Special Issue at the Journal of Software: Testing, Verification and Reliability (STVR)

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Special Issue Title:
Special Issue of International Workshop on Mutation Analysis

Guest Editors:
Donghwan Shin
Renzo Degiovanni
Mike Papadakis (not appearing in the Proceedings)

Important Dates
Submission opens: 14th July 2023
Submission deadline: 1st October 2023

Call for Papers

Mutation analysis involves mutation of software artifacts that are then used to evaluate the quality of software verification tools and techniques. It is considered the premier technique for evaluating the fault-revealing effectiveness of test suites, test generation techniques and other testing approaches.

Ideas derived from mutation analysis have also been used to test artifacts at different levels of abstraction, including requirements, formal specifications, models, architectural design notations and even informal descriptions. Recently, mutation has also played an important role in software engineering for AI, such as in verifying trained models and their behaviors. Furthermore, researchers and practitioners have investigated diverse forms of mutation, such as training or test data mutation, in combination with metamorphic testing to evaluate model performance in machine learning and detecting adversarial examples.

In addition to the **open call for papers** that are on the topics of interest below, all authors with an accepted paper at the 18th edition International Workshop on Mutation Analysis (Mutation), collocated with ICST at Dublin in April 2023, are kindly encouraged to submit the extended versions of their work. We also extend the invitation to papers from the past two editions of the Mutation Workshop, 2021 and 2022, that were held virtually.

Topics of Interest

Topics of interest include, but are not limited to, the following:

- Evaluation of mutation-based test adequacy criteria, and comparative studies with other test adequacy criteria.
- Formal theoretical analysis of mutation testing.
- Empirical studies on any aspects of mutation testing.
- Mutation-based generation of program variants.

- Higher-order mutation testing.
- Mutation testing tools.
- Mutation for mobile, internet, and cloud-based systems (e.g., addressing QoS, power consumption, stress testing, performance, etc.).
- Mutation for security and reliability.
- Novel mutation testing applications, and mutation testing in novel domains.
- Industrial experience with mutation testing.
- Mutation for artificial intelligence (e.g., data mutation, model mutation, mutation-based test data generation, etc.)

Review Process

All submissions will be reviewed based on the Software: Testing, Verification and Reliability (STVR) standards and will undergo a rigorous reviewing process. Reviews of extended versions of the papers presented at the previous editions of the Mutation Workshops (i.e., Mutation 2021, 2022, and 2023) may include some of the reviewers of the original papers as well as new reviewers with relevant expertise to ensure the highest possible review quality. The guest editors of the special issue are not permitted to submit.

Submission

For extended versions of workshop or conference papers, it is necessary to include at least 30% new contents and clearly explain the additional contributions. The abstract should be different from that of the original paper, and the proper citation of the original workshop/conference paper is required.

To submit your paper, please use the manuscript submission site for Software Testing, Verification and Reliability (http://wiley.atyponrex.com/journal/stvr) and select "Special Issue Paper". In the cover letter, mention that you are submitting to the **“International Workshop on Mutation Analysis"**. Additionally, we encourage you to notify us via email when you submit your paper.

Guest Editor’s Information

Donghwan Shin
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Donghwan Shin is a Lecturer at the Department of Computer Science, University of Sheffield. He received his PhD in Computer Science from Korea Advanced Institute of Science and Technology (KAIST) in 2018. He organized the last Mutation Analysis workshop (Mutation 2022 and 2023) and served as a PC member for the last four years. He is also a PC member of several software engineering conferences, including ICSE 2024, ASE 2023, ICST 2022/2023, and ISSRE 2022. His research focuses on mutation analysis, as well as various applications of mutation in the field of software testing. He is especially interested in software system testing approaches for ML-based systems (e.g., DNN-based automated driving systems) and their combination with mutation analysis.

Renzo Degiovanni
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Renzo Degiovanni is a Research Scientist at SnT, University of Luxembourg. He received his PhD in Computer Science from the National University of Cordoba (UNC), Argentina, in 2015. He has organized the last Mutation Analysis workshop (Mutation 2023 and 2024). He has served on the PC committees of ASE 2023, ASE NIER 2023, ICST 2023, ICSE DEMO 2022, FSE DEMO 2021 and ISSTA AE 2018/2020. His research lies mainly in the areas of software analysis and software engineering, with a focus on the interplay between formal methods, software testing and machine learning.

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Mike Papadakis is a senior research scientist at the Interdisciplinary Center for Security, Reliability and Trust (SnT) of the University of Luxembourg. He holds a Ph.D. in Computer Science from the Athens University of Economics and Business. His research interests include software testing, static analysis, prediction modeling and search-based software engineering. He is best known for his work on Mutation Testing for which he has been awarded IEEE TCSE Rising Star Award 2020. He has also been awarded several ACM SIGSOFT and IEEE TCSE Distinguished Paper and Artifact Awards and a Facebook Research Award (2019). He serves on multiple software engineering conference program committees, as a deputy editor of the Software Testing Verification and Reliability journal, and in the steering committees of ICST, ICSME and SSBSE. He has (co-)authored more than 100 publications in international peer-reviewed conferences and journals. His work has been supported by Facebook, FNR, CETREL (SIX group company), BGL (BNP Paribas), Microsoft and PayPal.