vamos'24

Feb 7-9, Bern, Switzerland

18th Intl. Working Conference on Variability Modelling of Software-Intensive Systems

General Chair: Timo Kehrer

PC Chairs: Marianne Huchard, Leopoldo Teixeira

mgm

ELCA

CHOOSE
Swiss Group for Software Engineering
SI

UNIVERSITÄT
BERN

Welcome to VaMoS | Welcome to Bern!

Program (at a Glance)

We're here…

	Feb 7 Registration	Feb 8 Registration	Feb 9 Registration
08:30			
09:00	Keynote	Keynote	Invited Talk
09:30			
10:00	Break	Break	Break
10:30	Session 1: Applications	Session 4: Cyberphysical & Adaptive Systems	Session 6: AI
11:00			
11:30			
12:00	Lunch Break	Lunch Break	
12:30			
13:00			
13:30	Session 2: Methodology & Empirical Studies	Session 5: Testing	
14:00			
14:30			
15:00	Break	Break	
15:30	Session 3: Feature Models & Analysis	MIP Session	
16:00			
16:30			
17:00		Spooky Bern	
17:30	Reception		
18:00			
18:30			
19:00			
19:30		Dinner	

Program (at a Glance)

Industry Keynote

(Slawomir Duszynski, Robert Bosch GmbH)

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18:30			
19:00			
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Program (at a Glance)

Plenty of research talks…

… and plenty of time for discussions:

- Each paper has a discussant assigned who has read the paper in advance
- Session chairs lead the discussion
- We welcome questions by younger community members
- Don't be shy!

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Program (at a Glance)

… and even more time for discussions (aka. breaks)

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Program (at a Glance)

17:30 – Welcome Apéro (Reception)

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18:00			
18:30			
19:00			
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Venue: “Haus der Universität”

Feel free to roam around: house is “ours”

Potential Interrupt

Federal Office for Civil Protection FOCP

Tasks | Publications and services | About us

esting sirens

Testing sirens

Test day: first Wednesday in February

Every year, on the first Wednesday in February, all sirens across Switzerland are tested. The public is notified beforehand through announcements on the radio, on TV and in the press. The general public is not required to respond in a particular way or take protective measures, but simply requested in advance to excuse the inconvenience caused by the noise of the sirens.

Two alarm signals

At 1.30 p.m. the 'general alert' signal is sounded throughout Switzerland. This is a regular ascending and descending tone, which lasts for one minute, and is repeated once after a two-minute interval. Where necessary, the sirens can continue to be tested until 2 p.m. From 2 p.m. to 4.30 p.m. (at the latest), the „water alert" signal is tested in those areas that are close to dams. It consists of twelve low continuous tones lasting twenty seconds and repeated at ten-second intervals. The function of a total of 7,200 sirens is tested.

17:30 – Welcome Apéro (Reception)

… Opening cont'd:

- Outlook on the next two days
- A bit of statistics
- Plenty of thanks and acknowledgements

Program (at a Glance)

2 more days ahead

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Scientific Keynote (Thursday, 9:00)

Synergizing Variability Modeling with Machine Learning: A Journey of Possibilities

Maxime Cordy, University of Luxembourg

Invited Talk (Friday, 9:00)

Embracing Software Variability to Build Explainable Systems

Oscar Nierstrasz, feenk.com | Professor em. Univ. of Bern

Social Event: „Spooky Bern“ (Thursday)

Spooky night walk through Bern's unique old town, approx. 90 mins.

- Meet us at Zytglogge at 17:15
- Or simply join us in walking to the tour

Social Event: Conference Dinner

Thursday, 19:30 – “Dampfzentrale” winter tent

Program from a Statistical Point of View

Submissions | Accepted Papers

- **Technical track:** 27 submissions, 14 accepted papers
- **Variability-in-Practice track:** 5 submissions, 4 accepted papers
- **New and Controversial Ideas track:** 4 submissions, 4 accepted papers
- **Artifact Evaluation track:** 6 submissions, 6 accepted

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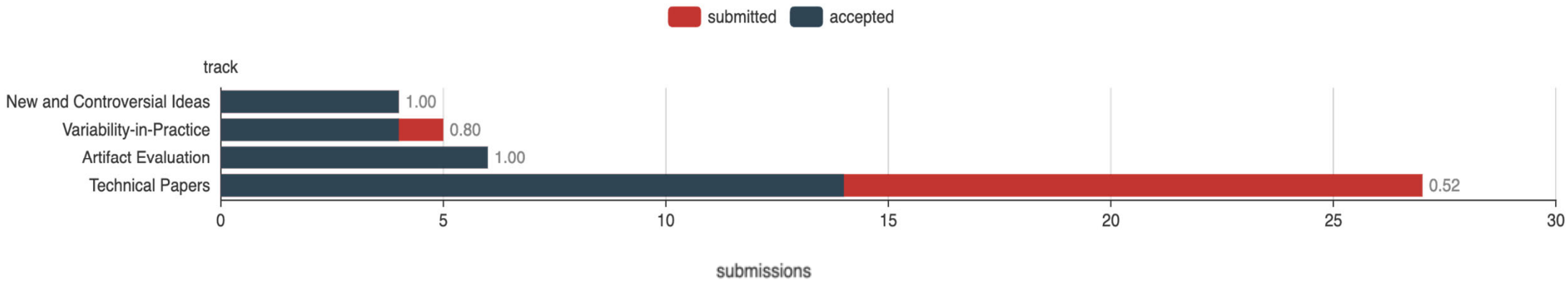
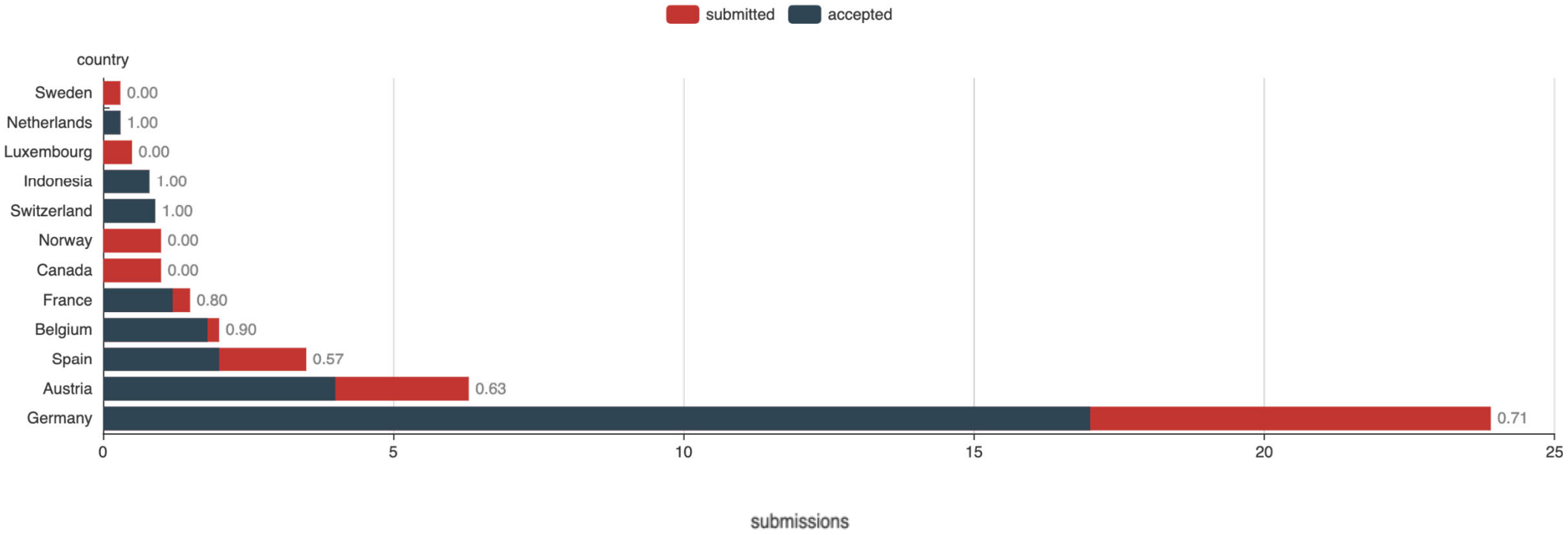
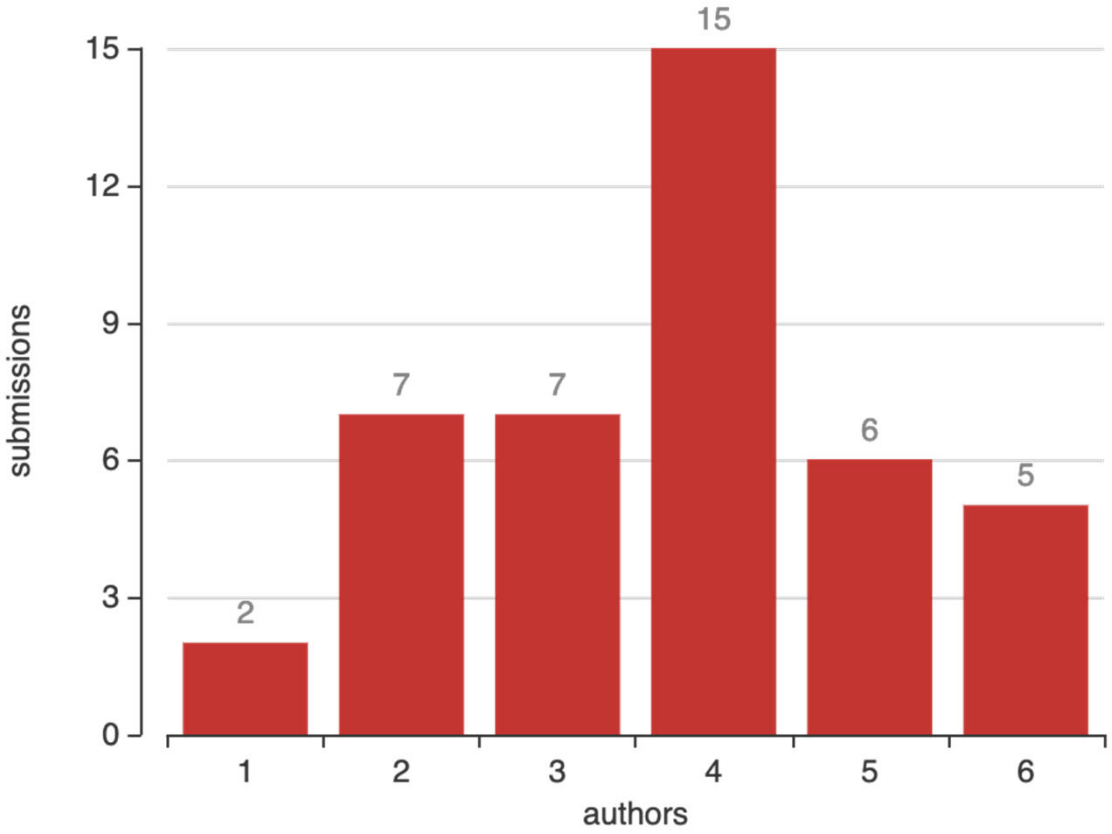


Submissions | Accepted Papers

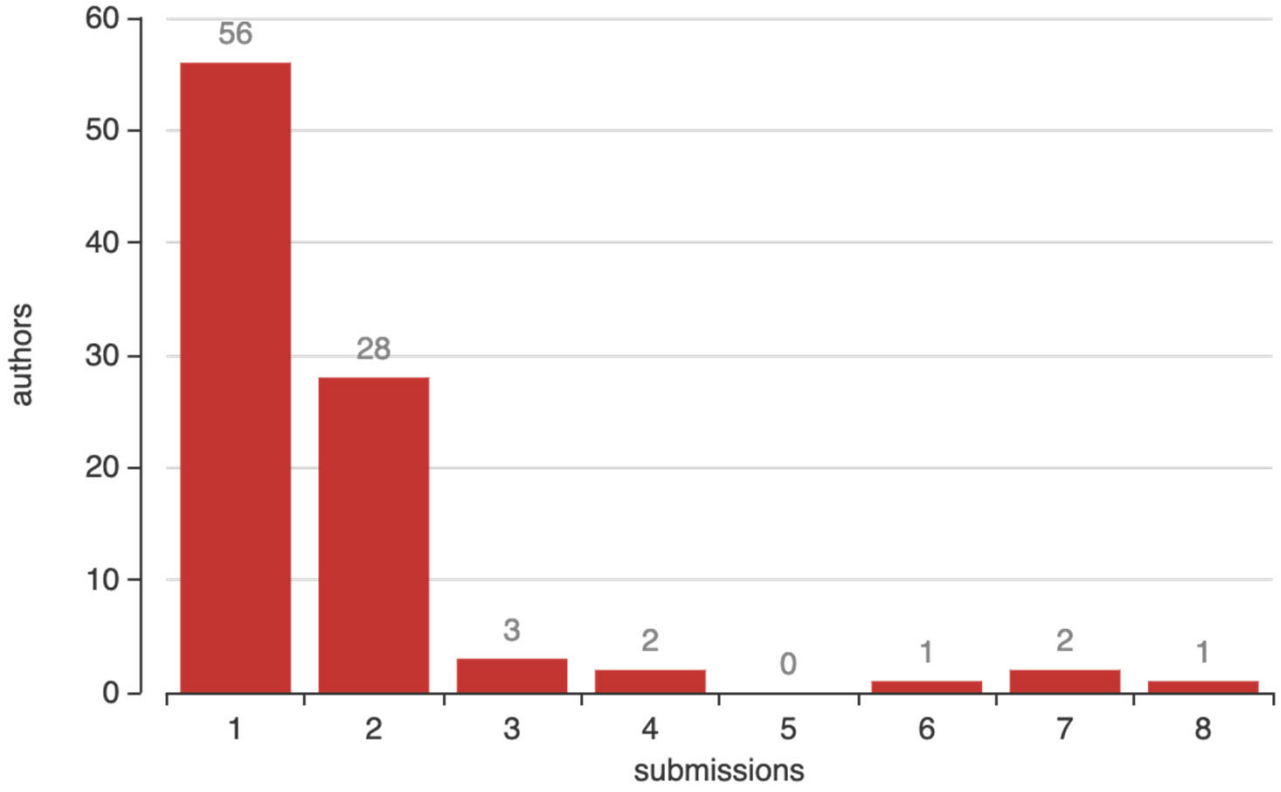
Submissions per Country



Authors per Submissions



Submissions per Author



Program from a PC Point of View

- In sum, **42 submissions** that received **3 reviews each**.
- **Two conditional accepts** provided with an **extra meta-review**.
- In total, **128 reviews** written by the PC members.
- More than **53k words** written to all authors, **414 words per review on average**.

Program from a PC Point of View

Thanks to our Program Committee…

Vander Alves
Paolo Arcaini
Wesley K. G. Assunção
David Benavides
Marsha Chechik
Philippe Collet
Xavier Devroey
Aleksandar S. Dimovski
Clemens Dubslaff
Lidia Fuentes
Jessie Galasso
Paul Gazzillo
Lea Gerling
Sebastian Krieter
Jacob Krüger
Jihyun Lee
Axel Legay
Malte Lochau
Roberto Erick Lopez-Herrejon
Ivan Machado
Gabriela Michelon
Mohammad Reza Mousavi
Clément Quinton
Rick Rabiser
Márcio Ribeiro
Alexander Schultheiß
Sandro Schulze
Yutian Tang
Paul Temple
Thomas Thüm
Maurice ter Beek
Gilles Perrouin

… and all Sub-Reviewers

Davide Basile
Paul Bittner
Sabrina Böhm
Benoît Duhoux
Tobias Heß
Gullelala Jadoon
Elias Kuiter
Luciano Marchezan
Ilaria Matteucci
Robert Müller
Logan Murphy
Mathis Weiß

Special thanks to the PC Chairs

Marianne Huchard

Leopoldo Teixeira

Thanks to the Artifact PC and Chairs

Jose Miguel Horcas Aguilera
Pablo Sanchez Barreiro
Kevin Feichtinger
Thiago Ferreira
Michael Lienhardt
Kristof Meixner
Luca Paolini
Thomas Georges
Edilton Lima Dos Santos
Andrea Vandin

Inmaculada Ayala

Sébastien Mosser

Thanks to the VaMoS'24 Team

Alexander Boll

Web Chair

Elias Kuiter

Publicity Chair

Christian Birchler

Proceedings Chair

Sandra Greiner

Local Organization

Thanks to the VaMoS Steering Committee

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Danny Weyns, KU Leuven, Belgium

Thanks to the VaMoS'24 Supporters

MGM Technology Partners

ELCA Informatik AG

CHOOSE: Swiss Group for Original and Outside-the-box Software Engineering

University of Bern

Very special thanks to…

Bettina Choffat

Local Organization

Soul Polisher

Awards…

Some special awards will be announced on Friday (please check the VaMoS website)

10-years Most Influental Paper Award

Towards Statistical Prioritization for Software Product Lines Testing

Xavier Devroey, Gilles Perrouin, Maxime Cordy, Pierre-Yves Schobbens, Axel Legay, Patrick Heymans

Towards Statistical Prioritization for Software Product Lines Testing

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ABSTRACT

Software Product Lines (SPLs) are inherently difficult to test due to the combinatorial explosion of the number of products to consider. To reduce the number of products to test, sampling techniques such as combinatorial interaction testing have been proposed. They usually start from a feature model and apply a coverage criterion (e.g. pairwise feature interaction or dissimilarity) to generate tractable, fault-finding, lists of configurations to be tested. Prioritization can also be used to sort/generate such lists, optimizing coverage criteria or weights assigned to features. However, current sampling/prioritization techniques barely take product behaviour into account. We explore how ideas of statistical testing, based on a usage model (a Markov chain), can be used to extract configurations of interest according to the likelihood of their executions. These executions are gathered in featured transition systems, compact representation of SPL behaviour. We discuss possible scenarios and give a prioritization procedure validated on a web-based learning management software.

Categories and Subject Descriptors

D.2.5 [**Software Engineering**]: Testing and Debugging; D.2.7 [**Software Engineering**]: Distribution, Maintenance, and Enhancement

General Terms

Verification, Algorithms, Measurement

*FNRS Postdoctoral Researcher
†FNRS Research Fellow

VaMoS'14, January 22 - 24 2014, Sophia Antipolis, France

http://dx.doi.org/10.1145/2556624.2556635.

Keywords

SPL Testing, Prioritization, Statistical Testing

1. INTRODUCTION

Software Product Line (SPL) engineering is based on the idea that products of the same family can be built by systematically reusing assets, some of them being common to all members whereas others are only shared by a subset of the family. Such variability is commonly captured by the notion of *feature*. Individual features can be specified using languages such as UML, while their inter-relationships are organized in a *Feature Diagram* (FD) [17].

SPL testing the most common quality assurance technique in SPL engineering. As opposed to single-system testing where the testing process considers only one software product, SPL testing is concerned about minimizing the test effort for all the SPL products. Testing these products separately is clearly infeasible in real-world SPLs, which typically consist of thousands of products. Automated model-based testing [32] and shared execution [18] are established testing methods that allows test reuse across a set of software. They can thus be used to reduce the SPL testing effort. Even so, the problem remains entire as these methods still need to cover all the products.

Other approaches consist in testing only a representative sample of the products. Typical methods select these products according to some coverage criterion on the FD (e.g. all the valid couples of features must occur in at least one tested product [7,25]). An alternative method is to associate each feature with a weight and prioritize the products with the highest weight [15, 16]. This actually helps testers to scope more finely and flexibly relevant products to test than a covering criteria alone. Yet, assigning meaningful weights is cumbersome in the absence of additional information regarding their behaviour.

In this paper, we propose an approach to prioritize the products to test according to criteria based on the actual behaviour of the products, thereby increasing the relevancy of the testing activities and decreasing the risk of leaving errors undetected in many products. Our work leans on statistical testing [35], which generates test cases from a *usage model* represented by a *Discrete-Time Markov Chain* (DTMC). This usage model represents the usage scenarios

Enjoy VaMoS'24! Enjoy Bern!