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Research Interests: *Software Product Lines, Software Testing and
Software Debugging*

SERVAL – SnT – Luxembourg University

- **SERVAL**
 - Belong to the Interdisciplinary Centre for Security, Reliability and Trust (SnT)
 - Headed by professor Yves Le Traon
 - Is composed of 20 researchers
- **Research Interests**
 - Static analysis for security and reliability issues
 - Software testing techniques
 - Software debugging for domain specific programs
 - Automatic debugging techniques i.e. bug fixing
 - Android security
- **Industrial Projects**
 - Bank card processor companies
 - Software Industry
 - Cloud providers

Current & Future Work

Mutation-based Test Generation

- Dynamic Symbolic Execution¹
- Search-based testing²

Efficiency of the mutation process

- Equivalent mutants^{3,4}
- Higher Order mutants⁴
- Selective mutation

1. Mike Papadakis and Nicos Malevris. *"Automatic Mutation Test Case Generation Via Dynamic Symbolic Execution"*, in ISSRE 2010, pp.121-130

2. Mike Papadakis and Nicos Malevris. *"Automatically Performing Weak Mutation with the Aid of: Symbolic Execution, Concolic and Search Based Testing"*, in Software Quality Journal. 19(4), pp. 691-723, 2011

3. Marinos Kintis, Mike Papadakis, and Nicos Malevris, *"Employing Second Order Mutation for Isolating First Order Equivalent Mutants"*, in Software Testing, Verification and Reliability Journal (STVR), in press

4. Mike Papadakis, Marcio Delamaro and Yves Le Traon. *"Mitigating the Effects of Equivalent Mutants with Mutant Classification Strategies"*, in Science of Computer Programming Journal (SCP), in press

Current & Future Work

Mutation-based Fault Localization¹

Model-based mutation

- Software product lines²
- Sampling program inputs, as alternative to Combinatorial Interaction Testing³

1. Mike Papadakis and Yves Le Traon. "**Metallaxis-FL: Mutation-based Fault Localization**", in *Software Testing, Verification and Reliability Journal*, in press

2. Christopher Henard, Mike Papadakis, Gilles Perrouin, Jacques Klein and Yves Le Traon. "**Assessing Software Product Line Testing via Model-based Mutation: An Application to Similarity Testing**", in *ICST Workshops 2013*, pp. 188-197.

3. Mike Papadakis, Christopher Henard and Yves Le Traon. "**Sampling Program inputs with Mutation Analysis: Going Beyond Combinatorial Interaction Testing**", in *ICST 2014*, pp 1-10.

Interest in MT² workshop

- Learn about the state of the art on MT
- Identify possible ways of applying and extending mutation approaches on MT
- Identify ways to use of model transformation for semantic program transformations