

2020 IEEE/ACM 1st International Conference on Automation of Software Test (AST 2020)

**Seoul, South Korea
15 – 16 July 2020**



IEEE Catalog Number: CFP2015D-POD
ISBN: 978-1-7281-9844-6

**Copyright © 2020, Association for Computing Machinery (ACM)
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:	CFP2015D-POD
ISBN (Print-On-Demand):	978-1-7281-9844-6
ISBN (Online):	978-1-4503-7957-1
ISSN:	2377-8628

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2020 IEEE/ACM 1st International Conference on Automation of Software Test (AST)

AST 2020

Table of Contents

Welcome	viii
Organizing Committee	x
Program Committee	xi
External Reviewers	xii
Steering Committee	xiii

Test Automation

Testing Apps with Real World Inputs	1
<i>Tanapuch Wanwarang (CISPA Helmholtz Center for Information Security), Nataniel Pereira Borges Jr. (CISPA Helmholtz Center for Information Security), Leon Bettscneider (CISPA Helmholtz Center for Information Security), and Andreas Zeller (CISPA Helmholtz Center for Information Security)</i>	
Automatic Ex-Vivo Regression Testing of Microservices	11
<i>Luca Gazzola (University of Milano - Bicocca), Maayan Goldstein (Nokia Bell Labs), Leonardo Mariani (University of Milano - Bicocca), Itai Segall (Nokia Bell Labs), and Luca Ussi (University of Milano - Bicocca)</i>	
A Delta-Debugging Approach to Assessing the Resilience of Actor Programs through Run-Time Test Perturbations	21
<i>Jonas De Bleser (Vrije Universiteit Brussel (VUB), Belgium), Dario Di Nucci (Tilburg University - JADS, The Netherlands), and Coen De Roover (Vrije Universiteit Brussel (VUB), Belgium)</i>	

Test Validation and Exploratory Testing

Validating Test Case Migration via Mutation Analysis	31
<i>Ivan Jovanovikj (Paderborn University, Germany), Achyuth Nagaraj (Paderborn University, Germany), Enes Yigitbas (Paderborn University, Germany), Anthony Anjorin (Paderborn University, Germany), Stefan Sauer (Paderborn University, Germany), and Gregor Engels (Paderborn University, Germany)</i>	

Hybrid Methods for Reducing Database Schema Test Suites: Experimental Insights from Computational and Human Studies	41
<i>Abdullah Alsharif (Saudi Electronic University), Gregory M. Kapfhammer (Allegheny College), and Phil McMinn (The University of Sheffield)</i>	
Exploratory Datamorphic Testing of Classification Applications	51
<i>Hong Zhu (Oxford Brookes University, UK) and Ian Bayley (Oxford Brookes University, UK)</i>	

Test Generation

Algorithm or Representation? An Empirical Study on How SAPIENZ Achieves Coverage	61
<i>Iván Arcuschin Moreno (FCEyN-UBA/ICC-CONICET, Argentina), Juan Pablo Galeotti (FCEyN-UBA/ICC-CONICET, Argentina), and Diego Garberovetsky (FCEyN-UBA/ICC-CONICET, Argentina)</i>	
Blockrace: A Big Data Approach to Dynamic Block-Based Data Race Detection for Multithreaded Programs	71
<i>Xiupei Mei (City University of Hong Kong, Hong Kong, China), Zhengyuan Wei (City University of Hong Kong, Hong Kong, China), Hao Zhang (City University of Hong Kong, Hong Kong, China), and Wing Kwong Chan (City University of Hong Kong, Hong Kong, China)</i>	

Short Papers

Automated Analysis of Flakiness-Mitigating Delays	81
<i>Jean Malm (Mälardalen University, Sweden), Adnan Causevic (Mälardalen University, Sweden), Björn Lisper (Mälardalen University, Sweden), and Sigrid Eldh (Ericsson AB, Sweden)</i>	
The Power of String Solving: Simplicity of Comparison	85
<i>Mitja Kulczyński (Kiel University, Germany), Florin Manea (University of Göttingen, Germany), Dirk Nowotka (Kiel University, Germany), and Danny Bøgsted Poulsen (Aalborg University, Denmark)</i>	
A Quantitative Comparison of Coverage-Based Greybox Fuzzers	89
<i>Tsuzuki Natsuki (Nagoya University), Norihiro Yoshida (Nagoya University), Koji Toda (Fukuoka Institute of Technology), Kenji Fujiwara (Nagoya University), Ryota Yamamoto (Nagoya University), and Hiroaki Takada (Nagoya University)</i>	
Fastbot: A Multi-Agent Model-Based Test Generation System	93
<i>Tianqin Cai (Beijing Bytedance Network Technology Co., Ltd.), Ping Yang (Beijing Bytedance Network Technology Co., Ltd.), and Zhao Zhang (Beijing Bytedance Network Technology Co., Ltd.)</i>	
Muteria: An Extensible and Flexible Multi-Criteria Software Testing Framework	97
<i>Thierry Titcheu Chekam (University of Luxembourg (SnT)), Mike Papadakis (University of Luxembourg (SnT)), and Yves Le Traon (University of Luxembourg (SnT))</i>	

Industrial Abstracts

The Effectiveness of Client-Side Javascript Testing	101
<i>Jonny Moon (Adobe Inc.), Brian Farnsworth (Adobe Inc.), and Riley Smith (Adobe Inc.)</i>	
Difference Grouping and Test Suite Evaluation: Lessons from Automated Differential Testing for Adobe Analytic	103
<i>Darryl Jarman (Adobe), Scott Hunt (Adobe), Jeffrey Berry (Adobe, Lehi, Utah, USA), and Dave Towey (University of Nottingham Ningbo China)</i>	
AI-Driven Conversational Bot Test Automation Using Industry Specific Data Cartridges	105
<i>Muralidhar Yalla (Accenture Technologies Bangalore India) and Asha Sunil (Accenture Technologies Bangalore India)</i>	
Automatic Prevention of Accidents in Production	108
<i>Chang-Seo Park (Google LLC, USA)</i>	
Author Index	111