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List of Publications

H-Index: 20 (Google Scholar)

Academic Theses

- [T3] Ralf Wimmer. “Formal Methods for Analyzing Digital and Probabilistic Systems”. *Habilitation Thesis*. Freiburg im Breisgau, Germany: Albert-Ludwigs-Universität Freiburg, Mar. 1, 2018.
- [T2] Ralf Wimmer. “Symbolische Methoden für die probabilistische Verifikation – Zustandsraumreduktion und Gegenbeispiele”. *Dissertation*. Freiburg im Breisgau, Germany: Albert-Ludwigs-Universität Freiburg, Jan. 18, 2011. URL: <https://freidok.uni-freiburg.de/data/7932>.
- [T1] Ralf Wimmer. “Ganzzahlige lineare Optimierung und Separierung mit binären Entscheidungsdiagrammen”. *Diploma Thesis*. Freiburg im Breisgau, Germany: Albert-Ludwigs-Universität Freiburg, Dec. 22, 2004.

Journal Articles

- [J8] Ralf Wimmer, Christoph Scholl, and Bernd Becker. “The (D)QBF Preprocessor HQSpre – Underlying Theory and Its Implementation”. In: *Journal on Satisfiability, Boolean Modeling and Computation* 11 (July 2019). Ed. by Martina Seidl and Luca Pulina, pp. 1–51. URL: <http://jsatjournal.org/volumes/11/>.
- [J7] Hassan Hatefi, Ralf Wimmer, Bettina Braitling, Luis María Ferrer Fioriti, Bernd Becker, and Holger Hermanns. “Cost vs. Time in Stochastic Games and Markov Automata”. In: *Formal Aspects of Computing* 29.4 (July 2017), pp. 629–649. DOI: 10.1007/s00165-016-0411-1.
- [J6] Ernst Moritz Hahn, Holger Hermanns, Ralf Wimmer, and Bernd Becker. “Transient Reward Approximation for Continuous-Time Markov Chains”. In: *IEEE Transactions on Reliability* 64.4 (2015), pp. 1254–1275. DOI: 10.1109/TR.2015.2449292.
- [J5] Ralf Wimmer, Nils Jansen, Erika Ábrahám, and Joost-Pieter Katoen. “High-level Counterexamples for Probabilistic Automata”. In: *Logical Methods in Computer Science* 11.1:15 (Mar. 2015). Ed. by Kaustubh Joshi, Markus Siegle, and Marielle Stoëlinga, pp. 1–23. DOI: 10.2168/LMCS-11(1:15)2015.
- [J4] Nils Jansen, Ralf Wimmer, Erika Ábrahám, Barna Zajzon, Joost-Pieter Katoen, Bernd Becker, and Johann Schuster. “Symbolic Counterexample Generation for Large Discrete-Time Markov Chains”. In: *Science of Computer Programming* 91.A (2014), pp. 90–114. DOI: 10.1016/j.scico.2014.02.001.

- [J3] Ralf Wimmer, Nils Jansen, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. “Minimal Counterexamples for Linear-Time Probabilistic Verification”. In: *Theoretical Computer Science* 549 (Sept. 2014), pp. 61–100. DOI: 10.1016/j.tcs.2014.06.020.
- [J2] Ralf Wimmer, Salem Derisavi, and Holger Hermanns. “Symbolic Partition Refinement with Automatic Balancing of Time and Space”. In: *Performance Evaluation* 67.9 (2010). Ed. by Susanna Donatelli, Prakash Panangaden, and Gerardo Rubino, pp. 815–835. DOI: 10.1016/j.peva.2009.12.008.
- [J1] Eckard Böde, Marc Herbstritt, Holger Hermanns, Sven Johr, Thomas Peikenkamp, Reza Pulungan, Jan-Hendrik Rakow, Ralf Wimmer, and Bernd Becker. “Compositional Dependability Evaluation for STATEMATE”. In: *IEEE Transactions on Software Engineering* 35.2 (2009), pp. 274–292. DOI: 10.1109/TSE.2008.102.

Editorship

- [E1] Ralf Wimmer, ed. *Proceedings of the 19th GI/ITG/GMM Workshop “Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen” (MBMV)*. Freiburg im Breisgau, Germany: Albert-Ludwigs-Universität Freiburg, Mar. 1–2, 2016. DOI: 10.6094/UNIFR/10617.

Refereed Conference and Workshop Publications

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- [C56] Steven Carr, Nils Jansen, Ralf Wimmer, Alexandru Constantin Serban, Bernd Becker, and Ufuk Topcu. “Counterexample-Guided Strategy Improvement for POMDPs using Recurrent Neural Networks”. In: *Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI)*. Ed. by Sarit Kraus. Macao, China: ijcai.org, Aug. 10–16, 2019, pp. 5532–5539. DOI: 10.24963/ijcai.2019/768.
- [C55] Aile Ge-Ernst, Christoph Scholl, and Ralf Wimmer. “Localizing Quantifiers for DQBF”. In: *Proceedings of the 19th International Conference on Formal Methods in Computer-Aided Design (FMCAD)*. Ed. by Clark Barrett and Jin Yang. (**Best Paper Award**). San Jose, CA, USA: IEEE, Oct. 22–25, 2019, pp. 184–192. DOI: 10.23919/FMCAD.2019.8894269.
- [C54] Christoph Scholl, Jie-Hong Roland Jiang, Ralf Wimmer, and Aile Ge-Ernst. “A PSPACE Subclass of Dependency Quantified Boolean Formulas and Its Effective Solving”. In: *Proceedings of the 33rd AAAI Conference on Artificial Intelligence (AAAI)*. Ed. by Pascal Van Hentenryck and Zhi-Hua Zhou. Honolulu, HI, USA: AAAI Press, Jan. 27–Feb. 1, 2019, pp. 1584–1591. DOI: 10.1609/aaai.v33i01.33011584.

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- [C53] Yuliya Butkova, Ralf Wimmer, and Holger Hermanns. “Markov Automata on Discount!” In: *Proceedings of the 19th International GI/ITG Conference on Measurement, Modelling and Evaluation of Computing Systems (MMB)*. Ed. by Reinhard German, Kai-Steffen Jens Hielscher, and Udo R. Krieger. Vol. 10740. Lecture Notes in Computer Science. (**Best Paper Award**). Erlangen, Germany: Springer, Feb. 26–28, 2018, pp. 19–34. DOI: 10.1007/978-3-319-74947-1_2.

- [C52] Steven Carr, Nils Jansen, Ralf Wimmer, Jie Fu, and Ufuk Topcu. “Human-in-the-Loop Synthesis for Partially Observable Markov Decision Processes”. In: *Proceedings of the 2018 Annual American Control Conference (ACC)*. Ed. by Jordan Berg and Zongli Lin. Milwaukee, WI, USA: IEEE, June 27–29, 2018, pp. 762–769. DOI: 10.23919/ACC.2018.8431911.
- [C51] Sebastian Junges, Nils Jansen, Ralf Wimmer, Tim Quatmann, Leonore Winterer, Joost-Pieter Katoen, and Bernd Becker. “Finite-State Controllers of POMDPs via Parameter Synthesis”. In: *Proceedings of the 34th Conference on Uncertainty in Artificial Intelligence (UAI)*. Ed. by Amir Globerson and Ricardo Silva. Monterey, CA, USA: AUAI Press, Aug. 6–10, 2018, pp. 519–529. URL: <http://auai.org/uai2018/proceedings/papers/195.pdf>.
- [C50] Christoph Scholl and Ralf Wimmer. “Dependency Quantified Boolean Formulas: An Overview of Solution Methods and Applications”. In: *Proceedings of the 21st International Conference on Theory and Applications of Satisfiability Testing (SAT)*. Ed. by Olaf Beyersdorff and Christoph M. Wintersteiger. Vol. 10929. Lecture Notes in Computer Science. Oxford, UK: Springer, July 9–12, 2018, pp. 3–16. DOI: 10.1007/978-3-319-94144-8_1.

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- [C49] Yuliya Butkova, Ralf Wimmer, and Holger Hermanns. “Long-run Rewards for Markov Automata”. In: *Proceedings of the 23rd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), Part II*. Ed. by Axel Legay and Tiziana Margaria. Vol. 10206. Lecture Notes in Computer Science. Uppsala, Sweden: Springer, Apr. 22–29, 2017, pp. 188–203. DOI: 10.1007/978-3-662-54580-5_11.
- [C48] Ralf Wimmer, Andreas Karrenbauer, Ruben Becker, Christoph Scholl, and Bernd Becker. “From DQBF to QBF by Dependency Elimination”. In: *Proceedings of the 20th International Conference on Theory and Applications of Satisfiability Testing (SAT)*. Ed. by Serge Gaspers and Toby Walsh. Vol. 10491. Lecture Notes in Computer Science. Melbourne, Australia: Springer, Aug. 28–Sept. 1, 2017, pp. 326–343. DOI: 10.1007/978-3-319-66263-3_21.
- [C47] Ralf Wimmer, Sven Reimer, Paolo Marin, and Bernd Becker. “HQSPRE – An Effective Preprocessor for QBF and DQBF”. In: *Proceedings of the 23rd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), Part I*. Ed. by Axel Legay and Tiziana Margaria. Vol. 10205. Lecture Notes in Computer Science. Uppsala, Sweden: Springer, Apr. 22–29, 2017, pp. 373–390. DOI: 10.1007/978-3-662-54577-5_21.
- [C46] Leonore Winterer, Sebastian Junges, Ralf Wimmer, Nils Jansen, Ufuk Topcu, Joost-Pieter Katoen, and Bernd Becker. “Motion Planning under Partial Observability using Game-Based Abstraction”. In: *Proceedings of the 56th IEEE Conference on Decision and Control (CDC)*. Melbourne, Australia: IEEE, Dec. 12–15, 2017, pp. 2201–2208. DOI: 10.1109/CDC.2017.8263971.

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- [C45] Karina Wimmer, Ralf Wimmer, Christoph Scholl, and Bernd Becker. “Skolem Functions for DQBF”. In: *Proceedings of the 14th International Symposium on Automated Technology for Verification and Analysis (ATVA)*. Ed. by Cyrille Artho, Axel Legay, and Doron Peled. Vol. 9938. Lecture Notes in Computer Science. Chiba, Japan: Springer, Oct. 17–20, 2016, pp. 395–411. DOI: 10.1007/978-3-319-46520-3_25.

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- [C43] Bettina Braitling, Luis María Ferrer Fioriti, Hassan Hatefi, Ralf Wimmer, Holger Hermanns, and Bernd Becker. “Abstraction-based Computation of Reward Measures for Markov Automata”. In: *Proceedings of the 16th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI)*. Ed. by Deepak D’Souza, Akash Lal, and Kim Guldstrand Larsen. Vol. 8931. Lecture Notes in Computer Science. Mumbai, India: Springer, Jan. 12–14, 2015, pp. 172–189. DOI: 10.1007/978-3-662-46081-8_10.
- [C42] Karina Gitina, Ralf Wimmer, Sven Reimer, Matthias Sauer, Christoph Scholl, and Bernd Becker. “Solving DQBF through Quantifier Elimination”. In: *Proceedings of the International Conference on Design, Automation & Test in Europe (DATE)*. Ed. by Wolfgang Nebel and David Atienza. Grenoble, France: IEEE, Mar. 9–13, 2015, pp. 1617–1622. DOI: 10.7873/DATE.2015.0098.
- [C41] Hassan Hatefi, Bettina Braitling, Ralf Wimmer, Luis María Ferrer Fioriti, Holger Hermanns, and Bernd Becker. “Cost vs. Time in Stochastic Games and Markov Automata”. In: *Proceedings of the 1st International Symposium on Dependable Software Engineering: Theory, Tools and Applications (SETTA)*. Ed. by Xuandong Li, Zhiming Liu, and Wang Yi. Vol. 9409. Lecture Notes in Computer Science. Nanjing, China: Springer, Nov. 4–6, 2015, pp. 19–34. DOI: 10.1007/978-3-319-25942-0_2.
- [C40] Tim Quatmann, Nils Jansen, Christian Dehnert, Ralf Wimmer, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. “Counterexamples for Expected Rewards”. In: *Proceedings of the 20th International Symposium on Formal Methods (FM)*. Ed. by Nikolaj Bjørner and Frank S. de Boer. Vol. 9109. Lecture Notes in Computer Science. Oslo, Norway: Springer, June 24–26, 2015, pp. 435–452. DOI: 10.1007/978-3-319-19249-9_27.
- [C39] Karsten Scheibler, Leonore Winterer, Ralf Wimmer, and Bernd Becker. “Towards Verification of Artificial Neural Networks”. In: *Proceedings of the 18th GI/ITG/GMM-Workshop “Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen” (MBMV)*. Ed. by Ulrich Heinkel, Marko Röbler, and Daniel Kriesten. Chemnitz, Germany: Technische Universität Chemnitz, Germany, Mar. 3–4, 2015, pp. 30–40.
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- [C36] Christian Dehnert, Nils Jansen, Ralf Wimmer, Erika Ábrahám, and Joost-Pieter Katoen. “Fast Debugging of PRISM Models”. In: *Proceedings of the 12th International Symposium on Automated Technology for Verification and Analysis (ATVA)*. Ed. by Franck Cassez and Jean-François Raskin. Vol. 8837. Lecture Notes in Computer Science. Sydney, NSW, Australia: Springer, Nov. 3–7, 2014, pp. 146–162. DOI: 10.1007/978-3-319-11936-6.
- [C35] Nils Jansen, Florian Corzilius, Matthias Volk, Ralf Wimmer, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. “Accelerating Parametric Probabilistic Verification”. In: *Proceedings of the 11th International Conference on Quantitative Evaluation of Systems (QEST)*. Ed. by William H. Sanders and Gethin Norman. Vol. 8657. Lecture Notes in Computer Science. Florence, Italy: Springer, Sept. 8–10, 2014, pp. 404–420. DOI: 10.1007/978-3-319-10696-0_31.
- [C34] Sreedhar Saseendran Kumar, Jan Wülfing, Joschka Boedecker, Ralf Wimmer, Martin Riedmiller, Bernd Becker, and Ulrich Egert. “Autonomous Control of Network Activity”. In: *Proceedings of the 9th International Meeting on Substrate-Integrated Microelectrode Arrays (MEA)*. Ed. by Alfred Stett and Guenther Zeck. Reutlingen, Germany, July 1–4, 2014.

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- [C33] Bettina Braitleing, Ralf Wimmer, Bernd Becker, and Erika Ábrahám. “Stochastic Bounded Model Checking: Bounded Rewards and Compositionality”. In: *Proceedings of the 16th GI/ITG/GMM-Workshop “Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen” (MBMV)*. Ed. by Christian Haubelt and Dirk Timmermann. Rostock, Germany: Universität Rostock, ITMZ, Mar. 12–14, 2013, pp. 243–254.
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- [C23] Pepijn Crouzen, Ernst Moritz Hahn, Holger Hermanns, Abhishek Dhama, Oliver Theel, Ralf Wimmer, Bettina Braitling, and Bernd Becker. “Bounded Fairness for Probabilistic Distributed Algorithms”. In: *Proceedings of the 11th International Conference on Application of Concurrency to System Design (ACSD)*. Ed. by Benoît Caillaud and Josep Carmona. (**Outstanding Paper Award**). Newcastle Upon Tyne, United Kingdom: IEEE Computer Society, June 20–24, 2011, pp. 89–97. DOI: 10.1109/ACSD.2011.21.
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