2024 IEEE International Conference on Artificial Intelligence Testing (AITest 2024)

Shanghai, China 15-18 July 2024



IEEE Catalog Number: CFP24S64-POD ISBN:

979-8-3503-6506-1

Copyright © 2024 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:
 CFP24S64-POD

 ISBN (Print-On-Demand):
 979-8-3503-6506-1

 ISBN (Online):
 979-8-3503-6505-4

ISSN: 2835-3552

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



2024 IEEE International Conference on Artificial Intelligence Testing (AITest) AITest 2024

Table of Contents

Message from the IEEE CISOSE 2024 General Co-Chairs	viii
Message from the IEEE AITest 2024 General Chairs	x
Message from the IEEE AITest 2024 PC Chairs	xi
IEEE AITest 2024 Organizing Committee	xii
IEEE AITest 2024 Program Committee	xiii
Keynote Speakers	xv
Tutorials	xxi
Plenary Panel - GenAI, Where Are You Going?	xxvi
Plenary Panel - Sustainable AI: Pursuing Computational Efficiency and En	
Harmony	xxviii
Plenary Panel - Ethical, Societal, and Policy Implications of AI	xxx
Sponsors	xxxi
Outline of an Independent Systematic Blackbox Test for ML-based Systems . Hans-Werner Wiesbrock (ITPower Solutions GmbH) and Jürgen Grossmann (Fraunhofer FOKUS)	1
On a Systematic Test of ML-Based Systems: Experiments on Test Statistics	11
Nicolas Grube (ITPower Solutions GmbH), Mozhdeh Massah (ITPower	
Solutions GmbH, Germany), Michael Tebbe (ITPower Solutions GmbH,	
Germany), Paul Wancura (ITPower Solutions GmbH, Germany), Hans-Werner	
Wiesbrock (ITPower Solutions GmbH, Germany), Jürgen Grossmann	
(Fraunhofer-Institut für Offene Kommunikationssysteme FOKUS, Germany),	
and Sami Kharma (Fraunhofer-Institut für Offene Kommunikationssysteme	
FOKUS, Germany)	
Computer Vision Intelligence Test Modeling and Generation: A Case Study of	on Smart OCR 21
Jing Shu (San Jose State University, USA), Bing-Jiun Miu (San Jose	
State University, USA), Eugene Chang (ALPSTouchStone, Inc., USA),	
Jerry Gao (San Jose State University, USA), and Jun Liu (San Jose	
State University, USA)	

Session 2: Security Verification of AI Models

MEH-FEST-NA: An Ensemble Defense System Against Adversarial Attacks in Speaker	20
Verification Systems	29
Quantifying the Vulnerability of Anomaly Detection Implementations to Nondeterminism-based Attacks	37
Muyeed Ahmed (New Jersey Institute of Technology, USA) and Iulian Neamtiu (New Jersey Institute of Technology, USA)	07
FaultLines - Evaluating the Efficacy of Open-Source Large Language Models for Fault Detection in Cyber-Physical Systems	47
Herbert Mühlburger (Institute of Software Technology, Graz University of Technology, Austria) and Franz Wotawa (Institute of Software	
Technology, Graz University of Technology, Austria)	
Session 3: Use of ML Techniques for Software Testing - I	
ScenEval: A Benchmark for Scenario-Based Evaluation of Code Generation	55
Proxima: A Proxy Model-Based Approach to Influence Analysis	64
University of Texas at Arlington, USA), Raghu N Kacker (National Institute of Standards and Technology, USA), and D. Richard Kuhn (National Institute of Standards and Technology, USA)	
Utilizing Genetic Algorithms for Generating Critical Scenarios for Testing Autonomous Driving Functions	73
Florian Klück (AVL List GmbH, Austria), Daniel Sumann (Graz University of Technology, Austria), and Franz Wotawa (Graz University of Technology, Austria)	
Session 4: Use of ML techniques for software testing - II	
SpecNLP: A Pre-trained Model Enhanced with Spectrum Profile for Bug Localization	81
Session 5: The First IEEE International Workshop onT esting and Evaluation of Large Language Models (TELLMe 2024)	
Benchmarks and Metrics for Evaluations of Code Generation: A Critical Review	87

Leveraging Large Language Models for Python Unit Test
Black-box L1 and L2 Adversarial Attack Based on Genetic Algorithm
Invited Papers
User Centric Evaluation of Code Generation Tools Tanha Miah (Oxford Brookes University, UK) and Hong Zhu (Oxford Brookes University, UK)
A Survey on Data Quality Dimensions and Tools for Machine Learning
AI Test Modeling and Analysis for Intelligent Chatbot Mobile App - A Case Study on Wysa
Evaluation of Question-Answering Based Text Summarization using LLM
Fast Abstracts
Real-Time Anomaly Detection in Time Series Using Transformer-Like Architecture
Test Case Priortization for Regression Testing Using Machine Learning
Author Index