

12th Symposium on Software Performance (SSP) Leipzig, November 9-10, 2021

David Georg Reichelt¹, Richard Müller²

¹University Computing Centre, Research and Development, Universität Leipzig

²ipoque GmbH

1. Preface

Almost 40 participants from Germany and Czech Republic have attended the 12th Symposium on Software Performance (SSP). Despite the Covid-19 pandemic, it was possible to hold the symposium as physical event.

Performance is one of the most relevant quality attributes of IT systems. While good performance leads to high user satisfaction, weak response times lead to perceived unavailability of the system, or unnecessarily high costs of network or computing resources, or may even cause a loss of users. Therefore, various techniques to evaluate, control, and improve the performance of IT systems have been developed, ranging from online monitoring and benchmarking to modeling and prediction. Experience shows, that for system design or subsequent optimization, such techniques should be applied in smart combination.

For these reasons, the SSP brings together researchers and practitioners interested in all facets of software performance, ranging from modeling and prediction to monitoring and runtime management. The symposium is organized by the three established research groups Descartes [1], Kieker [2], and Palladio [3]; thus this symposium also serves as a joint community meeting. Descartes' focus are techniques and tools for engineering self-aware computing systems designed for maximum dependability and efficiency. Kieker is a well-established tool and approach for monitoring software performance of complex, large, and distributed IT systems. Palladio is a likewise-established tool and approach for modeling software architectures of IT systems as well as for simulating their performance.

The symposium program includes contributions from practitioners and researchers in the field of software performance, including but not limited to approaches employing Descartes, Kieker, or Palladio.


In addition to the three organizing groups, the SSP is also supported by the special interest group "Softwaretechnik" (software engineering) of the "Gesellschaft für Informatik (GI)" and by the special interest committee "Messung, Modellierung und Bewertung (MMB) von Rechensystemen" (measurement, modeling, and evaluation of computer systems) of GI and the "Informationstechnische Gesellschaft ITG im VDE".

SSP'21: Symposium on Software Performance, November 09–10, 2021, Leipzig, Germany

 <https://www.urz.uni-leipzig.de/fue/DavidGeorgReichelt/> (D. G. Reichelt)



© 2021 Copyright for this paper by its authors. Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0).

 CEUR Workshop Proceedings (CEUR-WS.org)

We solicited two types of contributions, namely technical papers and posters for industry or experience talks. Submitted proposals were reviewed by a program committee with the following members:

- Holger Eichelberger, University of Hildesheim
- Johannes Grohmann, University of Würzburg
- Robert Heinrich, KIT
- Reiner Jung, Kiel University
- Holger Knoche, ivv GmbH
- Sebastian Krach, FZI
- Johannes Kroß, Fortiss GmbH
- Dušan Okanović, Novatec Consulting GmbH
- David Georg Reichelt, Leipzig University
- Norbert Schmitt, University of Würzburg
- Henning Schnoor, Kiel University
- Dominik Werle, KIT

The program committee was chaired by:

- David Georg Reichelt, Leipzig University
- Richard Müller, ipoque GmbH

Currently, the steering committee has the following members:

- Steffen Becker, University of Stuttgart
- Wilhelm Hasselbring, Kiel University
- André van Hoorn, University of Stuttgart
- Samuel Kounev, University of Würzburg
- Anne Koziolk, KIT
- Ralf Reussner, KIT/FZI

We would like to thank all committee members, the local organization team, and all participants that contributed to the event including the authors and presenters as well as our sponsors RETIT GmbH, Appsfactory GmbH, Novatec Consulting GmbH and GISA GmbH.

2. Program

The program comprises three industry talks from the sponsors, nine paper presentations, and eight presentations from posters.

- [Industry Talk] Denis Angeletta (RETIT): *Investigating the Performance of Reactive Libraries in a Quarkus Micro-Service*
- [Industry Talk] Ricky Kaehlert, Henry Kursawe (Appsfactory): *Software As A Medical Device - Creating Digital Products Based On ISO 13485*
- [Paper] Lukas Beierlieb, Lukas Iffländer, Aleksandar Milenkoski, Thomas Prantl and Samuel Kounev: *Measuring the Performance Impact of Branching Instructions*
- [Paper] Richard Müller, Dirk Mahler and Christopher Klinkmüller: *Experiences in Replicating an Experiment on Comparing Static and Dynamic Coupling Metrics*
- [Extended Abstract] Daniel Seybold and Jörg Domaschka: *Automated Benchmarking of Cloud-Hosted DBMS With benchANT*
- [Paper] David Georg Reichelt, Stefan Kühne and Wilhelm Hasselbring: *Overhead Comparison of OpenTelemetry, inspectIT and Kieker*
- [Paper] Christopher Noel Hesse and Holger Eichelberger: *Benchmarking Neural Networks on Heterogeneous Hardware Resources*
- [Paper] Sören Henning, Benedikt Wetzels and Wilhelm Hasselbring: *Reproducible Benchmarking of Cloud-Native Applications With the Kubernetes Operator Pattern*
- [Paper] Marcus Hilbrich and Fabian Lehmann: *βMACH - A Software Management Guidance*
- [Paper] Sophie Schulz, Frederik Reiche, Sebastian Hahner and Jonas Schiffel: *Continuous Secure Software Development and Analysis*
- [Poster] Sebastian Frank, Alireza Hakamian, André van Hoorn, Samuel Beck and Christoph Zorn: *Scenario-Based Elicitation, Specification, and Comprehension of Transient Software Behavior*
- [Industry Talk] Tino Schmidt (GISA): *Increasing adaptability and flexibility by centralizing an on-premise ERP landscape on the SAP Business Technology Platform*
- [Paper] Miguel Gomez Casado and Holger Eichelberger: *Industry 4.0 Resource Monitoring - Experiences With Micrometer and Asset Administration Shells*
- [Paper] Reiner Jung, Sven Gundlach and Wilhelm Hasselbring: *Instrumenting C and Fortran Software with Kieker*
- [Poster] Reiner Jung, Sven Gundlach, Serafim Simonov and Wilhelm Hasselbring: *Monitoring Python Applications With Kieker*

- [Poster] Martin Straesser and Samuel Kounev: *Container Start Times: Empirical Analysis and Predictability*
- [Poster] Dennis Kaiser, Bohdan Dovhan, André Bauer and Samuel Kounev: *Towards Splitting Monolithic Workflows Into Serverless Functions and Estimating Their Run-Time in the Earth Observation Domain*
- [Poster] Lion Wagner, Sebastian Frank, Alireza Hakamian and André van Hoorn: *MiSim – A Lightweight and Extensible Simulator for a Scenario-Based Resilience Evaluation of Microservice Architectures*
- [Poster] Julijan Katic, Floriment Klinaku and Steffen Becker: *The Slingshot Simulator: An Extensible Event-Driven PCM Simulator*
- [Poster] Floriment Klinaku, Alireza Hakamian and Steffen Becker: *Using Online Working Sessions as an Evaluation Technique for Research in SPE: Experience and Lessons Learned*

The papers and the posters are included in the present volume of “[ceur-ws.org](http://www.ceur-ws.org)” as post-proceedings. Additionally, the slides of the presentations are available on the program web page.

3. Outlook

The next SSP in 2022 will take place in Stuttgart. More information will be available at <http://www.performance-symposium.org/>.

References

- [1] N. Huber, F. Brosig, S. Spinner, S. Kounev, M. Bähr, Model-based self-aware performance and resource management using the Descartes modeling language, *IEEE Transactions on Software Engineering* 43 (2017) 432–452.
- [2] W. Hasselbring, A. van Hoorn, Kieker: A monitoring framework for software engineering research, *Software Impacts* 5 (2020) 1–5. URL: <http://eprints.uni-kiel.de/49892/>. doi:doi:10.1016/j.simpa.2020.100019.
- [3] R. Reussner, S. Becker, J. Happe, R. Heinrich, A. Koziolok, H. Koziolok, M. Kramer, K. Krogmann, *Modeling and simulating software architectures: The Palladio approach*, MIT Press, 2016.