

# 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.

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

Digital Object Identifier 10.4230/DARTS.4.3.0

## Contents

Preface  Maria Christakis, Philipp Haller, and Marianna Rapoport	0:vii
Artifact Evaluation Process	
Artifact Evaluation Committee	0:ix
T++ CA -1	0:xi
List of Authors	0:xiii
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 and Joeri De Koster and Wolfgang De Meuter	3:1-3:2
The Essence of Nested Composition (Artifact) $Xuan\ Bi^1$ and $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 and Johannes Späth and Karim Ali and Eric Bodden and Mira Mezi 6:1–6:4	ni .
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 and Anders Møller and Martin Toldam Torp	8:1-8:2
Typed First-Class Traits (Artifact)  Xuan Bi <sup>1</sup> and Bruno C. d. S. Oliveira	9:1-9:2
KafKa: Gradual Typing for Objects (Artifact)  Benjamin Chung and Paley Li and Francesco Zappa Nardelli and Jan Vitek	10:1-10:3

## 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.

## 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.

## 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

#### xii Committee

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