

# **2017 IEEE/ACM 12th International Workshop on Automation of Software Testing (AST 2017)**

**Buenos Aires, Argentina  
20 – 21 May 2017**



**IEEE Catalog Number: CFP1715D-POD  
ISBN: 978-1-5386-1549-2**

**Copyright © 2017 by the Institute of Electrical and Electronics Engineers, Inc  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1715D-POD
ISBN (Print-On-Demand):	978-1-5386-1549-2
ISBN (Online):	978-1-5386-1548-5

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# 2017 IEEE/ACM 12th International Workshop on Automation of Software Testing (AST 2017)

## Table of Contents

AST 2017 Program Committee .....	vii
AST 2017 Steering Committee .....	ix
ICSE 2017 Sponsors and Benefactors .....	x

AST 2017 Workshop Summary .....	1
<i>Hong Zhu, Junhua Ding, Patricia Machado, and Marc Roper</i>	
— <i>Oxford Brookes University; East Carolina University; Federal University of Campina Grande; University of Strathclyde</i>	

### Keynotes

Gamification of Software Testing .....	2
<i>Gordon Fraser</i>	
— <i>University of Sheffield</i>	
Transferring Software Testing Tools to Practice .....	8
<i>Tao Xie</i>	
— <i>University of Illinois at Urbana-Champaign</i>	

### Agile Testing

Supporting Agile Teams with a Test Analytics Platform: A Case Study .....	9
<i>Olivier Liechti, Jacques Pasquier, and Rodney Reis</i>	
— <i>University of Applied Sciences and Arts-Western Switzerland; Fribourg University; Avalia Systems</i>	
Efficient Product-Line Testing Using Cluster-Based Product Prioritization .....	16
<i>Mustafa Al-Hajjaji, Jacob Krüger, Sandro Schulze, Thomas Leich, and Gunter Saake</i>	
— <i>University of Magdeburg; Harz University of Applied Sciences</i>	
Tree Preprocessing and Test Outcome Caching for Efficient Hierarchical Delta Debugging .....	23
<i>Renáta Hodován, Ákos Kiss, and Tibor Gyimóthy</i>	
— <i>University of Szeged</i>	

## Test Generation

Generating Unit Tests with Structured System Interactions .....	30
<i>Nikolas Havrikov, Alessio Gambi, Andreas Zeller, Andrea Arcuri, and Juan Pablo Galeotti</i>	
— Saarland University; Westerdals Oslo ACT and University of Luxembourg; University of Buenos Aires	
Toward Adaptive, Self-Aware Test Automation .....	34
<i>Benedikt Eberhardinger, Axel Habermaier, and Wolfgang Reif</i>	
— University of Augsburg	
Analyzing Automatic Test Generation Tools for Refactoring Validation .....	38
<i>Indy P.S.C. Silva, Everton L.G. Alves, and Wilkerson L. Andrade</i>	
— Universidade Federal de Campina Grande	

## Test Automation

DATm: Diderot's Automated Testing Model.....	45
<i>Charisee Chiw, Gordon Kindlmann, and John Reppy</i>	
— University of Chicago	
High-Coverage Testing of Navigation Models in Android Applications .....	52
<i>Fernando Paulovsky, Esteban Pavese, and Diego Garbervetsky</i>	
— Universidad de Buenos Aires; Humboldt Universität	
d(mu)Reg: A Path-Aware Mutation Analysis Guided Approach to Regression Testing .....	59
<i>Chang-Ai Sun, Cuiyang Fan, Zhen Wang, and Huai Liu</i>	
— University of Science and Technology, Beijing; Victoria University	
<b>Author index .....</b>	<b>65</b>