

2024 IEEE/ACM International Conference on Automation of Software Test (AST 2024)

**Lisbon, Portugal
15-16 April 2024**



**IEEE Catalog Number: CFP2415D-POD
ISBN: 979-8-3503-5218-4**

**Copyright © 2024, 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:	CFP2415D-POD
ISBN (Print-On-Demand):	979-8-3503-5218-4
ISBN (Online):	979-8-4007-0588-5

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2024 IEEE/ACM International Conference on Automation of Software Test (AST) AST 2024

Table of Contents

Message from the AST 2024 Chairs	ix
AST 2024 Committees	x

Session 1: Test Coverage

Mutation Coverage is Not Strongly Correlated with Mutation Coverage	1
<i>Samia AlBlwi (New Jersey Institute of Technology), Amani Ayad (Kean University), and Ali Mili (New Jersey Institute of Technology)</i>	
Running a Red Light: An Investigation into Why Software Engineers (Occasionally) Ignore Coverage Checks	12
<i>Alexander Sterk (Delft University of Technology), Mairieli Wessel (Radboud University), Eli Hooten (Sentry.io), and Andy Zaidman (Delft University of Technology)</i>	
Coverage-based Strategies for the Automated Synthesis of Test Scenarios for Conversational Agents	23
<i>Pablo C. Cañizares (Universidad Autónoma de Madrid, Spain), Daniel Ávila (Universidad Autónoma de Madrid, Spain), Sara Pérez-Soler (Universidad Autónoma de Madrid, Spain), Esther Guerra (Universidad Autónoma de Madrid, Spain), and Juan de Lara (Universidad Autónoma de Madrid, Spain)</i>	
WallMauer: Robust Code Coverage Instrumentation for Android Apps	34
<i>Michael Auer (University of Passau), Iván Arcuschin Moreno (University of Buenos Aires), and Gordon Fraser (University of Passau)</i>	

Session 2: Test Generation

Using GitHub Copilot for Test Generation in Python: An Empirical Study	45
<i>Khalid El Haji (Delft University of Technology, The Netherlands), Carolin Brandt (Delft University of Technology, The Netherlands), and Andy Zaidman (Delft University of Technology, The Netherlands)</i>	

Grammar-Based Action Selection Rules for Scriptless Testing	56
<i>Lianne V. Hufkens (Open Universiteit, The Netherlands), Fernando Pastor Ricós (Universitat Politècnica de València, Spain), Beatriz Marin (Universitat Politècnica de València, Spain), and Tanja E. J. Vos (Universitat Politècnica de València, Spain and Open Universiteit, The Netherlands)</i>	
Fences: Systematic Sample Generation for JSON Schemas using Boolean Algebra and Flow Graphs	66
<i>Björn Otto (Institute for Automation and Communication, OVGU Magdeburg) and Tobias Kleinert (Chair of Information and Automation Systems for Process and Material Technology, RWTH Aachen)</i>	
Generating Software Tests for Mobile Applications Using Fine-Tuned Large Language Models ..	76
<i>Jacob Hoffmann (Karlsruhe Institute of Technology (KIT), Germany) and Demian Frister (Karlsruhe Institute of Technology (KIT), Germany)</i>	

Session 3: Privacy, Security and Robustness

Sugar-coated poison defense on deepfake face-swapping attacks	78
<i>Cheng-Yao Guo (National Chengchi University, Taiwan) and Fang Yu (National Chengchi University, Taiwan)</i>	
Anonymizing Test Data in Android: Does It Hurt?	88
<i>Elena Masserini (University of Milano - Bicocca), Davide Ginelli (University of Milano - Bicocca), Daniela Micucci (University of Milano - Bicocca), Daniela Briola (University of Milano - Bicocca), and Leonardo Mariani (University of Milano - Bicocca)</i>	
Properties that allow or prohibit transferability of adversarial attacks among quantized networks	99
<i>Abhishek Shrestha (Fraunhofer-Institut für Offene Kommunikationssysteme FOKUS, Germany) and Jürgen Großmann (Fraunhofer-Institut für Offene Kommunikationssysteme FOKUS, Germany)</i>	
Can explainability and deep-learning be used for localizing vulnerabilities in source code?	110
<i>Alessandro Marchetto (University of Trento, Italy)</i>	
Towards an Empirical Robustness Assessment Through Measuring Adversarial Subspaces	120
<i>Viraj Rohit Gala (Fraunhofer FOKUS), Martin A. Schneider (Fraunhofer FOKUS), and Marvin Vogt (Fraunhofer FOKUS)</i>	

Session 4: AI-based testing

Machine Learning-based Test Case Prioritization using Hyperparameter Optimization	125
<i>Md Asif Khan (Ontario Tech University, Canada), Akramul Azim (Ontario Tech University, Canada), Ramiro Liscano (Ontario Tech University, Canada), Kevin Smith (IBM United Kingdom Ltd), Qasim Tauseef (IBM United Kingdom Ltd), Gkerta Seferi (IBM United Kingdom Ltd), and Yee-Kang Chang (IBM Canada Ltd)</i>	

Testing for Fault Diversity in Reinforcement Learning	136
<i>Quentin Mazouni (Simula Research Laboratory, Norway), Helge Spieker (Simula Research Laboratory, Norway), Arnaud Gotlieb (Simula Research Laboratory, Norway), and Mathieu Acher (Univ Rennes, Inria, INSA Rennes, CNRS, IRISA, France)</i>	
Reducing Workload in Using AI-based API REST Test Generation	147
<i>Benjamin Leu (University of Applied Sciences and Arts Northwestern Switzerland), Jonas Volken (University of Applied Sciences and Arts Northwestern Switzerland), Martin Kropp (University of Applied Sciences and Arts Northwestern Switzerland), Nejdett Dogru (Testifi GmbH), Craig Anslow (Victoria University of Wellington Wellington, New Zealand), and Robert Biddle (Carleton University Ottawa, Canada)</i>	
Identifying Performance Issues in Microservice Architectures through Causal Reasoning	149
<i>Luca Giamattei (University of Naples Federico II), Antonio Guerriero (University of Naples Federico II), Ivano Malavolta (Vrije Universiteit Amsterdam), Cristian Mascia (University of Naples Federico II), Roberto Pietrantuono (University of Naples Federico II), and Stefano Russo (University of Naples Federico II)</i>	

Session 5: Test process optimization

Dynamic Test Case Prioritization in Industrial Test Result Datasets	154
<i>Alina Torbunova (Åbo Akademi University), Per Erik Strandberg Strandberg (Westermo Network Technologies AB), and Ivan Porres (Åbo Akademi University)</i>	
PAFOT: A Position-Based Approach for Finding Optimal Tests of Autonomous Vehicles	159
<i>Victor Crespo-Rodriguez (Monash University, Australia), Neelofar Neelofar (Monash University, Australia), and Aldeida Aleti (Monash University, Australia)</i>	
Evaluating String Distance Metrics for Reducing Automatically Generated Test Suites	171
<i>Islam Elgendy (University of Sheffield), Robert Hierons (University of Sheffield), and Phil McMinn (University of Sheffield)</i>	
An Overview of Microservice-Based Systems Used for Evaluation in Testing and Monitoring: A Systematic Mapping Study	182
<i>Stefan Fischer (Software Competence Center Hagenberg), Pirmin Urbanke (Software Competence Center Hagenberg), Rudolf Ramler (Software Competence Center Hagenberg), Monika Steidl (University of Innsbruck), and Michael Felderer (German Aerospace Center (DLR))</i>	

Session 6: Testing

Exploring the Role of Automation in Duplicate Bug Report Detection: An Industrial Case Study	193
<i>Malte Götharsson (University of Gothenburg, Sweden), Karl Stahre (University of Gothenburg), Gregory Gay (Chalmers and University of Gothenburg, Sweden), and Francisco Gomes de Oliveira Neto (Chalmers and University of Gothenburg, Sweden)</i>	

What Are Massive Open Online Courses (MOOCs) Teaching About Software Testing?	204
<i>Neda Džiugaitė (Delft University of Technology, Netherlands), Baris Ardic (Delft University of Technology, Netherlands), and Andy Zaidman (Delft University of Technology, Netherlands)</i>	
Identification of Java lock contention anti-patterns based on runtime performance data	209
<i>Aritra Ahmed (Ontario Tech University), Ramiro Liscano (Ontario Tech University), Akramul Azim (Ontario Tech University), Ye-Kang Chang (IBM Canada), and Vijay Sundaresan (IBM Canada)</i>	
An Inconvenient Truth in Software Engineering? The Environmental Impact of Testing Open Source Java Projects	214
<i>Andy Zaidman (Delft University of Technology, The Netherlands; University of Victoria, Canada)</i>	
9 in 10 cameras agree: Pedestrians in front possibly endangered	219
<i>Liliana Marie Prikler (Graz University of Technology) and Franz Wotawa (Graz University of Technology)</i>	
Author Index	225