Curriculum Vitae - Nils Jansen

Personal information

Name	Nils Jansen
Email	n.jansen@science.ru.nl
Website	http://nilsjansen.org
Born	April 22, 1982—Simmerath, Germany
Nationality	German

Appointments held

Since June 2017	Assistant Professor at the Radboud University, Nijmegen, The Netherlands (tenure track position)
Jan 2017–May 2017	Research Associate at the University of Texas at Austin with Prof. Dr. Ufuk Topcu (tenured position)
2016–2017	Postdoctoral Research Fellow at the University of Texas at Austin with Prof. Dr. Ufuk Topcu (fixed term position)
2015–2016	Postdoctoral Researcher at RWTH Aachen University with Prof. Dr. Ir. Joost-Pieter Katoen (fixed term position)
2014–2015	Research Assistant at RWTH Aachen University (fixed term position) with Prof. Dr. Ir. Joost-Pieter Katoen
2009–2013	Research Assistant and PhD Student at RWTH Aachen University with Prof. Dr. Erika Ábrahám (fixed term position)

Education

2015	PhD in Computer Science (*summa cum laude*) Thesis: *Counterexamples in Probabilistic Verification*, supervised by Prof. Dr. Erika Ábrahám and Prof. Dr. Ir. Joost-Pieter Katoen
2009	Diploma in Computer Science with minor business administration (*grade: very good)* Thesis: *Automaton-definable Tree Relations with Cardinality Constraints*, supervised by Prof. Dr. Dr.h.c. Wolfgang Thomas

Awards

Borchers Badge of RWTH Aachen University for PhD examination "with distinction"

Research

Area of specialization

- Formal verification
- Dependable and explainable machine learning and artificial intelligence
- Analysis and synthesis of stochastic and uncertain systems
- Co-design of approximate and uncertain hard- and software systems
- Probabilistic programs
- Formal methods and control theory
- Formal methods for robotics applications

Research stays

January 2020	Tu Delft, NL, with Dr. Matthijs Spaan
May 2019	UT Austin, US, with Dr. Ufuk Topcu
December 2018, January 2020	Tu Delft, NL, with Dr. Neil Yorke-Smith and Dr. Matthijs Spaan
June 2018	KTH Stockholm, SE, with Dr. Jana Tumova
March 2018	TU Graz, Austria, with Prof. Dr. Roderick Bloem
October 2017	University of Oxford, UK, with Prof. Dr. Marta Kwiatkowska
September 2017	RWTH University, Germany, with Prof. Dr. Ir. Katoen
March 2017	Stony Brook University, NY, USA, with Prof. Dr. Scott Smolka
March 2016	RWTH University, Germany, with Prof. Dr. Ir. Katoen
April 2015	University of Pennsylvania, USA, with Prof. Dr. Ufuk Topcu
Feb 2013, Aug 2013, Mar 2014	Universidad Nacional de Cordoba, Argentina, with Prof. Dr. Pedro R. d'Argenio
2010–2020	Frequent stays at University of Freiburg, Germany, with Prof. Dr. Bernd Becker and Dr. Ralf Wimmer

Professional activities

Program committee member

- International Conference on Learning Representations (ICLR 2021)
- International Conference on Fundamental Approaches to Software Engineering (FASE 2021)
- Formal Methods (FM 2021)
- International Conference on Formal Modeling and Analysis of Timed Systems (FORMATS 2020), **co-chair**
- International Joint Conference on Artificial Intelligence (IJCAI 2020)
- Conference on Neural Information Processing Systems (NeurIPS 2020)
- International Conference on Machine Learning (ICML 2020)
- International Conference on Fundamental Approaches to Software Engineering (FASE 2021)
- Symposium on Dependable Software Engineering (SETTA 2020)

- Workshop on Quantitative Aspects of Variant-rich Systems (QAVS 2020)
- Conference on Neural Information Processing Systems (NeurIPS 2019)
- International Conference on Quantitative Evaluation of SysTems (QEST 2019)
- International Conference on Artificial Neural Networks (ICANN 2019)
- Symposium on Dependable Software Engineering (SETTA 2019)
- International Conference on Formal Techniques for Distributed Objects, Components, and Systems (FORTE 2018)
- Artifact Evaluation for the International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2018)
- PhD Symposium at International Conference on integrated Formal Methods (iFM 2018)
- Conference for ICT-Research in the Netherlands (ICT.OPEN 2018)
- SKILL 2018

Event organization

- Lorentz Center Workshop: Rigorous Automated Planning (March 2020)
- Dagstuhl Seminar 18121: Machine Learning and Model Checking Join Forces (March 2018)
- Robots, Morality, and Trust through the Verification Lens (colocated with CAV 2018)
- Formal approaches to Explainable VERification (FEVER) (colocated with CAV 2017)

Journal reviewer
ACM Transactions on Modeling and Computer Simulation, ACM Transactions on Computational Logic, Acta Informatica, Journal of Systems and Software, International Journal of Robotics Research, Science of Computer Programming, IEEE Control Systems Letter, IEEE Transactions of Reliability, IEEE Transactions of Automatic Control, Journal of Automated Reasoning, Theoretical Computer Science

External reviewer
ACC, ATVA, CAV, CDC, CONCUR, FACS, FM, FMOODS–FORTE, FORMATS, FOSSACS, FSEN, FSTTCS, FTSCS, HSCC, IFM, Petri Nets, QEST, SIMULTECH, TACAS, TASE, VMCAI

Further activities

Since 2019	Member of the Program Committee for the quality of teaching (Opleidingscommissie) at Radboud University
Since 2019	Organization of the internal seminars at the Software Science institute at Radboud University
2014–2016	Member of the examination board in Computer Science at RWTH Aachen University
2011–2015	Member of the commission for teaching in Computer Science at RWTH Aachen University
2010–2011	Member of the steering committee of the graduate school AlgoSyn
2011	Participation in local organization for CONCUR 2011, QEST 2011 and TGC 2011

Teaching experience

Responsible Lecturer and Course Coordinator (Radboud University Nijmegen)

- Processors 2018, 2019, 2020
- Model Checking 2018, 2019, 2020
- Operating Systems 2017, 2018, 2019

Teaching assistance (RWTH Aachen University)

- Introduction to model checking
- Modeling and verification of probabilistic systems
- Modeling and analysis of hybrid systems
- Satisfiability checking
- Automata and reactive systems
- Applied automata theory
- Formal systems, automata, and processes

Supervision of successful Bachelor, Master, and Diploma theses

- Entropy-guided decision making in multiple-environment Markov decision processes
- Creating a Formal Model of the Game 2048
- Human-in-the-loop Strategy Synthesis: PAC-MAN verified
- A Comparison of Model Checking Tools for Synchronisation Problems
- Convex optimization for uncertain Markov decision processes
- On-the-fly model checking for probabilistic programs
- Counterexamples for expected rewards on discrete-time Markov chains
- Verification and synthesis for parametric Markov chains
- Minimal critical subsystems for probabilistic models with nondeterminism
- Compositional counterexamples for MDPs
- Verification and synthesis for parametric Markov chains
- Hierarchical counterexamples for DTMCs—case studies
- Minimal critical subsystems for PCTL properties of Markov models

Selected Talks 2017-2020

- Planning under Uncertainty - AI Safety via Formal Verification. Invited Talk, NASA Formal Methods AI-SAFETY, 2020, Mountain View, USA (virtual).
- Planning under Partial Observability: Performance versus Formal Guarantees. Invited Talk, Eindhoven University, 2020, NL.
- Prognostics and Optimization for Robust Predictive Maintenance (How to Combine Data and Models). Invited Industry Talk, Nexperia, 2020, Nijmegen, NL.

- Planning under Partial Observability: A Betrothal of Artificial Intelligence and Formal Verification. Invited Talk, Freiburg University, 2019, DE.
- Counterexample-Guided Policy Improvement for POMDPs Using Recurrent Neural Networks. IJCAI 2019, Macao, CN.
- Planning under Uncertainty and Partial Observability. Lorentz Workshop on Formal Methods in the Netherlands 2019, Leiden, NL.
- Counterexample-Guided Policy Improvement for POMDPs Using Recurrent Neural Networks. Dagstuhl Seminar on Logic and Learning 2019, DE.
- Planning under Partial Observability: A Betrothal of Formal Verification and Machine Learning. Invited Talk, LearnAut 2019, Vancouver, CA.
- Convex Optimization meets Parameter Synthesis for MDPs. Invited Talk, SynCop 2019, Prague, CZ.
- Counterexample-Guided Strategy Improvement for POMDPs Using Recurrent Neural Networks. LiVe 2019, Prague, CZ.
- Automation and Planning under Uncertainty and Partial Observability. Invited Industry Talk, cmlabs, 2019, Montreal, CA.
- Correct-by-Construction Policies for POMDPs. Invited Talk, SNR 2019, Montreal, CA.
- Structured Synthesis for Probabilistic Systems. NASA Formal Methods Symposium 2019, Houston, USA.
- Motion Planning under Uncertainty and Partial Observability. Invited Talk, Graz University, 2018, AU.
- Convex Optimization for Parametric Markov Models: A Tale of 1001 Parameters. Invited Talk, Freiburg University, 2018, DE.
- Verified Safety in Machine Learning. Invited Talk, Freiburg University, DE, 2018.
- Planning under Uncertainty and Partial Observability: Machine Learning and Formal Methods (And Humans) Join Forces? Invited Talk, TU Delft, 2018, NL.
- Motion Planning under Uncertainty and Partial Observability. Invited Talk, University of Oxford, 2017, UK.
- Synthesis of Shared Control Protocols with Provable Safety and Performance Guarantees. American Control Conference 2017, Seattle, USA.
- Motion Planning under Uncertainty and Partial Observability. Invited Talk, UnRAVEL Research Training School, RWTH Aachen University, 2017, DE.
- Probabilistic Verification for Cognitive Models. Invited Talk, RWTH Aachen University, 2017, DE.
- Sequential Convex Programming for the Efficient Verification of Parametric MDPs. Invited Talk, Stony Brook University, 2017, USA.
- Shared Control. Dagstuhl Seminar on Computer-Assisted Engineering for Robotics and Autonomous Systems 2017, DE.
- Sequential Convex Programming for the Efficient Verification of Parametric MDPs. TACAS 2017, SE.

Project Funding

I am (co-)principal investigor of six successfully funded projects. In what follows, I list these projects, the funding agency, potential partners, the overall budget, and the positions and budget that I personally applied for within these projects.

Provably Correct Policies for Uncertain Partially Observable Markov Decision Processes

- Funding agency: NWO Open Competition Klein-1 Domain Science
- Personal budget: 295 702 Euro (1 PhD position for 4 years)

Predictive maintenance for Very effective asset management (PrimaVera)

- Funding agency: NWA "Research along Routes by Consortia"
- Partners: Netherlands Aerospace Centre, Netherlands Railways, Royal Netherlands Navy, Radboud University Nijmegen, Rijkswaterstaat, Federation of Dutch institutes for applied research, The Hague University of Applied Sciences, Eindhoven University of Technology, University of Twente, Waterschap de Dommel
- Overall budget: 4 744 757 Euro
- Personal budget: 840 523 Euro (2 PhD positions for 4 years, 1 Postdoc position for 3 years)
- Website: https://primavera-project.com/

Scheduling Adaptive Modular Flexible Manufacturing Systems (SAM-FMS)

- Funding agency: NWO MasCot Partnership
- Partners: Eindhoven University of Technology, Technical University Delft, Radboud University Nijmegen, OCE technologies
- Overall budget: 749 588 Euro
- Personal budget: 223 838 Euro (1 PhD position for 4 years)
- Website: https://www.nwo.nl/onderzoek-en-resultaten/programmas/ttw/partnership/17931.html

EXplainable Data Science (EXoDuS)

- Funding agency: NWA
- Partners: TNO (Netherlands Organisation for Applied Scientific Research)
- Personal budget: 100 000 Euro (1 PhD position for 4 years with support from Radboud University)

GRIMES: Green Production via Model-based Reasoning

- Funding agency: Faculty of Science, Radboud University
- Partners: NEXPERIA Nijmegen
- Personal budget: 26 762 Euro (A partial postdoc position in collaboration with the institute for Analytical Chemistry)

- Website: https://www.ru.nl/science/research/green-information-technology/collaboration-projects/grimes-green-production-via-model-based-reasoning/

Safe Planning with Artificial Intelligence

- Funding agency: Radboud-Glasgow Collaboration Fund
- Partners: University of Glasgow, Dr. Gethin Norman
- Personal budget: 12 00 GBP (Travel and equipment money to foster the collaboration with the University of Glasgow)

Publications

So far, I published over 50 peer-reviewed articles in conference proceedings or journals. According to Google Scholar, my h-index is 20 and my i10-index is 25, see also https://scholar.google.de/citations?ser=zUavkyEAAAAJ&hl=en&oi=ao.

Book chapters and edited volumes

[1] Nathalie Bertrand and Nils Jansen, eds. *Formal Modeling and Analysis of Timed Systems - 18th International Conference, FORMATS 2020, Vienna, Austria, September 1-3, 2020, Proceedings*. Vol. 12288. Lecture Notes in Computer Science. Springer, 2020.

[2] Radu Calinescu, Marco Autili, Javier Cámara, Antinisca Di Marco, Simos Gerasimou, Paola Inverardi, Alexander Perucci, Nils Jansen, Joost-Pieter Katoen, Marta Kwiatkowska, et al. "Synthesis and Verification of Self-aware Computing Systems". In: *Self-Aware Computing Systems*. Springer International Publishing, 2017, pp. 337–373.

Refereed articles

[1] Murat Cubuktepe, Nils Jansen, Sebastian Junges, Ahmadreza Marandi, Marnix Suilen, and Ufuk Topcu. *Robust Finite-State Controllers for Uncertain POMDPs*. In: *AAAI*. to appear. 2021.

[2] Thiago D. Simão, Nils Jansen, and Matthijs T. J. Spaan. *AlwaysSafe: Reinforcement Learning without Safety Constraint Violations*. In: *AAMAS*. to appear. 2021.

[3] Mohamadreza Ahmadi, Nils Jansen, Bo Wu, and Ufuk Topcu. *Control Theory Meets POMDPs: A Hybrid Systems Approach*. In: *IEEE Transactions on Automatic Control* (2020). to appear.

[4] Steven Carr, Nils Jansen, and Ufuk Topcu. *Verifiable RNN-Based Policies for POMDPs Under Temporal Logic Constraints*. In: *IJCAI*. ijcai.org, 2020, pp. 4121–4127.

[5] Murat Cubuktepe, Nils Jansen, Mohammed Alshiekh, and Ufuk Topcu. *Synthesis of Provably Correct Autonomy Protocols for Shared Control*. In: *IEEE Transactions on Automatic Control* (2020), pp. 1–1.

[6] Murat Cubuktepe, Nils Jansen, Sebastian Junges, Joost-Pieter Katoen, and Ufuk Topcu. *Scenario-Based Verification of Uncertain MDPs*. In: *TACAS*. Vol. 12078. LNCS. Springer, 2020, pp. 287–305.

[7] Dennis Gross, Nils Jansen, Guillermo A. Pérez, and Stephan Raaijmakers. *Robustness Verification for Classifier Ensembles*. In: *ATVA*. Vol. 12302. Lecture Notes in Computer Science. Springer, 2020, pp. 271–287.

[8] Richard den Hollander, Ajaya Adhikari, Ioannis Tolios, Michael van Bekkum, Anneloes Bal, Stijn Hendriks, Maarten Kruithof, Dennis Gross, Nils Jansen, Guillermo Perez, et al. *Adversarial patch camouflage against aerial detection*. In: *Artificial Intelligence and Machine Learning in Defense Applications II*. Vol. 11543. International Society for Optics and Photonics. 2020, 115430F.

[9] Nils Jansen, Bettina Könighofer, Sebastian Junges, Alex Serban, and Roderick Bloem. *Safe Reinforcement Learning Using Probabilistic Shields (Invited Paper)*. In: *CONCUR*. Vol. 171. LIPIcs. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2020, 3:1–3:16.

[10] Bettina Könighofer, Florian Lorber, Nils Jansen, and Roderick Bloem. *Shield Synthesis for Reinforcement Learning*. In: *ISoLA (1)*. Vol. 12476. Lecture Notes in Computer Science. Springer, 2020, pp. 290–306.

[11] Hadas Kress-Gazit, Kerstin Eder, Guy Hoffman, Henny Admoni, Brenna Argall, Rüdiger Ehlers, Christoffer Heckman, Nils Jansen, Ross Knepper, Jan Kretínský, Shelly Levy-Tzedek, Jamy Li, Todd Murphey, Laurel D. Riek, and Dorsa Sadigh. *Formalizing and Guaranteeing* Human-Robot Interaction*. In: *Communications of the ACM* (2020). to appear.

[12] Dung T. Phan, Radu Grosu, Nils Jansen, Nicola Paoletti, Scott A. Smolka, and Scott D. Stoller. *Neural Simplex Architecture*. In: *NFM*. Vol. 12229. Lecture Notes in Computer Science. Springer, 2020, pp. 97–114.

[13] Marnix Suilen, Nils Jansen, Murat Cubuktepe, and Ufuk Topcu. *Robust Policy Synthesis for Uncertain POMDPs via Convex Optimization*. In: *IJCAI*. ijcai.org, 2020, pp. 4113–4120.

[14] Leonore Winterer, Sebastian Junges, Ralf Wimmer, Nils Jansen, Ufuk Topcu, and Joost-Pieter Katoen. *Strategy Synthesis for POMDPs in Robot Planning via Game-Based Abstractions*. In: *IEEE Transactions on Automatic Control* (2020).

[15] Leonore Winterer, Ralf Wimmer, Nils Jansen, and Bernd Becker. *Strengthening Deterministic Policies for POMDPs*. In: *NFM*. Vol. 12229. Lecture Notes in Computer Science. Springer, 2020, pp. 115–132.

[16] 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: *IJCAI*. ijcai.org, 2019, pp. 5532–5539.

[17] Milan Ceska, Christian Dehnert, Nils Jansen, Sebastian Junges, and Joost-Pieter Katoen. *Model Repair Revamped - - On the Automated Synthesis of Markov Chains*. In: *From Reactive Systems to Cyber-Physical Systems*. Vol. 11500. Lecture Notes in Computer Science. Springer, 2019, pp. 107–125.

[18] Nils Jansen, Laura R. Humphrey, Jana Tumova, and Ufuk Topcu. *Structured Synthesis for Probabilistic Systems*. In: *NFM*. Vol. 11460. LNCS. Springer, 2019, pp. 237–254.

[19] Milan Ceska Jr., Nils Jansen, Sebastian Junges, and Joost-Pieter Katoen. *Shepherding Hordes of Markov Chains*. In: *TACAS*. Vol. 11428. LNCS. Springer, 2019, pp. 172–190.

[20] Mohamadreza Ahmadi, Murat Cubuktepe, Nils Jansen, and Ufuk Topcu. *Verification of Uncertain POMDPs Using Barrier Certificates*. In: *Allerton*. IEEE, 2018, pp. 115–122.

[21] Steven Carr, Nils Jansen, Ralf Wimmer, Jie Fu, and Ufuk Topcu. *Human-in-the-Loop Synthesis for Partially Observable Markov Decision Processes*. In: *ACC*. IEEE, 2018, pp. 762–769.

[22] Murat Cubuktepe, Nils Jansen, Sebastian Junges, Joost-Pieter Katoen, and Ufuk Topcu. *Synthesis in pMDPs: A Tale of 1001 Parameters*. In: *ATVA*. Vol. 11138. LNCS. Springer, 2018, pp. 160–176.

[23] Nils Jansen, Joost-Pieter Katoen, Pushmeet Kohli, and Jan Kretinsky. *Machine Learning and Model Checking Join Forces (Dagstuhl Seminar 18121)*. In: *Dagstuhl Reports* 8.3 (2018), pp. 74–93.

[24] Sebastian Junges, Nils Jansen, Joost-Pieter Katoen, Ufuk Topcu, Ruohan Zhang, and Mary M. Hayhoe. *Model Checking for Safe Navigation Among Humans*. In: *QEST*. Vol. 11024. LNCS. Springer, 2018, pp. 207–222.

[25] Sebastian Junges, Nils Jansen, Ralf Wimmer, Tim Quatmann, Leonore Winterer, Joost-Pieter Katoen, and Bernd Becker. *Finite-State Controllers of POMDPs using Parameter Synthesis*. In: *UAI*. AUAI Press, 2018, pp. 519–529.

[26] Federico Olmedo, Friedrich Gretz, Nils Jansen, Benjamin Lucien Kaminski, Joost-Pieter Katoen, and Annabelle McIver. *Conditioning in Probabilistic Programming*. In: *ACM Trans. Program. Lang. Syst.* 40.1 (2018), 4:1–4:50.

[27] Murat Cubuktepe, Nils Jansen, Sebastian Junges, Joost-Pieter Katoen, Ivan Papusha, Hasan A. Poonawala, and Ufuk Topcu. *Sequential Convex Programming for the Efficient Verification of Parametric MDPs*. In: *TACAS*. Vol. 10206. LNCS. 2017, pp. 133–150.

[28] Nils Jansen, Murat Cubuktepe, and Ufuk Topcu. *Synthesis of Shared Control Protocols with Provable Safety and Performance Guarantees*. In: *ACC*. IEEE, 2017, pp. 1866–1873.

[29] 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: *CDC*. IEEE, 2017, pp. 2201–2208.

[30] Nils Jansen, Christian Dehnert, Benjamin Lucien Kaminski, Joost-Pieter Katoen, and Lukas Westhofen. *Bounded Model Checking for Probabilistic Programs*. In: *ATVA*. Vol. 9938. LNCS. 2016, pp. 68–85.

[31] Sebastian Junges, Nils Jansen, Christian Dehnert, Ufuk Topcu, and Joost-Pieter Katoen. *Safety-Constrained Reinforcement Learning for MDPs*. In: *TACAS*. Vol. 9636. LNCS. Springer, 2016, pp. 130–146.

[32] Sebastian Junges, Nils Jansen, Joost-Pieter Katoen, and Ufuk Topcu. *Probabilistic Verification for Cognitive Models*. In: *CDCAS*. AAAI Technical Reports FS-16. AAAI Press, 2016.

[33] Francesco Leofante, Simone Vuotto, Erika Ábrahám, Armando Tacchella, and Nils Jansen. *Combining Static and Runtime Methods to Achieve Safe Standing-Up for Humanoid Robots*. In: *ISOLA*. Vol. 9952. LNCS. 2016, pp. 496–514.

[34] Tim Quatmann, Christian Dehnert, Nils Jansen, Sebastian Junges, and Joost-Pieter Katoen. *Parameter Synthesis for Markov Models: Faster Than Ever*. In: *ATVA*. Vol. 9938. LNCS. 2016, pp. 50–67.

[35] Christian Dehnert, Sebastian Junges, Nils Jansen, Florian Corzilius, Matthias Volk, Harold Bruintjes, Joost-Pieter Katoen, and Erika Abraham. *PROPhESY: A PRObabilistic ParamEter SYnthesis Tool*. In: *CAV*. Vol. 9206. 2015, pp. 214–231.

[36] Nils Jansen. "Counterexamples in Probabilistic Verification". Dissertation. RWTH Aachen University, 2015.

[37] Nils Jansen, Benjamin Lucien Kaminski, Joost-Pieter Katoen, Christoph Matheja, and Federico Olmedo. *Probabilistic Programs - A Natural Model for Approximate Computations*. In: *AC15 - Workshop on Approximate Computing*. Paderborn, Germany, Oct. 2015.

[38] Nils Jansen, Benjamin Lucien Kaminski, Joost-Pieter Katoen, Federico Olmedo, Friedrich Gretz, and Annabelle McIver. *Conditioning in Probabilistic Programming*. In: *Electr. Notes Theor. Comput. Sci.* 319 (2015), pp. 199–216.

[39] Joost-Pieter Katoen, Friedrich Gretz, Nils Jansen, Benjamin Lucien Kaminski, and Federico Olmedo. *Understanding Probabilistic Programs*. In: *Correct System Design - Symposium in Honor of Ernst-Rüdiger Olderog on the Occasion of His 60th Birthday*. Vol. 9360. LNCS. Springer, 2015, pp. 15–32.

[40] Shashank Pathak, Erika Ábrahám, Nils Jansen, Armando Tacchella, and Joost-Pieter Katoen. *A Greedy Approach for the Efficient Repair of Stochastic Models*. In: *NFM*. Vol. 9058. LNCS. Springer, 2015, pp. 295–309.

[41] Tim Quatmann, Nils Jansen, Christian Dehnert, Ralf Wimmer, Erika Abraham, Joost-Pieter Katoen, and Bernd Becker. *Counterexamples for Expected Rewards*. In: *FM*. Vol. 9109. LNCS. Springer, 2015, pp. 435–452.

[42] Ralf Wimmer, Nils Jansen, Erika Abraham, and Joost-Pieter Katoen. *High-level Counterexamples for Probabilistic Automata*. In: *Logical Methods in Computer Science* 11.1:15 (2015).

[43] Erika Ábrahám, Bernd Becker, Christian Dehnert, Nils Jansen, Joost-Pieter Katoen, and Ralf Wimmer. *Counterexample Generation for Discrete-Time Markov Models: An Introductory Survey*. In: *SFM*. Vol. 8483. LNCS. Springer, 2014, pp. 65–121.

[44] Christian Dehnert, Nils Jansen, Ralf Wimmer, Erika Ábrahám, and Joost-Pieter Katoen. *Fast Debugging of PRISM Models*. In: *ATVA*. Vol. 8837. LNCS. Springer, 2014, pp. 146–162.

[45] Nils Jansen, Florian Corzilius, Matthias Volk, Ralf Wimmer, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. *Accelerating Parametric Probabilistic Verification*. In: *QEST*. Vol. 8657. LNCS. Springer, 2014, pp. 404–420.

[46] 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.

[47] Ralf Wimmer, Nils Jansen, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. *Minimal counterexamples for linear-time probabilistic verification*. In: *Theoretical Computer Science* 549 (2014), pp. 61–100.

[48] Daniel Neider and Nils Jansen. *Regular Model Checking Using Solver Technologies and Automata Learning*. In: *NFM*. Vol. 7871. LNCS. Springer, 2013, pp. 16–31.

[49] Ralf Wimmer, Nils Jansen, Andreas Vorpahl, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. *High-level Counterexamples for Probabilistic Automata*. In: *QEST*. Vol. 8054. LNCS. Springer, 2013, pp. 18–33.

[50] Nils Jansen, Erika Abraham, Matthias Volk, Ralf Wimmer, Joost-Pieter Katoen, and Bernd Becker. *The COMICS Tool - Computing Minimal Counterexamples for DTMCs*. In: *ATVA*. Vol. 7561. LNCS. Springer, 2012, pp. 349–353.

[51] Nils Jansen, Erika Ábrahám, Barna Zajzon, Ralf Wimmer, Johann Schuster, Joost-Pieter Katoen, and Bernd Becker. *Symbolic Counterexample Generation for Discrete-time Markov Chains*. In: *FACS*. Vol. 7684. LNCS. Springer, 2012, pp. 134–151.

[52] Ralf Wimmer, Nils Jansen, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. *Minimal Critical Subsystems for Discrete-Time Markov Models*. In: *TACAS*. Vol. 7214. LNCS. Springer, 2012, pp. 299–314.

[53] Erika Ábrahám, Nadine Bergner, Philipp Brauner, Florian Corzilius, Nils Jansen, Thiemo Leonhardt, Ulrich Loup, Johanna Nellen, and Ulrik Schroeder. *On Collaboratively Conveying Computer Science to Pupils*. In: *KOLI*. ACM. 2011, pp. 132–137.

[54] Bettina Braitling, Ralf Wimmer, Bernd Becker, Nils Jansen, and Erika Ábrahám. *Counterexample Generation for Markov Chains using SMT-based Bounded Model Checking*. In: *FMOODS/FORTE*. Vol. 6722. LNCS. Springer, 2011, pp. 75–89.

[55] Nils Jansen, Erika Ábrahám, Jens Katelaan, Ralf Wimmer, Joost-Pieter Katoen, and Bernd Becker. *Hierarchical Counterexamples for Discrete-Time Markov Chains*. In: *ATVA*. Vol. 6996. LNCS. Springer, 2011, pp. 443–452.

[56] Erika Ábrahám, Philipp Brauner, Nils Jansen, Thiemo Leonhardt, Ulrich Loup, and Ulrik Schroeder. *Podcastproduktion als kollaborativer Zugang zur theoretischen Informatik*. In: *DeLFI*. Vol. 169. LNI. Duisburg: Gesellschaft für Informatik, 2010, pp. 239–251.

[57] Erika Ábrahám, Nils Jansen, Ralf Wimmer, Joost-Pieter Katoen, and Bernd Becker. *DTMC Model Checking by SCC Reduction*. In: *QEST*. IEEE Computer Society, 2010, pp. 37–46.

Informal publications and technical reports[1]

[1] Sebastian Junges, Nils Jansen, and Sanjit A. Seshia. *Enforcing Almost-Sure Reachability in POMDPs*. In: *CoRR* abs/2007.00085 (2020).

[2] Stefan Pranger, Bettina Könighofer, Martin Tappler, Martin Deixelberger, Nils Jansen, and Roderick Bloem. *Adaptive Shielding under Uncertainty*. In: *CoRR* abs/2010.03842 (2020).

[3] Sebastian Junges, Erika Ábrahám, Christian Hensel, Nils Jansen, Joost-Pieter Katoen, Tim Quatmann, and Matthias Volk. *Parameter Synthesis for Markov Models*. In: *CoRR* abs/1903.07993 (2019).

[4] Sebastian Junges, Nils Jansen, Ralf Wimmer, Tim Quatmann, Leonore Winterer, Joost-Pieter Katoen, and Bernd Becker. *Permissive Finite-State Controllers of POMDPs using Parameter Synthesis*. In: *CoRR* abs/1710.10294 (2018).

[5] Christian Dehnert, Sebastian Junges, Nils Jansen, Florian Corzilius, Matthias Volk, Joost-Pieter Katoen, Erika Ábrahám, and Harold Bruintjes. *Parameter Synthesis for Probabilistic Systems*. In: *MBMV*. Albert-Ludwigs-Universität Freiburg, 2016, pp. 72–74.

[6] Sebastian Junges, Nils Jansen, Ufuk Topcu, and Joost-Pieter Katoen. *Probabilistic Model Checking for Complex Cognitive Tasks – A case study in human-robot interaction*. In: *CoRR* (2016).

[7] Nils Jansen. *A Greedy Approach for the Efficient Repair of Stochastic Models*. In: *Frontiers of Formal Methods*. Vol. AIB-2011-11. RWTH Aachen University, 2015.

[1] Technical reports are only listed if they are not published yet or significantly extend the published version.

[8] Nils Jansen, Erika Ábrahám, Maik Scheffler, Matthias Volk, Andreas Vorpahl, Ralf Wimmer, Joost-Pieter Katoen, and Bernd Becker. *The COMICS Tool - Computing Minimal Counterexamples for Discrete-time Markov Chains*. In: *CoRR* abs/1206.0603 (2012). URL: https://arxiv.org/abs/1206.0603.

[9] Ralf Wimmer, Nils Jansen, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. *Minimal Counterexamples for Refuting ω-Regular Properties of Markov Decision Processes*. Reports of SFB/TR 14 AVACS 88. ISSN: 1860-9821, http://www.avacs.org. Sept. 2012.

[10] Ralf Wimmer, Nils Jansen, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. *Minimal Critical Subsystems as Counterexamples for ω-Regular DTMC Properties*. In: *MBMV*. Verlag Dr. Kovač, 2012, pp. 169–180.

[11] Bettina Braitling, Ralf Wimmer, Bernd Becker, Nils Jansen, and Erika Ábrahám. *SMT-based Counterexample Generation for Markov Chains*. In: *MBMV*. Offis Oldenburg, 2011, pp. 19–28. ISBN: 978-3-00-033820-5.