, none had fewer than three.

Due to the COVID-19 pandemic, a physical meeting of the Program Committee was impossible. Despite that, all members of the Program and the External Review Committees did exceptional work, dealt with every obstacle in their way, and stayed positive and constructive, leading to rich and interesting proceedings.

ECOOP 2020 was planned to be held in July in Berlin, Germany, but went virtual and co-located with ACM SIGPLAN’s SPLASH conference. Together with OOPSLA, Onward!, GPCE, SLE, DLS, SAS, and several workshops, ECOOP took place in November 2020.

The 2020 AITO Dahl-Nygaard Junior Prize was awarded to Jonathan Bell for his significant contributions to tooling in the Java ecosystem, which has improved our understanding and ability to test and discover bugs in software. The Senior Prize was presented to Jan Vitek, whose work has been to observe how software is being developed and how programming languages are being used; over his career he has studied and improved practical programming languages.

A journal-first arrangement with Elsevier’s Science of Computer Programming yielded the first “Special Issue on Selected Papers from the European Conference on Object-Oriented Programming.”

It was an honor and a privilege to serve as Program Chair for this edition of ECOOP. I would like to thank the following: all authors who submitted their research; my amazing colleagues of the Program and External Review Committees along with our other external reviewers for their outstanding work and help; the Artifact Evaluation Committee; the Organizing Committee; and my Software Architecture Group here at HPI for their invaluable support.

Robert Hirschfeld
Fall 2020
Message from the General Chair

It is my great pleasure to welcome you to ECOOP’20, to be held during 15–17 Nov, the first virtual instance of ECOOP in its 34 years of history. ECOOP is the European forum for bringing together researchers, practitioners, and students to share their ideas and experiences on all topics related to programming languages, software development, object-oriented technologies, systems and applications.

The Corona pandemic quickly raised doubts whether we could have a physical meeting in Berlin during July, as originally planned. Like many other conferences we had to evaluate the situation carefully and eventually came to the conclusion that a physical meeting, while not forbidden by law in the German state of Berlin at the planned timeframe, would not be possible, mostly due to international travel restrictions.

Instead, ECOOP co-located with SPLASH, which gave the organizing team time to plan a virtual meeting and the authors their online presentation. Other conferences and several of ECOOP’s satellite events like the Scala Symposium followed, such that SPLASH this year is a true multi-conference on programming and related communities. This year’s ECOOP features a doctoral symposium and a poster session, which are jointly organized with SPLASH, as well as tutorials. In the joint SPLASH virtualization team we developed a plan for ECOOP/SPLASH to be experienced world-wide, in particular with closed captioning and a daily 12h program that is repeated in the subsequent half day. Experience was also drawn from other virtually organized conferences like PLDI, ICSE, and ICFP. While nothing can compensate for the networking at a physical meeting, we therefore hope that we can provide you with the best online experience possible.

My congratulations go to the junior and senior AITO Dahl-Nygaard Prize winners, Jonathan Bell and Jan Vitek, who will present keynotes during ECOOP, and the paper “Load-Time Structural Reflection in Java” by Shigeru Chiba, which was selected for the AITO Test of Time Award.

Organizing ECOOP in these challenging times would not have been possible without the support of a great team. I would like to express my gratitude towards all the people involved in organizing this year’s ECOOP and the joint virtual event, in particular the members of the ECOOP’20 Organizing Committee, the joint SPLASH Virtualization Committee, especially the intersection of those two consisting of Toni Mattis, Patrick Rein, and Fabio Niephaus, the Program Committee led by Robert Hirschfeld for compiling an excellent program, AITO e.V. and the support from its Executive Board. Many people contributed to various aspects of the program: the Doctoral Symposium was chaired by Philipp Dominik Schubert, Nafise Eskandani Masoule, Chengsong Tan; Julia Belyakova served as Diversity Chair; Annabel Satin served as Finance Chair; Jan Vitek and Gregor Richards co-organized the workshops; Jacob Hughes and Toni Mattis served as Student Volunteer Co-Chairs; Tim Felgentreff and Tobias Pape managed the ECOOP web site; Fabio Niephaus served as Publicity Chair; Eric Bodden served as Sponsorship Chair; Goran Piskachev and Patrik Rein served as Posters Co-Chairs; and last but not least, Lisa Nguyen Quang Do and Manuel Rigger served as Artifact Evaluation Co-Chairs for ECOOP 2020.

I would like to gratefully acknowledge our sponsor AITO and funding by Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – HA 6869/2-1, our financial supporters Facebook, Google, Connext Communications GmbH, and Huawei Technologies, as well as the cooperation with ACM and SIGPLAN.
Message from the General Chair

Finally, I wish all attendants of ECOOP’20 and the co-located events a fantastic time, thought-provoking, and inspiring talks, stimulating discussions and that the online conference offers ample opportunities to network with your peers, researchers and practitioners from our vibrant community.

Christian Hammer
Fall 2020
Message from the Artifact Evaluation Chairs

The goal of the Artifact Evaluation (AE) is to foster the reproducibility of results by providing authors the possibility to submit an artifact for accepted papers. For ECOOP 2020, artifacts include, but are not limited to, software artifacts, data sets, and proofs. An Artifact Evaluation Committee (AEC) reviews these artifacts and decides upon their acceptance. The accepted artifacts are archived in the Dagstuhl Artifacts Series (DARTS) published on the Dagstuhl Research Online Publication Server (DROPS). Each artifact is assigned a Digital Object Identifier (DOI) that can be used in future citations.

This year, the committee evaluated 21 artifacts out of 29 papers accepted at the conference’s research track. This corresponds to a participation rate of 72%. 20 of those artifacts were accepted, marking a 95% acceptance rate.

In total 70% of the research papers published at ECOOP 2020 have successfully passed the AE process, indicated by an artifact-evaluation badge on the paper. This is an improvement over the previous ECOOP editions: from 2017 to 2019, respectively 59%, 38%, and 50% of the research papers were accompanied by accepted artifacts.

The AE process for 2020 was a continuation of the AE process of previous ECOOP editions. In particular, the process was based on the artifact evaluation guidelines by Shriram Krishnamurthi, Matthias Hauswirth, Steve Blackburn, and Jan Vitek published on the Artifact Evaluation site. In addition, the authors and reviewers were provided with guidelines for creating and reviewing software artifacts, in particular guidelines from the Artifact Evaluation site, the HOWTO for AEC Submitters by Dan Barowy, Charlie Curtsinger, Emma Tosch, and John Vilk, Marianna Rapoport’s Proof Artifacts – Guidelines for Submission and Reviewing, and Erin Dahlgren’s study on the OOPSLA 2019 artifact evaluation process.

Each artifact was evaluated by three AEC members, which corresponded to a reviewer load of two to three artifacts. The reviewing process consisted of three phases:

- In the kick-the-tires phase, reviewers briefly verified the basic integrity of the artifacts to discover any issues that could prevent the evaluation of the artifact (e.g., a corrupted virtual machine image) and to assign a grade for the getting-started guide.
- In case of any issues, reviewers could, during the interactive reviewing period, indicate issues and ask clarifying questions to the authors. Authors, in turn, could respond to the reviewers’ feedback, and update their artifacts to address issues that the reviewers could then also respond to. During that phase, reviewers started a more comprehensive evaluation of their assigned artifacts. They were asked to assess the consistency of the artifact with respect to the paper, the artifact’s completeness, documentation, and reusability for future research and to decide on an overall grade.
- In the final reviewing period, the submission system was closed to the authors. Each reviewer had a week to finish the evaluation of their assigned artifacts.

The review phase was then followed by a discussion phase, in which artifacts were discussed to converge on either the artifacts’ acceptance or rejection.

1 http://www.artifact-eval.org
2 https://www.artifact-eval.org/guidelines.html
4 https://proofartifacts.github.io/guidelines/
Message from the Artifact Evaluation Chairs

Authors that received an acceptance notification were given one week of time to incorporate reviewers’ feedback and submit the camera-ready version of their artifacts.

We would like to commend the efforts of all 23 members of this year’s AEC, who, in spite of the global crisis, donated their valuable time and effort to make the AE process possible. We thank Martin Kavalar, Philipp Markovics, and Jan Vitek for their efforts in enabling Nextjournal as an option for authors to submit and host their artifacts. We would also like to thank Michael Wagner and the DARTS team for their efforts enabling the publication of the artifacts volume, as well as ECOOP 2020’s General Chair Christian Hammer, and the Program Chair Robert Hirschfeld for helping us coordinate the AE with the paper review process.

Lisa Nguyen Quang Do and Manuel Rigger
Fall 2020
The world has changed abruptly: The arrival of a new corona virus has seriously impacted society and traditional academic conferences have not been spared, but rather cancelled, or, at best, become virtual as ECOOP 2020. And, already, we have to start seriously considering going virtual in 2021, thus possibly missing out two years in a row, both Berlin 2020 and Aarhus 2021. We may also already now start wondering about the Post-Corona virus time that we hope will follow the likely (we hope) approval and adoption of a corona vaccine: What will that look like? Will we be able to go back to the tradition physical-meeting-for-a-week academic conferences? Will we want to? Or will everyone, including funding agencies, find that, well, virtual is good enough and a lot cheaper? I hope not as the personal interactions at physical conferences is very hard to mimic virtually. What will happen, time will tell.

Another change that has been slowly evolving over the past decades is that the original strong Object Orientation of ECOOP is that OO has become mainstream, and has diversified: thus ECOOP is mellowing into a more general programming language conference.

I would like to thank the ECOOP 2020 Program Chair, his crew and his PC for putting together an excellent program, Christian Hammer and his crew for organizing ECOOP 2020, and Annabel Satin who has been AITO’s indispensable behind-the-scene-manager. I hope you-all will enjoy ECOOP 2020.

Sincerely,
Eric Jul
Organization

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Virtualization Co-Chairs
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0:xviii Organization

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**Publications Chair**
Tobias Pape (*Hasso Plattner Institute, University of Potsdam, Germany*)
List of Authors

Davide Ancona (1, 32)
DIBRIS, University of Genova, Italy

Anastasios Antoniadis (15)
University of Athens, Greece

Mohamad Barbar (24)
University of Technology Sydney, Australia; CSIRO's Data61, Sydney, Australia

Pietro Barbieri (1)
DIBRIS, University of Genova, Italy

Xuan Bi (27)
The University of Hong Kong, China

Edwin Brady (20)
University of St Andrews, United Kingdom

Andrea Cerone (21)
Department of Computing, Imperial College London, United Kingdom

Angela Chang (25)
University of Waterloo, Canada

Shiping Chen (24)
CSIRO's Data61, Sydney, Australia

Francesco Dagnino (1, 32)
DIBRIS, University of Genova, Italy

Sadegh Dalvandi (11)
University of Surrey, United Kingdom

Joeri De Koster (19)
Software Languages Lab, Vrije Universiteit Brussel, Belgium

Wolfgang De Meuter (19)
Software Languages Lab, Vrije Universiteit Brussel, Belgium

Jan de Mujnck-Hughes (20)
University of Glasgow, United Kingdom

Lukas Diekmann (6)
Software Development Team, King's College London, United Kingdom

Simon Doherty (11)
University of Sheffield, United Kingdom

Julian Dolby (15)
IBM Research, Yorktown Heights, NY, USA

Alastair F. Donaldson (13, 22)
Google, London, United Kingdom; Imperial College London, United Kingdom

Brijesh Dongol (11)
University of Surrey, United Kingdom

Vlastimil Dort (18)
Charles University, Prague, Czech Republic

Sophia Drossopoulou (31)
Imperial College London, United Kingdom; Microsoft Research, London, United Kingdom

Susan Eisenbach (31)
Imperial College London, United Kingdom

Hugues Evrard (22)
Google, London, United Kingdom

Chris Fallin (30)
Mozilla, Mountain View, CA, USA

Simon Fowler (14)
University of Edinburgh, United Kingdom

José Fragoso Santos (28)
INESC-ID/Instituto Superior Técnico, Universidade de Lisboa, Portugal; Imperial College London, United Kingdom

Juliana Franco (31)
Microsoft Research, London, United Kingdom

Julia Gabet (4)
Imperial College London, United Kingdom

Philippa Gardner (21, 28)
Department of Computing, Imperial College London, United Kingdom

Colin S. Gordon (10, 23)
Department of Computer Science, Drexel University, Philadelphia, PA, USA

Neville Grech (15)
University of Athens, Greece

Elsa L. Gunter (7)
Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL, USA

Xuejing Huang (20)
The University of Hong Kong, China

Atsushi Igarashi (8)
Graduate School of Informatics, Kyoto University, Japan

Keigo Imai (9)
Gifu University, Japan
Authors

Sifis Lagouvardos (15)  
University of Athens, Greece

Ori Lahav (5)  
Tel Aviv University, Israel

Ondřej Lhoták (3, 12, 18, 25)  
University of Waterloo, Canada

Liyi Li (7)  
Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL, USA

David R. MacIver (13)  
Imperial College London, United Kingdom

Magnus Madsen (12)  
Aarhus University, Denmark

Petar Maksimović (28)  
Imperial College London, United Kingdom

Orestis Melkonian (5)  
University of Edinburgh, UK

Antoine Miné (17)  
Sorbonne Université, CNRS, LIP6, Paris, France; Institut Universitaire de France, Paris, France

Evgenii Moiseenko (5)  
St. Petersburg State University, Russia; JetBrains Research, St. Petersburg, Russia

Raphaël Monat (17)  
Sorbonne Université, CNRS, LIP6, Paris, France

Anders Møller (16)  
Aarhus University, Denmark

Rumyana Neykova (9)  
Brunel University London, United Kingdom

Benjamin Barslev Nielsen (16)  
Aarhus University, Denmark

Abel Nieto (3, 25)  
University of Waterloo, Canada

Bjarno Oeyen (19)  
Software Languages Lab, Vrije Universiteit Brussel, Belgium

Bruno C. d. S. Oliveira (26, 27, 29)  
The University of Hong Kong, China

Abdelraouf Ouadjaout (17)  
Sorbonne Université, CNRS, LIP6, Paris, France

Hila Peleg (2)  
University of California San Diego, CA, USA

Anton Podkopaev (5)  
National Research University Higher School of Economics, Moscow, Russia; MPI-SWS, Kaiserslautern, Germany; JetBrains Research, St. Petersburg, Russia

Nadia Polikarpova (2)  
University of California San Diego, CA, USA

Justin Pu (25)  
University of Waterloo, Canada

Azalea Raad (21)  
MPI-SWS, Kaiserslautern, Germany

Marianna Rapoport (3)  
University of Waterloo, Canada

Baber Rehman (29)  
The University of Hong Kong, China

Thierry Renaux (19)  
Software Languages Lab, Vrije Universiteit Brussel, Belgium

Gregor Richards (3)  
University of Waterloo, Canada

Jurriaan Rot (32)  
Radboud University, The Netherlands

Gabriela Sampaio (28)  
Imperial College London, United Kingdom

Tom Schrijvers (27)  
KU Leuven, Belgium

Cui Shaobo (29)  
University of California San Diego, CA, USA

Yannis Smaragdakis (15)  
University of Athens, Greece

Yulei Sui (24)  
University of Technology Sydney, Australia

Tomoya Tabuchi (8)  
Graduate School of Informatics, Kyoto University, Japan

Éric Tanter (33)  
PLEIAD Laboratory, Computer Science Department (DCC), University of Chile, Santiago, Chile

Alexandros Tasos (31)  
Imperial College London, United Kingdom

Paul Thomson (22)  
Google, London, United Kingdom

Frank Tip (12)  
Northeastern University, Boston, MA, USA
Matías Toro (33)
PLEIAD Laboratory, Computer Science Department (DCC), University of Chile, Santiago, Chile
Laurence Tratt (6)
Software Development Team, King’s College London, United Kingdom
Yuya Tsuda (8)
Graduate School of Informatics, Kyoto University, Japan
Viktor Vafeiadis (5)
MPI-SWS, Kaiserslautern, Germany
Sam Van den Vonder (19)
Software Languages Lab, Vrije Universiteit Brussel, Belgium
Wim Vanderbauwhede (20)
University of Glasgow, United Kingdom
Heike Wehrheim (11)
Paderborn University, Germany
Tobias Wrigstad (31)
Uppsala University, Sweden
Ningning Xie (27)
The University of Hong Kong, China
Shale Xiong (21)
Department of Computing, Imperial College London, United Kingdom
Nobuko Yoshida (4, 9)
Imperial College London, United Kingdom
Shoji Yuen (9)
Nagoya University, Japan
Yaoyu Zhao (25)
University of Waterloo, Canada
Elena Zucca (1, 32)
DIBRIS, University of Genova, Italy
List of Reviewers

Program Committee

Robert Hirschfeld (chair)
Hasso Plattner Institute
University of Potsdam
Germany
robert.hirschfeld@gmx.net

Karim Ali
University of Alberta
USA
karim.ali@ualberta.ca

Davide Ancona
DIBRIS, University of Genova
Italy
davide.ancona@unige.it

Carl Friedrich Bolz-Tereick
Heinrich-Heine-Universität Düsseldorf
Germany
cfbolz@gmx.de

John Boyland
University of Wisconsin
USA
boyland@cs.uwm.edu

Shigeru Chiba
The University of Tokyo
Japan
chiba@chibas.net

Theo D’Hondt
Vrije Universiteit Brussel
Belgium
tjdhondt@vub.ac.be

Wolfgang De Meuter
Vrije Universiteit Brussel
Belgium
wdemeuter@vub.ac.be

Sebastian Erdweg
JGU Mainz
Germany
erdweg@uni-mainz.de

Tim Felgentreff
Oracle Labs, Potsdam
Germany
tim.felgentreff@hpi.uni-potsdam.de

Olivier Flückiger
Northeastern University
USA
olivf@ccs.neu.edu

Lidia Fuentes
Universidad de Málaga
Spain
lff@lcc.uma.es

Richard P. Gabriel
Dream Songs, Inc. & HPI
California & Germany
rpg@dreamsongs.com

Anitha Gollamudi
Harvard University
USA
agollamudi@g.harvard.edu

Elisa Gonzalez Boix
Vrije Universiteit Brussel
Belgium
egonzale@vub.ac.be

Philipp Haller
KTH Royal Institute of Technology
Sweden
hallerp@gmail.com

Christian Hammer
University of Potsdam
Germany
hammer@cs.uni-potsdam.de

Félienne Hermans
Leiden University
The Netherlands
f.f.j.hermans@liacs.leidenuniv.nl

Atsushi Igarashi
Kyoto University
Japan
igarashi@kuis.kyoto-u.ac.jp
0:xxiv Reviewers

Stephen Kell  
University of Kent  
United Kingdom  
stephen.kell@cl.cam.ac.uk

Raffi Khatchadourian  
City University of New York (CUNY)  
Hunter College  
USA  
raffi.khatchadourian@hunter.cuny.edu

Yu David Liu  
State University of New York (SUNY)  
Binghamton  
USA  
davidl@cs.binghamton.edu

Hidehiko Masuhara  
Tokyo Institute of Technology  
Japan  
masuhara@acm.org

James Noble  
Victoria University of Wellington  
New Zealand  
kjx@ecs.vuw.ac.nz

Klaus Ostermann  
University of Tübingen  
Germany  
klaus.ostermann@uni-tuebingen.de

Patrick Rein  
Hasso Plattner Institute  
University of Potsdam  
Germany  
patrick.rein@hpi.uni-potsdam.de

Guido Salvaneschi  
University of St. Gallen  
Switzerland  
guido.salva@gmail.com

Manuel Serrano  
Inria  
France  
manuel.serrano@inria.fr

Jeremy G. Siek  
Indiana University  
USA  
jsiek@indiana.edu

Friedrich Steimann  
Fernuniversität Hagen  
Germany  
steimann@fernuni-hagen.de

Emma Söderberg  
Land University  
Sweden  
emma.m.soderberg@gmail.com

Peter Thiemann  
University of Freiburg  
Germany  
thiemann@acm.org

Eli Tilevich  
Virginia Tech  
USA  
tilevich@cs.vt.edu

Frank Tip  
Northeastern University  
USA  
f.tip@northeastern.edu

Jan Vitek  
Northeastern University  
USA  
j.vitek@neu.edu

Tobias Wrigstad  
Uppsala University  
Sweden  
tobias.wrigstad@it.uu.se

Tijs van der Storm  
CWI & University of Groningen  
The Netherlands  
storm@cwi.nl

External Reviewer Committee

Robert Hirschfeld (chair)  
Hasso Plattner Institute  
University of Potsdam  
Germany  
robert.hirschfeld@gmx.net

Erik Ernst  
Google  
Denmark  
eernst@acm.org
Matthew Flatt  
*University of Utah*  
USA  
mflatt@cs.utah.edu

Jeremy Gibbons  
*Department of Computer Science*  
*University of Oxford*  
*United Kingdom*  
jeremy.gibbons@cs.ox.ac.uk

Doug Lea  
*State University of New York (SUNY)*  
Osweego  
USA  
dl@cs.oswego.edu

Crista Lopes  
*University of California, Irvine*  
California  
lopes@uci.edu

Toni Mattis  
*Hasso Plattner Institute*  
*University of Potsdam*  
Germany  
toni.mattis@hpi.de

Todd Millstein  
*University of California, Los Angeles*  
USA  
todd@cs.ucla.edu

Jens Palsberg  
*University of California, Los Angeles*  
USA  
palsberg@ucla.edu

Tomas Petricek  
*University of Kent*  
*United Kingdom*  
tomas@tomas.p.net

Benjamin C. Pierce  
*University of Pennsylvania*  
USA  
bcpierce@cis.upenn.edu

Joe Gibbs Politz  
*University of California, San Diego*  
USA  
jpolitz@cs.swarthmore.edu

Tiark Rompf  
*Purdue University*  
USA  
tiark@purdue.edu

Laurence Tratt  
*King’s College London*  
*United Kingdom*  
laurie@tratt.net

Additional Reviewers

Leonidas Lampropoulos  
*University of Pennsylvania*  
*University of Maryland*  
USA  
leonidaslamp@hotmail.com

Magnus Madsen  
*University of Waterloo*  
Canada  
magnusm@cs.au.dk

Matthias Springer  
*Google*  
Japan  
me@matthias.springer.de

Nicholas Rioux  
*University of Pennsylvania*  
USA  
nrioux@seas.upenn.edu

Rui Abreu  
*University of Lisbon*  
Portugal  
rui.maranhao@tecnico.ulisboa.pt

Artifact Evaluation Committee

Lisa Nguyen Quang Do (*chair*)  
*Google*  
Switzerland  
lisa.nqd@gmail.com

Manuel Rigger (*chair*)  
*ETH Zurich*  
Switzerland  
manuel.rigger@inf.ethz.ch
Reviewers

Ellen Arteca  
Northeastern University  
USA  
earteca@uwaterloo.ca

Alexandre Bartel  
University of Luxembourg  
alexandre.bartel@uni.lu

Francesco Dagnino  
DIBRIS, University of Genova  
Italy  
francesco.dagnino@dibris.unige.it

Erin Dahlgren  
University of Chicago  
USA  
edahlgren@uchicago.edu

Kiko Fernandez-Reyes  
Uppsala University  
Sweden  
kiko.fernandez@it.uu.se

Zheng Guo  
University of California, San Diego  
USA  
zhg069@ucsd.edu

Byron Hawkins  
INRIA Rennes  
France  
byron.hawkins@inria.fr

Pinjia He  
ETH Zurich  
Switzerland  
pinjia.he@inf.ethz.ch

Aarti Kashyap  
University of British Columbia  
Canada  
kaarti.sr@gmail.com

Alyssa Milburn  
Vrije Universiteit Amsterdam  
The Netherlands  
a.a.milburn@vu.nl

Felix Pauck  
Paderborn University  
Germany  
fpauk@email.uni-paderborn.de

Cedric Richter  
Paderborn University  
Germany  
cedricr@mail.upb.de

Andrea Rosà  
University of Lugano  
Switzerland  
andrea.rosa@usi.ch

Somesh Singh  
Indian Institute of Technology, Madras  
India  
somesh.singh1992@gmail.com

Justin Smith  
Lafayette College, Easton  
USA  
justinssmith1@gmail.com

Quentin Stiévenart  
Vrije Universiteit Brussel  
Belgium  
qstieven@vub.ac.be

Qiyi Tang  
University of Oxford  
United Kingdom  
qiyi.tang71@gmail.com

John Toman  
University of Washington, Seattle  
USA  
jtoman@cs.washington.edu

Alix Trieu  
Aarhus University  
Denmark  
alix.trieu@cs.au.dk

Alexi Turcotte  
Northeastern University  
USA  
aturcotte@uwaterloo.ca

Junwen Yang  
University of Chicago  
USA  
junwen@uchicago.edu

Chengyu Zhang  
East China Normal University  
China  
dale.chengyu.zhang@gmail.com
Reviewers

Fuyuan Zhang
MPI-SWS
Germany
fuyuan@mpi-sws.org

Daming Zou
Peking University
China
zoudm@pku.edu.cn