

Dr. Martin Zimmermann

Curriculum Vitae

Contact

Mail:
Aalborg University
Department of Computer Science
Selma Lagerlöfs Vej 300
9220 Aalborg
Denmark
Office: Room 1.2.46
Email: mzi@cs.aau.dk
Phone: +45 9940 8770
URL: people.cs.aau.dk/~mzi/

Employment

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|---|------------------------------|
| Aalborg University Associate Professor | August 2021 - present |
| University of Liverpool Lecturer | October 2018 - July 2021 |
| Saarland University Postdoc | May 2013 - September 2018 |
| University of Warsaw Postdoc | February 2012 - April 2013 |
| RWTH Aachen University Research Assistant | February 2009 - January 2012 |

Education

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|---|-------------------------------|
| RWTH Aachen University PhD Student Thesis: Solving Infinite Games with Bounds Adviser: Wolfgang Thomas | February 2009 - January 2012 |
| RWTH Aachen University Diploma in Computer Science Minor in Business Administration Thesis: Time-optimal Winning Strategies in Infinite Games Adviser: Wolfgang Thomas | September 2003 - January 2009 |

Awards and Scholarships

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| Best Paper Award MFCS 2021 Awarded for the paper "A Bit of Nondeterminism Makes Pushdown Automata Expressive and Succinct" | 2021 |
| Springorum Medal Awarded for diploma with distinction at RWTH Aachen University | 2010 |

Fulbright Scholarship
DePaul University, Chicago, IL

September 2007 - June 2008

Grants

EPSRC Project “Ontology-Based Management of Many-Dimensional Quantitative Data” June 2019 - July 2021

Co-Investigator

DFG Project “Tradeoffs in Controller Synthesis” January 2015 - September 2018

Principal Investigator

Financial support to organize the “Ninth International Symposium on Games, Automata, Logics, and Formal Verification” (GandALF 2018) in Saarbrücken from the DFG

Activities

MOVEP 2022

Organizer

GandALF

Steering committee member

GandALF 2020

PC member

GandALF 2019

PC member

GandALF 2018

PC co-chair and organizing chair

Highlights of Logic, Games, and Automata 2018

PC member

TIME 2017

PC member

Events

Workshop “Automata Theory and Applications: Games, Learning and Structures” September 2021
Invited Participant

Workshop “Algorithmic Verification of Real-time Systems” December 2016
Invited Speaker

Workshop “Automata, Concurrency and Timed Systems” February 2015
Invited Speaker

Dagstuhl Seminar “Non-Zero-Sum-Games and Control” February 2015
Invited Participant

- Publications** All papers are available on my homepage.
- Under Submission** **From LTL to rLTL Monitoring: Improved Monitorability through Robust Semantics (journal version)**
Corto Mascle, Daniel Neider, Maximilian Schwenger, Paulo Tabuada, Alexander Weinert, and Martin Zimmermann
arXiv:1807.08203
- Journal Papers**
- Approximating the Minimal Lookahead Needed to Win Infinite Games**
Martin Zimmermann
Accepted at Information Processing Letters (arXiv:2010.11706)
- Good-for-games ω -Pushdown Automata**
Karoliina Lehtinen and Martin Zimmermann
Accepted at LMCS (arXiv:2001.04392)
- Robust, Expressive, and Quantitative Linear Temporal Logics: Pick any Two for Free**
Daniel Neider, Alexander Weinert, and Martin Zimmermann
Accepted at Information and Computation (arXiv:1807.08203)
- Finite-state Strategies in Delay Games**
Sarah Winter and Martin Zimmermann
Information and Computation (Special Issue GandALF 2017), 272, 2020
- Synthesizing Optimally Resilient Controllers**
Daniel Neider, Alexander Weinert, and Martin Zimmermann
Acta Informatica 57(1), 2020
- Parity Games with Weights**
Sven Schewe, Alexander Weinert, and Martin Zimmermann
Logical Methods in Computer Science (Special Issue CSL 2018), 15(3), 2019
- Visibly Linear Dynamic Logic**
Alexander Weinert and Martin Zimmermann
Theoretical Computer Science, 747, 2018
- Distributed Synthesis for Parameterized Temporal Logics**
Sven Jacobs, Leander Tentrup, and Martin Zimmermann
Information and Computation (Special Issue GandALF 2016), 262(2), 2018
- The Complexity of Counting Models of Linear-time Temporal Logic**
Hazem Torfah and Martin Zimmermann
Acta Informatica, 55(3), 2018
- Parameterized Linear Temporal Logics Meet Costs: Still not Costlier than LTL**
Martin Zimmermann
Acta Informatica (Special Issue GandALF 2015), 55(2), 2018
- Easy to Win, Hard to Master: Optimal Strategies in Parity Games with Costs**
Alexander Weinert and Martin Zimmermann
Logical Methods in Computer Science, 13(3), 2017
- Parametric Linear Dynamic Logic**
Peter Faymonville and Martin Zimmermann
Information and Computation (Special Issue GandALF 2014), 253(3), 2017

Delay Games with WMSO+U Winning Conditions

Martin Zimmermann
RAIRO ITA, 50(2), 2016

How Much Lookahead is Needed to Win Infinite Games?

Felix Klein and Martin Zimmermann
Logical Methods in Computer Science, 12(3), 2016

Optimal Strategy Synthesis for Request-Response Games

Florian Horn, Wolfgang Thomas, Nico Wallmeier, and Martin Zimmermann
RAIRO ITA, 49(3), 2015

Down the Borel Hierarchy: Solving Muller Games via Safety Games

Daniel Neider, Roman Rabinovich, and Martin Zimmermann
Theoretical Computer Science (Special Issue GandALF 2012), 560, 2014

Parity and Streett Games with Costs

Nathanaël Fijalkow and Martin Zimmermann
Logical Methods in Computer Science, 10(2), 2014

Optimal Bounds in Parametric LTL Games

Martin Zimmermann
Theoretical Computer Science (Special Issue GandALF 2011), 493, 2013

Playing Muller Games in a Hurry

John Fearnley and Martin Zimmermann
International Journal of Foundations of Computer Science (Special Issue GandALF 2010), 23(3), 2012

Conference Papers **HyperLTL Satisfiability is Σ_1^1 -complete, HyperCTL* Satisfiability is Σ_1^2 -complete**

Marie Fortin, Louwe B. Kuijjer, Patrick Totzke, and Martin Zimmermann
In *Proceedings of MFCS 2021*, volume 202 of *LIPICs*, 2021

A Bit of Nondeterminism Makes Pushdown Automata Expressive and Succinct

Shibashis Guha, Ismaël Jecker, Karoliina Lehtinen, and Martin Zimmermann
In *Proceedings of MFCS 2021*, volume 202 of *LIPICs*, 2021

Optimal Strategies in Weighted Limit Games

Aniello Murano, Sasha Rubin, and Martin Zimmermann
In *Proceedings of GandALF 2020*, volume 326 of *EPTCS*, 2020

Optimally Resilient Strategies in Pushdown Safety Games

Daniel Neider, Patrick Totzke, and Martin Zimmermann
In *Proceedings of MFCS 2020*, volume 170 of *LIPICs*, 2020

Good-for-games ω -Pushdown Automata

Karoliina Lehtinen and Martin Zimmermann
In *Proceedings of LICS 2020*, ACM, 2020

From LTL to rLTL Monitoring: Improved Monitorability through Robust Semantics

Corto Masclé, Daniel Neider, Maximilian Schwenger, Paulo Tabuada, Alexander Weisert, and Martin Zimmermann
In *Proceedings of HSCC 2020*, ACM, 2020

Promptness and Bounded Fairness in Concurrent and Parameterized Systems

Swen Jacobs, Mouhammad Sakr, and Martin Zimmermann
In *Proceedings of VMCAI 2020*, volume 11990 of *LNCS*, 2020

The Keys to Decidable HyperLTL Satisfiability: Small Models or Very Simple Formulas

Corto Mascle and Martin Zimmermann

In *Proceedings of CSL 2020*, volume 152 of *LIPICs*, 2020

Robust, Expressive, and Quantitative Linear Temporal Logics: Pick any Two for Free

Daniel Neider, Alexander Weinert, and Martin Zimmermann

In *Proceedings of GandALF 2019*, volume 305 of *EPTCS*, 2019

Parity Games with Weights

Sven Schewe, Alexander Weinert, and Martin Zimmermann

In *Proceedings of CSL 2018*, volume 119 of *LIPICs*, 2018

Synthesizing Optimally Resilient Controllers

Daniel Neider, Alexander Weinert, and Martin Zimmermann

In *Proceedings of CSL 2018*, volume 119 of *LIPICs*, 2018

Parity to Safety in Polynomial Time for Pushdown and Collapsible Pushdown Systems

Matthew Hague, Roland Meyer, Sebastian Muskalla, and Martin Zimmermann

In *Proceedings of MFCS 2018*, volume 117 of *LIPICs*, 2018

Team Semantics for the Specification and Verification of Hyperproperties

Andreas Krebs, Arne Meier, and Jonni Virtema, and Martin Zimmermann

In *Proceedings of MFCS 2018*, volume 117 of *LIPICs*, 2018

Finite-state Strategies in Delay Games

Martin Zimmermann

In *Proceedings of GandALF 2017*, volume 256 of *EPTCS*, 2017

Games with Costs and Delays

Martin Zimmermann

In *Proceedings of LICS 2017*, IEEE Computer Society, 2017

Bounding Average-energy Games

Patricia Bouyer, Piotr Hofman, Nicolas Markey, Mickael Randour, and Martin Zimmermann

In *Proceedings of FOSSACS 2017*, volume 10203 of *LNCS*, 2017

The First-Order Logic of Hyperproperties

Bernd Finkbeiner and Martin Zimmermann

In *Proceedings of STACS 2017*, volume 66 of *LIPICs*, 2017

Prompt Delay

Felix Klein and Martin Zimmermann

In *Proceedings of FSTTCS 2016*, volume 65 of *LIPICs*, 2016

Visibly Linear Dynamic Logic

Alexander Weinert and Martin Zimmermann

In *Proceedings of FSTTCS 2016*, volume 65 of *LIPICs*, 2016

Limit your Consumption! Finding Bounds in Average-energy Games

Kim G. Larsen, Simon Laursen, and Martin Zimmermann

In *Proceedings of QAPL 2016*, volume 227 of *EPTCS*, 2016

Approximating Optimal Bounds in Prompt-LTL Realizability in Doubly-exponential Time

Leander Tentrup, Alexander Weinert, and Martin Zimmermann
In *Proceedings of GandALF 2016*, volume 226 of *EPTCS*, 2016

Distributed PROMPT-LTL Synthesis

Swen Jacobs, Leander Tentrup, and Martin Zimmermann
In *Proceedings of GandALF 2016*, volume 226 of *EPTCS*, 2016

Easy to Win, Hard to Master: Optimal Strategies in Parity Games with Costs

Alexander Weinert and Martin Zimmermann
In *Proceedings of CSL 2016*, volume 62 of *LIPICs*, 2016

Parameterized Linear Temporal Logics Meet Costs: Still not Costlier than LTL

Martin Zimmermann
In *Proceedings of GandALF 2015*, volume 193 of *EPTCS*, 2015

What are Strategies in Delay Games? Borel Determinacy for Games with Lookahead

Felix Klein and Martin Zimmermann
In *Proceedings of CSL 2015*, volume 41 of *LIPICs*, 2015

Delay Games with WMSO+U Winning Conditions

Martin Zimmermann
In *Proceedings of CSR 2015*, volume 9139 of *LNCS*, 2015

How Much Lookahead is Needed to Win Infinite Games?

Felix Klein and Martin Zimmermann
In *Proceedings of ICALP 2015, part II*, volume 9135 of *LNCS*, 2015

The Complexity of Counting Models of Linear-time Temporal Logic

Hazem Torfah and Martin Zimmermann
In *Proceedings of FSTTCS 2014*, volume 29 of *LIPICs*, 2014

Parametric Linear Dynamic Logic

Peter Faymonville and Martin Zimmermann
In *Proceedings of GandALF 2014*, volume 161 of *EPTCS*, 2014

Cost-Parity and Cost-Streeth Games

Nathanaël Fijalkow and Martin Zimmermann
In *Proceedings of FSTTCS 2012*, volume 18 of *LIPICs*, 2012

Playing Pushdown Parity Games in a Hurry

Wladimir Fridman and Martin Zimmermann
In *Proceedings of GandALF 2012*, volume 96 of *EPTCS*, 2012

Down the Borel Hierarchy: Solving Muller Games via Safety Games

Daniel Neider, Roman Rabinovich, and Martin Zimmermann
In *Proceedings of GandALF 2012*, volume 96 of *EPTCS*, 2012

Degrees of Lookahead in Context-free Infinite Games

Wladimir Fridman, Christof Löding, and Martin Zimmermann
In *Proceedings of CSL 2011*, volume 12 of *LIPICs*, 2011

Optimal Bounds in Parametric LTL Games

Martin Zimmermann
In *Proceedings of GandALF 2011*, volume 54 of *EPTCS*, 2011

Playing Muller Games in a Hurry

John Fearnley and Martin Zimmermann

In *Proceedings of GandALF 2010*, volume 25 of *EPTCS*, 2010

Time-optimal Winning Strategies for Poset Games

Martin Zimmermann

In *Proceedings of CIAA 2009*, volume 5642 of *LNCS*, 2009

Posters

Adaptive Strategies for rLTL Games

Satya Prakash Nayak, Daniel Neider, and Martin Zimmermann

In *Proceedings of HSCC 2021*, ACM 2021

Theses

Tradeoffs in Infinite Games

Habilitation Thesis, Saarland University, 2018

Solving Infinite Games with Bounds

PhD Thesis, RWTH Aachen University, 2012

Time-optimal Winning Strategies in Infinite Games

Diploma Thesis, RWTH Aachen University, 2009

Talks

Slides are available on my homepage.

A Bit of Nondeterminism Makes Pushdown Automata Expressive and Succinct Highlights 2021

How undecidable are HyperLTL and HyperCTL*? Highlights 2021

Optimal Strategies in Weighted Limit Games GandALF 2020

Optimally Resilient Strategies in Pushdown Safety Games MFCS 2020, Highlights 2020

Temporal Logics for Information-flow Policies Royal Holloway 2020

Robust, Expressive, and Quantitative Linear Temporal Logics: Pick any Two for Free GandALF 2019

Synthesizing Optimally Resilient Strategies Highlights 2018

Finite-state Strategies in Delay Games GandALF 2017

The First-order Logic of Hyperproperties Centre Fédéré en Vérification (Brussels) 2017, RWTH Aachen University 2017, STACS 2017, Leibniz University Hannover 2017, Highlights 2017

Easy to Win, Hard to Master: Playing Parity Games with Costs Optimally AVERTS 2016, University of Liverpool 2017

Prompt Delay FSTTCS 2016

Distributed Prompt-LTL Synthesis GandALF 2016

Visibly Linear Dynamic Logic Highlights 2016, FSTTCS 2016

Approximating Optimal Bounds in Prompt-LTL Realizability in Doubly-exponential Time QAPL 2016

Limit your Consumption! Finding Bounds in Average-energy Games QAPL 2016

Unbounded Lookahead in WMSO+U Games University of Warsaw 2015

Parameterized Linear Temporal Logics Meet Costs: Still not Costlier than LTL GandALF 2015

What are Strategies in Delay Games? Borel Determinacy for Games with Lookahead CSL 2015

Delay Games with WMSO+U Winning Conditions Dagstuhl 2015, Avacs Meeting 2015, CSR 2015, Highlights 2015

Parametric Linear Temporal Logics Aalborg 2015

Infinite Games University of Oldenburg 2014 (invited)

Optimal Strategy Synthesis for Request-Response Games AVACS Meeting 2014

The Complexity of Counting Models of Linear-time Temporal Logic Highlights 2014, RWTH Aachen University 2015

How much Lookahead is Needed to Win Infinite Games? Algosyn/PUMA Meeting 2014, ACTS 2015, Aalborg University 2015, University of Napoli 2018

Cost-Parity and Cost-Streett Games RWTH Aachen University 2012, TU München 2013, Saarland University 2013

Playing Pushdown Parity Games in a Hurry AISS 2012, GandALF 2012, Games 2012

Down the Borel Hierarchy Solving Muller Games via Safety Games University of Warsaw 2011, Algosyn Workshop 2011, Gasics Meeting 2011, LICS 2012, AVACS Meeting 2014

Degrees of Lookahead in Context-free Infinite Games AlMoTh 2011, Gasics Meeting 2011, Games 2011

Playing Muller Games in a Hurry Gasics Meeting 2010, GandALF 2010, MoVeP 2010, Games 2010

Time-optimal Strategies for Infinite Games Warwick University 2010

Optimal Bounds in Parametric LTL Games Games 2009, Gasics Meeting 2009, AlMoTh 2010, Gasics Meeting 2010, GandALF 2011, AVACS Meeting 2013

Time-optimal Winning Strategies for Poset Games Gasics Meeting 2009, CIAA 2009

Academic Visits

| | |
|---|-------------------------|
| University of Naples (two weeks) Host: Aniello Murano | March 2018 |
| Aalborg University (three weeks) Host: Kim G. Larsen | August 2015 |
| University of Warwick (six weeks) Host: Marcin Jurdziński | March 2010 - April 2010 |

Advising

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| Satya Prakash Nayak (intern) | 2020-2021 |
| Corto Mascle (intern) | 2019 |

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| | Alexander Weinert (PhD student) | 2015 - 2018 |
| | Moritz Lichter (research immersion lab) | 2017 |
| | Tobias Salzmann (master thesis) | 2015 |
| Teaching | Lecture Computer Architecture and Operating Systems | 2021-2023 |
| | Module COMP313: Formal Methods | 2019-2020 |
| | Lecture Reactive Synthesis (co-taught with S. Jacobs) | Winter 2017/18 |
| | Lecture Infinite Games | Summer 2016 |
| | Lecture Recursion Theory | Summer 2015 |
| | Seminar Advanced Topics in Infinite Games (co-taught with B. Finkbeiner) | Summer 2014 |
| | Lecture Infinite Games | Winter 2013/14 |
| | Lecture Verification (co-taught with B. Finkbeiner) | Summer 2013 |
| PhD Committees | Anibar Majumdar (Université Paris-Saclay) | September 2021 |
| | Quentin Hautem (University of Mons) | June 2018 |
| | Alexander Wieder (Saarland University) | November 2017 |
| | Hassan Hatefi Ardakani (Saarland University) | December 2016 |
| | Rayna Dimitrova (Saarland University) | June 2014 |
| | Rüdiger Ehlers (Saarland University) | October 2013 |
| Reviewing | RP 2009, LPAR 2010, MFCS 2010, JCSS, LICS 2010, LATA 2010, FSTTCS 2010, CSL 2011, FSTTCS 2011, LICS 2013, ICALP 2013, TIME 2013, SICOMP, STACS 2014, TACAS 2014, FOSSACS 2014, I&C, CAV 2014, LMCS, YuriFest 2015, STACS 2015, LICS 2016, ATVA 2016, ESOP 2017, TCS, STACS 2018, FOSSACS 2018, MFCS 2018, Acta Informatica, I&C, RP 2019, ATVA 2019, FSTTCS 2019, STACS 2020, MFCS 2020, FSTTCS 2020, TAC, TOCS, MFCS 2021, WOLLIC 2021, TOCL. | |
| | Reviewer for Mathematical Reviews. | |

October 7, 2021