DAGSTUHL
ARTIFACTS SERIES

Volume 4 | Issue 3 | July 2018

Special Issue of the 32nd European Conference on Object-Oriented Programming (ECOOP 2018)

Edited by

Maria Christakis, Philipp Haller, and Marianna Rapoport

ISSN 2509-8195

DARTS Special Issue Editors

Maria Christakis
Max Planck Institute for Software Systems
Kaiserslautern, Germany
maria@mpi-sws.org

Philipp Haller
KTH Royal Institute of Technology
Stockholm, Sweden
phaller@kth.se

Marianna Rapoport
University of Waterloo
Waterloo, Canada
mrapoport@uwaterloo.ca

Published online and open access by
Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany.
Online available at
http://drops.dagstuhl.de/darts.

Publication date
July 2018

License
This work is licensed under a Creative Commons Attribution 3.0 Germany license (CC BY 3.0 DE): http://creativecommons.org/licenses/by/3.0/de/deed.en.

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/DARTS.4.3.0

Aims and Scope
The Dagstuhl Artifacts Series (DARTS) publishes evaluated research data and artifacts in all areas of computer science. An artifact can be any kind of content related to computer science research, e.g., experimental data, source code, virtual machines containing a complete setup, test suites, or tools.

Editorial Office
Michael Wagner *(Managing Editor)*
Jutka Gasiorowski *(Editorial Assistance)*
Dagmar Glaser *(Editorial Assistance)*
Thomas Schillo *(Technical Assistance)*

Contact
Schloss Dagstuhl – Leibniz-Zentrum für Informatik
DARTS, Editorial Office
Oktavie-Allee, 66687 Wadern, Germany
publishing@dagstuhl.de

http://www.dagstuhl.de/darts

Contents

Preface
Maria Christakis, Philipp Haller, and Marianna Rapoport 0:vii

Artifact Evaluation Process
..... 0:ix

Artifact Evaluation Committee
..... 0:xi

Artifacts

Dependent Types for Class-based Mutable Objects (Artifact)
Joana Campos and Vasco T. Vasconcelos 1:1–1:2

Legato: An At-Most-Once Analysis with Applications to Dynamic Configuration Updates (Artifact)
John Toman and Dan Grossman 2:1–2:2

Static Typing of Complex Presence Constraints in Interfaces (Artifact)
Nathalie Oostvogels, Joeri De Koster, and Wolfgang De Meuter 3:1–3:2

ContextWorkflow: A Monadic DSL for Compensable and Interruptible Executions (Artifact)
Hiroaki Inoue, Tomoyuki Aotani, and Atsushi Igarashi 4:1–4:2

The Essence of Nested Composition (Artifact)
Xuan Bi, Bruno C. d. S. Oliveira, and Tom Schrijvers 5:1–5:2

CrySL: An Extensible Approach to Validating the Correct Usage of Cryptographic APIs (Artifact)
Stefan Krüger, Johannes Späth, Karim Ali, Eric Bodden, and Mira Mezini 6:1–6:4

Definite Reference Mutability (Artifact)
Ana Milanova and Wei Huang 7:1–7:3

Type Regression Testing to Detect Breaking Changes in Node.js Libraries (Artifact)
Gianluca Mezzetti, Anders Møller, and Martin Toldam Torp 8:1–8:2

Typed First-Class Traits (Artifact)
Xuan Bi and Bruno C. d. S. Oliveira 9:1–9:2

KafKa: Gradual Typing for Objects (Artifact)
Benjamin Chung, Paley Li, Francesco Zappa Nardelli, and Jan Vitek 10:1–10:3

32nd European Conference on Object-Oriented Programming (ECOOP 2018).
Editors: Maria Christakis, Philipp Haller, and Marianna Rapoport
Dagstuhl Artifacts Series
Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Preface

The artifact evaluation (AE) committee reviews software artifacts and data sets that accompany research papers published at ECOOP. The goals of the committee are to ensure that the reviewed artifacts are reproducible, well-documented, and closely correspond to the associated paper.

The AE process for 2018 closely resembled the work done for ECOOP 2017. The artifact evaluation guidelines by Shriram Krishnamurthi, Matthias Hauswirth, Steve Blackburn, and Jan Vitek published on the Artifact Evaluation site (http://www.artifact-eval.org) were of great help. Additionally, this year we created new guidelines for reviewers and authors of artifacts that contain mechanized proofs (https://proofartifacts.github.io/guidelines/).

This year, the committee evaluated 13 artifacts (which correspond to 50% of all accepted papers), and accepted 10 of these (a 77% acceptance rate). In total, 38% of the research papers published at ECOOP 2018 have successfully passed the artifact evaluation process, indicated by an artifact-evaluation badge.

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.

We would like to thank the 20 members of this year's committee, who donated their valuable time and effort to make the AE process possible. We would also like to thank Michael Wagner for the publication of the artifacts volume, and the Program Chair Todd Millstein for helping us coordinate the artifact evaluation with the paper review process.

32nd European Conference on Object-Oriented Programming (ECOOP 2018).
Editors: Maria Christakis, Philipp Haller, and Marianna Rapoport
Dagstuhl Artifacts Series
DAGSTUHL ARTIFACTS SERIES
Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Artifact Evaluation Process

The authors of all papers that were accepted to ECOOP 2018 had the option to submit an artifact with their paper. Each artifact was evaluated by three reviewers who were part of the artifact evaluation committee. The reviewing process consisted of two phases. In the "kick-the-tires" phase, reviewers briefly verified the basic integrity, documentation, and set-up of the artifacts. In case of any issues, reviewers had the opportunity to ask clarifying questions to the authors. Authors, in turn, could respond to the reviewers' first feedback, and provide missing documentation or small fixes to the artifacts, to ensure that reviewers were able to fully evaluate the artifacts. In the second phase, each reviewer had three weeks to do a comprehensive evaluation of the three artifacts they were assigned to review. This included assessing whether an artifact fully corresponded to the paper, whether all results presented in the paper could be reproduced, how well the artifact was documented, and how easy it would be to re-use the artifact in future research.

32nd European Conference on Object-Oriented Programming (ECOOP 2018).
Editors: Maria Christakis, Philipp Haller, and Marianna Rapoport
Dagstuhl Artifacts Series
Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Artifact Evaluation Committee

Maria Christakis
Max Planck Institute for Software Systems
Kaiserslautern, Germany
maria@mpi-sws.org

Yu Feng
UT Austin
Austin, TX, USA
yufeng@cs.utexas.edu

Philipp Haller
KTH Royal Institute of Technology
Stockholm, Sweden
phaller@kth.se

Thomas Gilray
University of Maryland
College Park, MD, USA
thomas.gilray@gmail.com

Marianna Rapoport
University of Waterloo
Waterloo, Canada
mrapoport@uwaterloo.ca

Stefan Heule
Stanford University
Stanford, CA, USA
sheule@cs.stanford.edu

Ambrose Bonnaire-Sergeant
Indiana University
Bloomington, IN, USA
abonnairesergeant@gmail.com

Hugo Feree
University of Kent
Kent, UK
H.Feree@kent.ac.uk

Elias Castegren
Uppsala University
Uppsala, Sweden
elias.castegren@it.uu.se

Ravichandhran Madhavan
EPFL
Lausanne, Switzerland
ravi.kandhadai@epfl.ch

Ezgi Çiçek
MPI-SWS
Saarbruecken, Germany
ecicek@mpi-sws.org

Guillaume Martres
EPFL
Lausanne, Switzerland
guillaume.martres@epfl.ch

Ankush Desai
UC Berkeley
Berkeley, CA, USA
ankush@eecs.berkeley.edu

Gianluca Mezzetti
Aarhus University
Aarhus, Denmark
mezzetti@cs.au.dk

Jon Eyolfson
University of Waterloo
Waterloo, Canada
jonathan.eyolfson@uwaterloo.ca

Fabian Muehlboeck
Cornell University
Ithaca, NY, USA
fabianm@cs.cornell.edu

32nd European Conference on Object-Oriented Programming (ECOOP 2018).
Editors: Maria Christakis, Philipp Haller, and Marianna Rapoport
Dagstuhl Artifacts Series
Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Filip Niksic
MPI-SWS
Kaiserslautern, Germany
fniksic@mpi-sws.org

Alceste Scalas
Imperial College London
London, UK
alceste.scalas@imperial.ac.uk

Emma Tosch
UMass Amherst
Amherst, MA, USA
etosch@cs.umass.edu

Ming-Ho Yee
Northeastern University
Boston, MA, USA
mh@mhyee.com