

Norbert Siegmund

Curriculum Vitae



Coordinates

Position: Full Professor

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Research Interests

Software engineering and artificial intelligence are more and more intertwined disciplines. My research is driven by the quest how software engineering can be automated and enriched with methods from AI and how intelligent systems can be built, maintained, and evolve with methods from software engineering. Specifically, my focus is on:

- Configurable, complex systems that evolve over time
- Non-functional properties, such as performance and energy consumption
- Sampling, learning, and optimization methods from AI
- Contemporary empirical methods in software engineering

I apply and validate my methods on real-world software systems, interview experts, and collect and analyze industrial practices to develop common theories, models, and tools.

Education

2007 – 2012: Doctoral degree in Computer Science (Doktor-Ingenieur),
: University of Magdeburg, Germany,
: Grade: “summa cum laude” (with distinction)

2001 – 2007: Diploma degree in Computer Science (Diplom-Informatiker),
: University of Magdeburg, Germany

Academic Employment

since 2020 : Full Professor,
: Chair of Software Systems, Leipzig University, Germany

2016 – 2020: Full Professor,
: Chair of Intelligent Software Systems, Bauhaus-University Weimar, Germany

2013 – 2016: Postdoctoral Researcher (Akademischer Rat)
: Host: Prof. Sven Apel, University of Passau, Germany

2012 – 2013: Head Scientific Coordinator,
: Center for Digital Engineering, University of Magdeburg, Germany

2011 – 2012: Visiting Researcher
: Host: Prof. Don Batory, University of Texas at Austin, USA

2007 – 2012 : Research Assistant, Supervisor: Prof. Gunter Saake
: University of Magdeburg, Germany

Awards and Invited Talks

2021: Keynote “Modelling the Universe: Accurate & Interpretable Performance Models for an Astronomical Number of Influences” @QAVS

2020: Invited Industry Talk “Performance Sampling, Learning, and Prediction of Configurable Software Systems” @MongoDB

2020: Open-Source Award of the state Thuringia, Germany for a charity project combining industry experts and students

2019: Best Lecture Award @ Media Department, Bauhaus-Universität Weimar, Germany

2019: Keynote “Challenges and Insights from Optimizing Configurable Software Systems” @VaMoS

2015: ACM SIGSOFT Distinguished Paper Award @ICSE

2013: Best PhD-Student Award @ School of Computer Science at University of Magdeburg, Germany

2012: Most innovative Teaching-Concept Award of the University of Magdeburg, Germany

2011: Research Award @ School of Computer Science at University of Magdeburg, Germany

2011: Best Paper Award @SPLC

Research Grants and Projects

2017 – 2021: Green Configuration: Determining the Influence of
: Software Configurations on Energy Consumption
: funded by DFG, 590 000€

2019 – 2021: Coding-AI: An AI for Code Suggestions
: funded by BMBF, ca. 180 000€ as part of ScaDS.AI, Leipzig, Germany

2017 – 2020: Pervolution: Performance Evolution of Configurable Software Systems
: funded by DFG, 290 000€ of 580 000€, with Sven Apel

2019 – 2021: Agile-AI: Agile Entwicklung von Systemen der Künstlichen Intelligenz
: funded by BMBF, 181 000€ of 711 475€, with Benno Stein and Martin Potthast

Professional Services

Organizational Committees (selected).....

since **2019**: Steering Committee @VaMoS

2019 : Workshop Chair @ESEC/FSE

2018 – 19: TSE review board

2017 : Program Chair @VaMoS

2016 : Track Chair @SPLCE

2013 : Program Chair @FOSD

2013 : Publicity Chair @GPCE

Program Committees (selected).....

Journals: TSE, EMSE, TOSEM, SENSORS, JSS, SQJ, SCP, JUCS

ESEC/FSE: 2019,2020

ASE: 2016,2018

SPLC: 2016,17,20

ICPE: 2022

GPCE: 2014,15,16

VaMoS: 2016,18

Refereed Journal Articles (selected)

- [1] Norbert Siegmund, Marko Rosenmüller, Martin Kuhlemann, Christian Kästner, Sven Apel, and Gunter Saake. “SPL Conqueror: Toward Optimization of Non-functional Properties in Software Product Lines”. In: *Software Quality Journal (SQJ)* 20 (3 2012), pp. 487–517.
- [2] Vivek Nair, Zhe Yu, Tim Menzies, Norbert Siegmund, and Sven Apel. “Finding Faster Configurations Using FLASH”. In: *IEEE Transaction on Software Engineering (TSE)* 46 (7 2018), pp. 794–811.
- [3] Jianmei Guo, Dingyu Yang, Norbert Siegmund, Sven Apel, Atrisha Sarkar, Pavel Valov, Krzysztof Czarnecki, Andrzej Wasowski, and Huiqun Yu. “Data-efficient Performance Learning for Configurable Systems”. In: *Empirical Software Engineering (EMSE)* 23 (3 2018), pp. 1826–1867.

Refereed Conference Papers (selected)

- [4] Norbert Siegmund, Alexander Grebhahn, Sven Apel, and Christian Kästner. “Performance-Influence Models for Highly Configurable Systems”. In: *Proceedings of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*. ACM Press, Aug. 2015, pp. 284–294.
- [5] Janet Siegmund, Norbert Siegmund, and Sven Apel. “Views on Internal and External Validity in Empirical Software Engineering”. In: *Proceedings of the IEEE/ACM International Conference on Software Engineering (ICSE)*. ACM SIGSOFT Distinguished Paper Award. IEEE, May 2015, pp. 9–19.
- [6] Norbert Siegmund, Sergiy Kolesnikov, Christian Kästner, Sven Apel, Don Batory, Marko Rosenmüller, and Gunter Saake. “Predicting Performance via Automated Feature-Interaction Detection”. In: *Proceedings of the IEEE/ACM International Conference on Software Engineering (ICSE)*. IEEE, 2012, pp. 167–177.
- [7] Miguel Velez, Pooyan Jamshidi, Norbert Siegmund, Sven Apel, and Christian Kästner. “White-Box Analysis over Machine Learning: Modeling Performance of Configurable Systems”. In: *Proceedings of the IEEE/ACM International Conference on Software Engineering (ICSE)*. IEEE, 2021, pp. 1072–1084.
- [8] Max Weber, Sven Apel, and Norbert Siegmund. “White-Box Performance-Influence Models: A Profiling and Learning Approach”. In: *Proceedings of the IEEE/ACM International Conference on Software Engineering (ICSE)*. IEEE, 2021, pp. 232–233.
- [9] Johannes Dorn, Sven Apel, and Norbert Siegmund. “Mastering Uncertainty in Performance Estimations of Configurable Software Systems”. In: *Proceedings of the IEEE/ACM International Conference on Automated Software Engineering (ASE)*. ACM Press, 2020, pp. 684–696.
- [10] Christian Kaltenecker, Alexander Grebhahn, Norbert Siegmund, Jianmei Guo, and Sven Apel. “Distance-Based Sampling of Software Configuration Spaces”. In: *Proceedings of the IEEE/ACM International Conference on Software Engineering (ICSE)*. ACM, 2019, pp. 1084–1094.

¹The h-index has been computed by Google Scholar.