

Edited by: Yves Le Traon

[JOURNAL METRICS >](#)

Online ISSN: 1099-1689

Print ISSN: 0960-0833

© John Wiley & Sons Ltd

*Software Testing, Verification and Reliability* journal supports researchers, educators and practitioners to evaluate software better and ensure it reliably meets user requirements. We publish papers that use theory, practice and empirical work to provide techniques for testing, verifying and improving the reliability of software, as well as survey papers summarising current research in our field. We welcome submissions on software security, reliability modeling, measurement and application and automated test data generation.

Read the journal's full aims and scope [here](#).

## Editor-in-Chief Yves Le Traon

**Professor Yves Le Traon** is Director of the Interdisciplinary Centre for Security, Reliability and Trust at the University of Luxembourg. Research topics include software engineering, software testing, model driven engineering, security, adaptive systems and resilience.

## Articles

[Most Recent](#)   [Most Cited](#)   [Most Accessed](#)

The most read articles published in the last 5 years

**Open Access**

### The integration of machine learning into automated test generation: A systematic mapping study

Afonso Fontes, Gregory Gay

[Software Testing, Verification and Reliability](#) | First Published: 2 May 2023

Machine learning (ML) may enable effective automated test generation. We characterize research in this area, examining testing practices, researcher goals, ML techniques applied, evaluation, and challenges through a systematic mapping on a sample of 124 publications. The work-to-date shows great promise, but there are open challenges regarding training data, retraining, scalability, evaluation complexity, ML algorithms employed - and how they are applied - benchmarks, and replicability. Our findings can serve as a roadmap and inspiration for researchers in this field.



Layer #1	Layer #2	Layer #3
Test Input Generation 82	Black Box 65	System Test Generation (Black Box) 25
Test Oracle Generation 42	White Box 17	GUI Test Generation 24
	Expected Output 20	Performance Test Generation 9
	Test Verdict 12	Combinatorial Interaction Testing 5
	Metamorphic Properties 10	Unit Test Generation (Black Box) 2
		Unit Test Generation (White Box) 9
		System Test Generation (White Box) 8

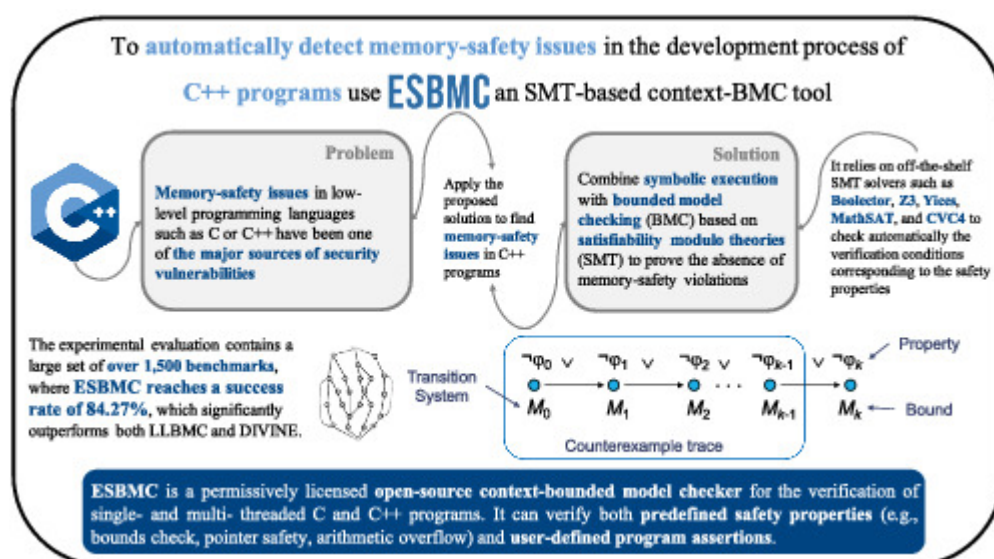
[Abstract](#) | [Full text](#) | [PDF](#) | [References](#) | [Request permissions](#)

[Open Access](#)

## Model checking C++ programs

Felipe R. Monteiro, Mikhail R. Gadelha, Lucas C. Cordeiro

Software Testing, Verification and Reliability | First Published: 8 September 2021



ESBMC is a permissively licensed open-source context-bounded model checker for the verification of single- and multi-threaded C and C++ programs. It can verify both predefined safety properties (e.g., bounds check, pointer safety, and arithmetic overflow) and user-defined program assertions.

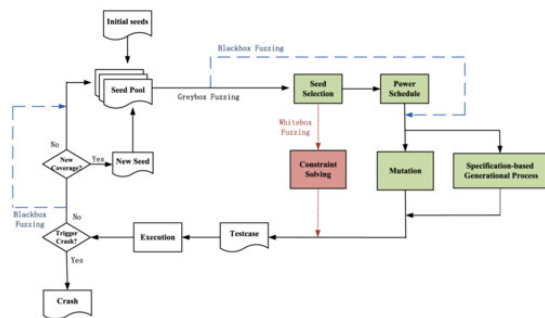
[Abstract](#) | [Full text](#) | [PDF](#) | [References](#) | [Request permissions](#)

[Open Access](#)

## The progress, challenges, and perspectives of directed greybox fuzzing

Pengfei Wang, Xu Zhou, Tai Yue, Peihong Lin, Yingying Liu, Kai Lu

## Software Testing, Verification and Reliability | First Published: 14 December 2023



Based on the investigation of 42 state-of-the-art fuzzers that are closely related to directed greybox fuzzing (DGF), we conduct the first in-depth study to summarize the empirical evidence on the research progress of DGF. By analyzing the benefits and limitations of DGF research, we try to identify gaps in current research.

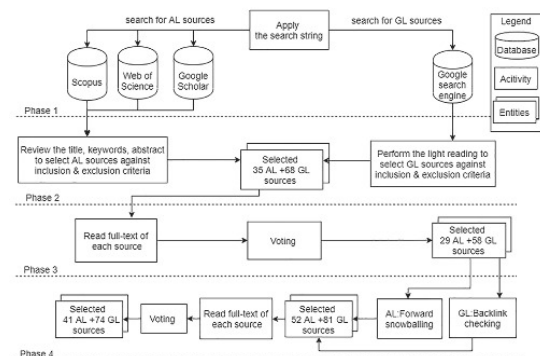
[Abstract](#) | [Full text](#) | [PDF](#) | [References](#) | [Request permissions](#)

**Open Access**

## Improving test automation maturity: A multivocal literature review

Yuqing Wang, Mika V. Mäntylä, Zihao Liu, Jouni Markkula, Päivi Raulamo-jurvanen

### Software Testing, Verification and Reliability | First Published: 15 February 2022



This paper reviewed 81 primary studies (26 academic literature and 55 grey literature sources). It extracted 26 test automation best practices (e.g., define an effective test automation strategy, set up good test environments, and develop high-quality test scripts) and collected many pieces of advice (e.g., in forms of implementation/improvement approaches, technical techniques, concepts, experience-based heuristics) on how to conduct these best practices.

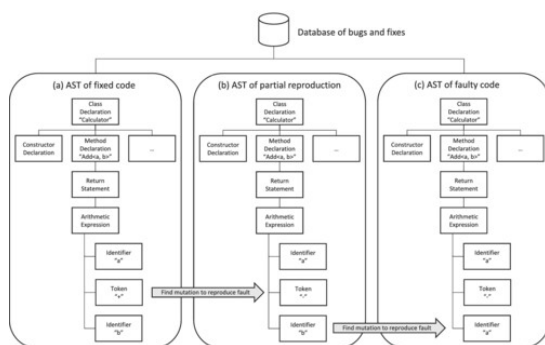
[Abstract](#) | [Full text](#) | [PDF](#) | [References](#) | [Request permissions](#)

**Open Access**

## A new perspective on the competent programmer hypothesis through the reproduction of real faults with repeated mutations

Zaheed Ahmed, Eike Schwass, Steffen Herbold, Fabian Trautsch, Jens Grabowski

### Software Testing, Verification and Reliability | First Published: 29 February 2024



Exploring the competent programmer hypothesis, this study examines the connection between mutation testing and real-world faults. By recreating faults through mutation chains, we assess the link's directness. Findings suggest the validity of the competent programmer hypothesis yet highlight the need for important mutation operators to generate representative real-world faults.

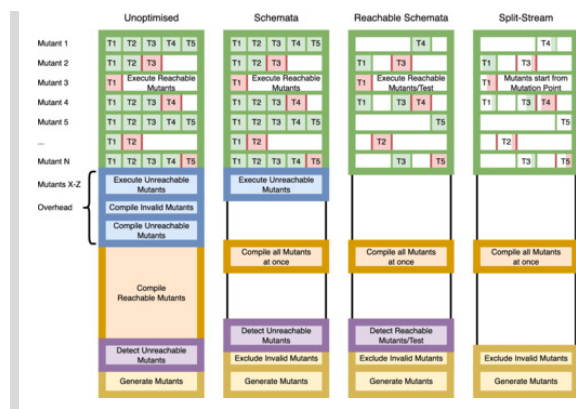
[Abstract](#) | [Full text](#) | [PDF](#) | [References](#) | [Request permissions](#)

 **Open Access**

## Mutation testing optimisations using the Clang front-end

Sten Vercammen, Serge Demeyer, Markus Borg, Niklas Pettersson, Görel Hedin

Software Testing, Verification and Reliability | First Published: 17 October 2023



Mutation testing is the state-of-the-art technique for assessing the fault detection capacity of a test suite. Unfortunately, it is often prohibitively expensive. We investigate how different optimisation strategies can be implemented based on the Clang front-end to eliminate compilation and execution overhead. Our proof-of-concept tool achieves speedups up to 30.

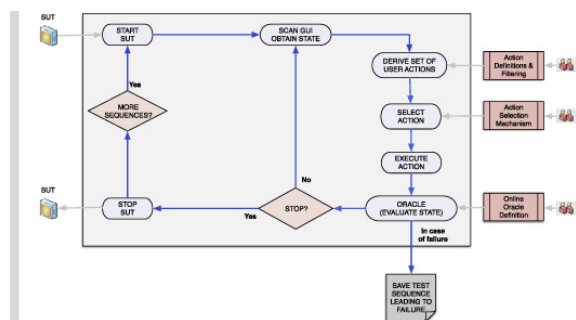
[Abstract](#) | [Full text](#) | [PDF](#) | [References](#) | [Request permissions](#)

 **Open Access**

## TESTAR – scriptless testing through graphical user interface

Tanja E. J. Vos, Pekka Aho, Fernando Pastor Ricos, Olivia Rodriguez-Valdes, Ad Mulders

Software Testing, Verification and Reliability | First Published: 25 April 2021



This article gives a comprehensive overview of TESTAR, an open source tool for scriptless graphical user interface (GUI) test automation, and presents the latest TESTAR extensions and industrial experiments. The novel extensions include, for example, active learning of state models (model inference) and support for Selenium WebDriver. The inferred state models enable more advanced action selection algorithms, for example, optimizing the GUI exploration with machine learning.

Support for Selenium WebDriver improves TESTAR in recognizing widgets and properties of web applications.

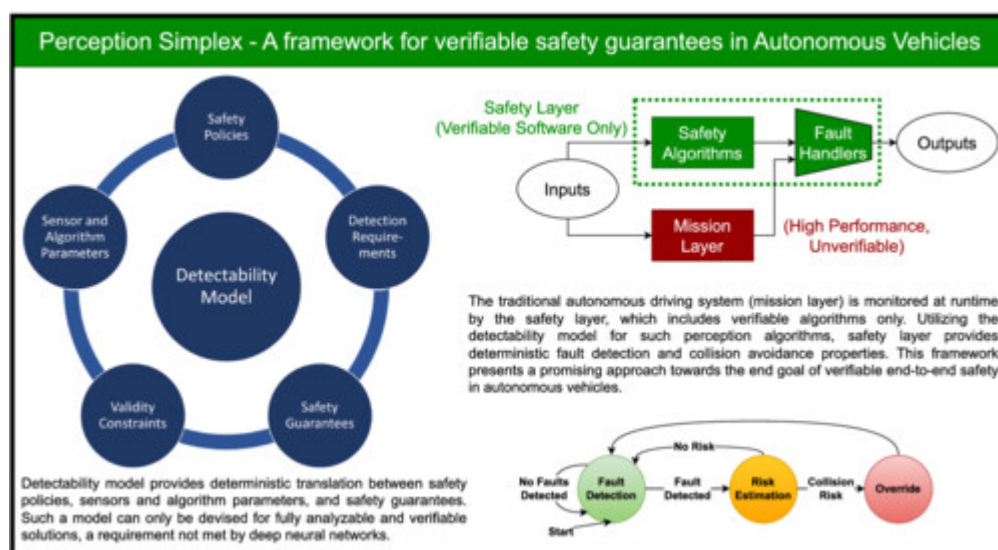
[Abstract](#) | [Full text](#) | [PDF](#) | [References](#) | [Request permissions](#)

 **Open Access**

## Perception simplex: Verifiable collision avoidance in autonomous vehicles amidst obstacle detection faults

Ayoosh Bansal, Hunmin Kim, Simon Yu, Bo Li, Naira Hovakimyan, Marco Caccamo, Lui Sha

Software Testing, Verification and Reliability | First Published: 28 May 2024



The traditional autonomous driving system (mission layer) is monitored at runtime by the safety layer, which includes verifiable algorithms only. Utilizing the detectability model for such perception algorithms, safety layer provides deterministic fault detection and collision avoidance properties. This framework presents a promising approach towards the end goal of verifiable end-to-end safety in autonomous vehicles. Detectability model provides deterministic translation between safety policies, sensors and algorithm parameters and safety guarantees. Such a model can only be devised for fully analysable and verifiable solutions, a requirement not met by deep neural networks.

[Abstract](#) | [Full text](#) | [PDF](#) | [References](#) | [Request permissions](#)

[More articles](#)

## Recent issues



**Volume 35, Issue 1**

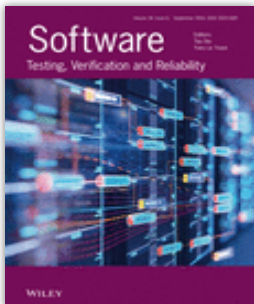
January 2025

**Volume 34, Issue 8**

December 2024

**Volume 34, Issue 7**

November 2024

**Volume 34, Issue 6**

September 2024

**Sign up for email alerts**

Enter your email to receive alerts when new articles and issues are published.

Email address

lucasccordeiro@gmail.com

[Continue](#)

Tools

 [Submit an article](#)

 [Browse free sample issue](#)

 [Journal Metrics](#)

 [Subscribe to this journal](#)

More from this journal

[STVR Editorial Information Page](#)

[Special Issues](#)

[Computer Science Journals](#)

and information technology. Broward College I...

Employer: Broward college

[Apply for this job](#)

**Computer Science Faculty**

Laurel, MD |

Job DescriptionJob Description Faculty Position Description Full-time, 10-Month INSTITUTION  
OVERVIEW: Founded in 1927 by a Navy veteran, Capitol T...

Employer: Capitol Technology University

[Apply for this job](#)

**Assistant Professor, Computer Science and Information Technology (Multiple Vacancies) (North Campus)**

Margate, FL |

Job Profile Summary Broward College invites applicants for a full-time tenure track teaching position in  
Computer Science and Information Technolog...

Employer: Broward College

[Apply for this job](#)

ABOUT WILEY ONLINE LIBRARY

[Privacy Policy](#)

[Terms of Use](#)

[About Cookies](#)

[Manage Cookies](#)

[Accessibility](#)

[Wiley Research DE&I Statement and Publishing Policies](#)

[Developing World Access](#)

HELP & SUPPORT

Contact Us

Training and Support

DMCA & Reporting Piracy

**OPPORTUNITIES**

Subscription Agents

Advertisers & Corporate Partners

**CONNECT WITH WILEY**

The Wiley Network

Wiley Press Room

Copyright © 1999-2025 John Wiley & Sons, Inc or related companies. All rights reserved, including rights for text and data mining and training of artificial intelligence technologies or similar technologies.