Sebastian Krings

Curriculum Vitae

Current Position

since 04.2018 Postdoc - Competence Centre for Information Security
Niederrhein University of Applied Sciences

since 2006 Freelance work in education, training and consulting

Work Experience

08.2017–03.2018 Postdoc - Chair for Programming Languages and Software Engineering
Heinrich-Heine-University Düsseldorf

12.2012–07.2017 Research Fellow
Chair for Programming Languages and Software Engineering

03.2012–08.2012 Research Assistant
Chair for Mathematics and Applied Fields

03.2011–09.2011 Research Assistant
Chair for Mathematics and Applied Fields

08.2010–12.2010 Research Assistant
Chair for Programming Languages and Software Engineering

Academic Education

Ph.D. Computer Science, *magna cum laude*

12.2012–06.2017 Heinrich-Heine-University Düsseldorf

Thesis Towards Infinite-State Symbolic Model Checking for B and Event-B

M.Sc. Computer Science, *excellent (A)*

02.2010–10.2012 an der Heinrich-Heine-University Düsseldorf

Thesis Inference of Physical Units in Formal Models, *very good (B)*

B.Sc. Mathematik, *good (C)*

04.2008–02.2012 an der Heinrich-Heine-University Düsseldorf

Thesis Mathematical Modeling of Wrist Joint Mobility, *very good (B)*

B.Sc. Informatik, *excellent (A)*

10.2006–02.2010 an der Heinrich-Heine-University Düsseldorf

Thesis Code Coverage Analysis for Prolog, *very good (B)*

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Further Education

11.2018 *Applied Data Science with Python*
University of Michigan via Coursera

11.2018 *ISMS Auditor/LEAD-Auditor ISO/IEC 27001*
HS Niederrhein

03.2018 Specialization Certificate *Professionelle Lehrkompetenz für die Hochschule (Professional teaching competence for universities)*
Netzwerk Hochschuldidaktik NRW

06.2017 *Cambridge English: Proficiency*
University of Cambridge via VHS Düsseldorf

02.2017 Extended Certificate *Professionelle Lehrkompetenz für die Hochschule (Professional teaching competence for universities)*
Netzwerk Hochschuldidaktik NRW

10.2016 Basic Certificate *Professionelle Lehrkompetenz für die Hochschule (Professional teaching competence for universities)*
Netzwerk Hochschuldidaktik NRW

Rewards & Scholarships

2015 Best Paper Award for *From Failure to Proof: The ProB Disprover for B and Event-B*, Software Engineering and Formal Methods

10.2010–09.2011 NRW Scholarship Program „Chancen Nutzen“
ARAG Insurance

Funding and Industry Projects

Funding

2018 *GENERATED - GENEration of ReAlistic Artificial TEst Data*. Project in cooperation with Periplus Instruments, internal start-up funding by Niederrhein University of Applied Sciences, 1 year, 15.000€

Project Involvement

2017 Industry project *Virtual Block Function for Hybrid L3* by Thales Berlin and Heinrich-Heine-University

2012–2014 EU FP7-ICT Projekt *ADVANCE - Advanced Design and Verification Environment for Cyber-physical System Engineering*

Academic Services

Reviewing

Journals Software Tools for Technology Transfer, Theoretical Computer Science

Conferences & Workshops RSSRail 2019, ABZ 2018, FM 2018, RSSRail 2017, LOPSTR 2016, ICLP 2016, IJCAI 2016, RSSRail 2016, SETS 2015, FM 2014

Event Organization

2018 Conference „Information Security Management in Hospitals“ as part of the European Cyber Security Month

Workshop „Ethical Hacking“ as part of the European Cyber Security Month

Self-Government

2017 Member of the appointments commitee *Artificial Intelligence*

Conferences, Workshops and Schools Attended

2018 26th International Workshop on Functional and Logic Progamming (WFLP), Frankfurt, Germany

18th International Workshop on Automated Verification of Critical Systems (AVoCS), Oxford, GB

20th International Symposium on Practical Aspects of Declarative Languages (PADL), Los Angeles, USA

45th ACM SIGPLAN Symposium on Principles of Programming Languages (POPL), Los Angeles, USA

2nd InSite User Group Meeting, Brüssel, Belgium

2017 Declare 2017 – Conference on Declarative Programming, Würzburg, Germany

2016 12th International Conference on integrated Formal Methods (iFM), Reykjavik, Iceland

PhD Symposium at iFM'16 on Formal Methods: Algorithms, Tools and Applications, Reykjavik, Iceland

5th International Conference on Abstract State Machines, Alloy, B, TLA, VDM and Z (ABZ), Linz, Austria

6th Rodin User and Developer Workshop, Linz, Austria

Leipzig Week of Declarative Programming, Leipzig, Germany

2014 1st Workshop on Formal-IDE (F-IDE), Grenoble, France

4th International Summer School on SAT/SMT, Semmering, Austria

20th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), Grenoble, France

2013 11th International Conference on Software Engineering and Formal Methods (SEFM), Madrid, Spain

4th Rodin User and Developer Workshop, Turku, Finnland

Summer School Marktoberdorf on Software Systems Safety, Marktoberdorf, Germany

3rd CHR Summer School, Berlin, Germany

Languages

German	native
English	fluent in written and spoken (CEFR Level C2)

Sebastian Krings

Publications

Book Chapters

2014 Michael Leuschel, Jens Bendisposto, Ivaylo Dobrikov, **Sebastian Krings** und Daniel Plagge. „From Animation to Data Validation: The ProB Constraint Solver 10 Years On“. In: *Formal Methods Applied to Complex Systems: Implementation of the B Method*. Hrsg. von Jean-Louis Boulanger. Hoboken, NJ: Wiley ISTE, 2014. Kap. 14, S. 427–446

Journal Articles

2017 **Sebastian Krings** und Michael Leuschel. „Proof Assisted Bounded and Unbounded Symbolic Model Checking of Software and System Models“. In: *Science of Computer Programming* (2017)

2015 **Sebastian Krings** und Michael Leuschel. „Inferring Physical Units in Formal Models“. In: *Software & Systems Modeling* 16.1 (Feb. 2017), S. 25–47

Conference and Workshop Proceedings

2019 Sebastian Krings Jannik Dunkelau und Joshua Schmidt. „Automatic Backend Selection for ProB Using Deep Learning“. In: *Proceedings of the 11th Annual NASA Formal Methods Symposium*. LNCS. Springer, 2019

Sebastian Krings, Philipp Körner und Joshua Schmidt. „Experience Report on An Inquiry-Based Course on Model Checking“. In: *Tagungsband des 16. Workshops zu Software Engineering im Unterricht der Hochschulen (to appear)*. CEUR. 2019

2018 Alexandros Efremidis, Joshua Schmidt, **Sebastian Krings** und Philipp Körner. „Measuring Coverage of Prolog Programs Using Mutation Testing“. In: *Proceedings of the 26th International Workshop on Functional and Logic Programming*. Bd. 11285. LNCS. Springer, 2018

Joshua Schmidt, **Sebastian Krings** und Michael Leuschel. „Repair and Generation of Formal Models Using Synthesis“. In: *Proceedings of the 14th International Conference on Integrated Formal Methods*. Bd. 11023. LNCS. Springer, 2018

Jessica Petrasch, Jan-Hendrik Oepen, **Sebastian Krings** und Moritz Gericke. „Writing a Model Checker in 80 Days: Reusable Libraries and Custom Implementation“. In: *Proceedings of the 18th International Workshop on Automated Verification of Critical Systems (to appear)*. Bd. 76. ECEASST. 2018

Sebastian Krings, Joshua Schmidt, Carola Brings, Marc Frappier und Michael Leuschel. „A Translation from Alloy to B“. In: *Proceedings of the 6th International Conference on Abstract State Machines, Alloy, B, TLA, VDM, and Z*. Bd. 10817. LNCS. Springer, 2018

Dominik Hansen, Michael Leuschel, David Schneider, **Sebastian Krings**, Philipp Körner, Thomas Naulin, Nader Nayeri und Frank Skowron. „Using a Formal B Model at Runtime in a Demonstration of the ETCS Hybrid Level 3 Concept with Real Trains“. In: *Proceedings of the 6th International Conference on Abstract State Machines, Alloy, B, TLA, VDM, and Z*. Bd. 10817. LNCS. Springer, 2018

Stefan Hallerstede, Miran Hasanagic, **Sebastian Krings**, Peter Gorm Larsen und Michael Leuschel. „From Software Specifications to Constraint Programming“. In: *Proceedings of the 16th International Conference on Software Engineering and Formal Methods*. Bd. 10886. LNCS. Springer, 2018

Sebastian Krings, Michael Leuschel, Philipp Körner, Stefan Hallerstede und Miran Hasanagic. „Three is a crowd: SAT, SMT and CLP on a chessboard“. In: *Proceedings of the 20th International Symposium on Practical Aspects of Declarative Languages*. Bd. 10702. LNCS. Springer, 2018

2017 **Sebastian Krings** und Philipp Körner. „plspec – A Specification Language for Prolog Data“. In: *Proceedings Declare 2017 – Conference on Declarative Programming*. Bd. 10997. LNCS. Springer, 2018

2016 **Sebastian Krings** und Michael Leuschel. „SMT Solvers for Validation of B and Event-B models“. In: *Proceedings of the 12th International Conference on Integrated Formal Methods*. Bd. 9681. LNCS. Springer, 2016

Sebastian Krings und Michael Leuschel. „Proof Assisted Symbolic Model Checking for B and Event-B“. In: *Proceedings of the 5th International Conference on Abstract State Machines, Alloy, B, TLA, VDM, and Z*. Bd. 9675. LNCS. Springer, 2016

Joshua Schmidt, **Sebastian Krings** und Michael Leuschel. „Interactive Model Repair by Synthesis“. In: *Proceedings of the 5th International Conference on Abstract State Machines, Alloy, B, TLA, VDM, and Z*. Bd. 9675. LNCS. Springer, 2016

Sebastian Krings und Michael Leuschel. „Constraint Logic Programming over Infinite Domains with an Application to Proof“. In: *Proceedings of the 30th Workshop on (Constraint) Logic Programming*. Bd. 234. EPTCS. 2016

2015 **Sebastian Krings**, Jens Bendisposto und Michael Leuschel. „From Failure to Proof: The ProB Disprover for B and Event-B“. In: *Proceedings of the 13th International Conference on Software Engineering and Formal Methods*. Bd. 9276. LNCS. Springer, 2015

2014 **Sebastian Krings**, Jens Bendisposto und Michael Leuschel. „Turning Failure into Proof: Evaluating the ProB Disprover“. In: *Proceedings of the 1st International Workshop about Sets and Tools*. 2014

Jens Bendisposto, **Sebastian Krings** und Michael Leuschel. „Who watches the watchers: Validating the ProB Validation Tool“. In: *Proceedings of the 1st Workshop on Formal-IDE*. Bd. 149. EPTCS. 2014

2013 **Sebastian Krings** und Michael Leuschel. „Inferring Physical Units in B Models“. In: *Proceedings of the 11th International Conference on Software Engineering and Formal Methods*. Bd. 8137. LNCS. Springer, 2013

Extended Abstracts

2016 **Sebastian Krings**. *The Burden of High-Level Languages: Complicated Symbolic Model Checking*. PhD Symposium at iFM'16 on Formal Methods: Algorithms, Tools and Applications. 2016

Sebastian Krings. *Meta-Predicates for Rodin*. 6th Rodin User and Developer Workshop. 2016

2013 **Sebastian Krings**, Jens Bendisposto, Ivaylo Dobrikov und Michael Leuschel. „B constrained“. In: *Proceedings of the 4th Rodin User and Developer Workshop*. TUCS Lecture Notes. TUCS, 2013

Jens Bendisposto, Joy Clark, Ivaylo Dobrikov, Philipp Körner, **Sebastian Krings**, Lukas Ladenberger, Michael Leuschel und Daniel Plagge. „ProB 2.0 Tutorial“. In: *Proceedings of the 4th Rodin User and Developer Workshop*. TUCS Lecture Notes. TUCS, 2013