

Roland Ewald

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RESEARCH INTERESTS Stochastic/Discrete-Event/Parallel and Distributed Simulation, Automatic Algorithm Selection, Experimental Algorithmics, Performance Analysis, Self-Adaptive Software, Machine Learning, Algorithm Portfolios, Multi-Level Modeling and Simulation, Modeling and Simulation of Complex Systems, Multi-Agent-Systems, Computational Systems Biology, Bioinformatics

Qualifications

EDUCATION **Doctoral Degree (Dr.-Ing.), summa cum laude** **May 2006 – October 2010**
University of Rostock, Germany

- Title of Dissertation: *Automatic Algorithm Selection for Complex Simulation Problems*
- Thesis reviewers:
 - Prof. Adelinde M. Uhrmacher (advisor)
 - Prof. David M. Nicol
 - Prof. Georgios K. Theodoropoulos

Computer Science Diploma (\approx M.Sc.), with honors **October 2001 – May 2006**
University of Rostock, Germany

- Title of thesis: *Simulation of Load Balancing Algorithms for Discrete Event Simulations*
- Minor: Mathematics

AWARDS **SIMUTools'13 Best Paper Award** **March 2013**
For „Evaluating Simulation Software Components with Player Rating Systems“ (Wienß, Stein, and Ewald, see publication list).

3. Prof. Dr. Werner Petersen Preis der Technik **November 2006**
(\approx „Award of Technology“)
VDE Nord e.V. + VDI Hamburg & Schleswig-Holstein, for the diploma thesis.

Work Experience

INDUSTRY **Co-Founder** **since June 2015**
Limbus Medical Technologies GmbH (<http://www.limbus-medtec.com>), Rostock, Germany
Development of new software products to support genetic labs.

Team Leader Software Development **April 2014 – May 2015**
Centogene AG (<http://www.centogene.com>), Rostock, Germany
Started as systems development engineer, promoted to team lead after five months. Worked on various internal software projects, mostly related to processing and managing biological and clinical data. Initial release of the mutation database CentoMD (<http://www.centomd.com>).

Part-time Software Engineer **January 2002 – April 2004**
QBus Advertising Agency (<http://www.qbus.de>), Rostock, Germany
Worked on the Content Management Systems *Sitechips* (<http://www.sitechips.de>) based on PHP, XML, and web services. Contributed to InnoRegio research project *Maritime Alliance*.

Freelancing Software Engineer **since November 1999**
Red Star GbR, Kröpelin, Germany
Software engineer and web developer. Amongst other things, development of a Java-based multimedia dictionary for *Compact Verlag* (ISBN 3817472463).

Post-doc / Principal investigator of research project ALeSiA April 2012 – March 2014

University of Rostock, Germany; Modeling and Simulation Research Group

DFG (German Research Foundation) research project ALeSiA (DFG EW 127/1-1): *Automated Performance Analysis of Simulation Algorithms for Incremental Algorithm Selection*.

Research focus: automated planning and execution of performance analysis experiments, incremental algorithm selection.

Post-doc**November 2010 – March 2012**

University of Rostock, Germany; Modeling and Simulation Research Group

DFG (German Research Foundation) research training group 1387: *dIEM oSiRiS – Integrative Development of Modeling and Simulation Methods for Regenerative Systems*.

Research focus: Enhanced user support for simulation experiments.

Teaching Assistant**May 2007 – November 2010**

University of Rostock, Germany; Modeling and Simulation Research Group

Exercise courses for the lectures *Artificial Intelligence*, *Modeling and Simulation*, *Continuous and Hybrid Systems Modeling and Simulation*, and others.

Research Assistant (DFG)**May 2006 – May 2007**

University of Rostock, Germany; Modeling and Simulation Research Group

Worked on two DFG-Projects, *Dier Mosis* and *CoSA* (50% each). Further development of the modeling and simulation framework JAMES II, particularly for applications in computational systems biology.

Student Assistant**April 2004 – April 2005, October 2005,
February 2006 – April 2006**

University of Rostock, Germany;

Modeling and Simulation Research Group

Worked on parallel and distributed simulation (partitioning and load balancing) with JAMES II, and on an XML-based parameterization subsystem.

Intern (Distributed Systems Lab)**April 2005 – September 2005**

University of Birmingham, UK; Distributed Systems Research Group

Worked on research project *PDES-MAS* (Parallel Discrete-Event Simulation of Multi-Agent Systems), supervised by Prof. Georgios K. Theodoropoulos. Simulation of methods for interest management and load balancing.

MISCELLANEOUS

Alternative Civilian Service**August 2000 – July 2001**

Evangelical Welfare Center, Kröpelin, Germany

Ambulant elderly care.

Research Grants

ALeSiA

(4/2012–4/2014)

Automated Performance Analysis of Simulation Algorithms for Incremental Algorithm Selection

Awarded by the German Research Foundation (DFG EW 127/1-1).

The project aims at developing a system that automatically analyzes the performance of simulation algorithms and then uses the results to improve the performance of algorithm selection mechanisms.

Publications

THESES

Roland Ewald. *Automatic Algorithm Selection for Complex Simulation Problems*. PhD thesis, Vieweg + Teubner, 2011. ISBN 978-3834815422. Open access via <http://nbn-resolving.de/urn:nbn:de:gbv:28-diss2011-0162-1>.

Roland Ewald. *Simulation of load balancing algorithms for discrete event simulations*. Master's thesis, University of Rostock, 2006. Open access via <http://books.google.de/books?id=puqhYJm32Q4C>.

- BOOK CHAPTERS & PROCEEDINGS Fernando Barros, Kalyan Perumalla, and **Roland Ewald**. *Proceedings of the 7th International ICST Conference on Simulation Tools and Techniques (SIMUTools 2014)*. ICST / ACM, 2014.
- Adeline M. Uhrmacher, Jan Himmelspace, and **Roland Ewald**. *Effective and efficient modeling and simulation with DEVS variants*. In G. Wainer and P. Mosterman, editors, *Discrete- Event Modeling and Simulation: Theory and Applications*, chapter 6, pages 139–176. Taylor and Francis, 2010.
- Georgios Theodoropoulos, Rob Minson, **Roland Ewald**, and Michael Lees. *Simulation engines for multi-agent systems*. In Danny Weyns and Adeline M. Uhrmacher, editors, *Agents, Simulation and Applications*, chapter 3, pages 77–105. Taylor and Francis, 2009.
- JOURNAL PAPERS Helms, Tobias and **Ewald, Roland** and Rybacki, Stefan and Uhrmacher, Adeline M. *Automatic Runtime Adaptation for Component-Based Simulation Algorithms*. ACM Transactions on Modeling and Computer Simulation 26 (1):1-24, 2015.
- Fiete Haack, Heiko Lemcke, **Roland Ewald**, Tarek Rharass, and Adeline M. Uhrmacher. *Spatio-temporal model of endogenous ROS and raft-dependent Wnt/beta-catenin signaling driving cell fate commitment in human neural progenitor cells*. PLOS Computational Biology 11 (3), e1004106, 2015.
- Stefan Leye, **Roland Ewald**, and Adeline M. Uhrmacher. *Composing Problem Solvers for Simulation Experimentation: A Case Study on Steady State Estimation*. PLoS ONE 9 (4), e91948, 2014.
- Roland Ewald** and Adeline M. Uhrmacher. *SESSL: A Domain-Specific Language for Simulation Experiments*. ACM Transactions on Modeling and Computer Simulation 24 (2), 2014.
- Matthias Jeschke, **Roland Ewald**, and Adeline M. Uhrmacher. *Exploring the performance of spatial stochastic simulation algorithms*. Journal of Computational Physics, 230(7):2562–2574, 2011.
- Roland Ewald**, Jan Himmelspace, Matthias Jeschke, Stefan Leye, and Adeline M. Uhrmacher. *Flexible experimentation in the modeling and simulation framework JAMES II — implications for computational systems biology*. Briefings in Bioinformatics, 11(3):290–300, 2010.
- Dan Chen, **Roland Ewald**, Georgios K. Theodoropoulos, Robert Minson, Ton Oguara, Michael Lees, Brian Logan, and Adeline M. Uhrmacher. *Data access in distributed simulations of multi-agent systems*. Journal of Systems and Software, 81(12):2345–2360, December 2008.
- Mathias John, **Roland Ewald**, and Adeline M. Uhrmacher. *A spatial extension to the π calculus*. Electronic Notes in Theoretical Computer Science, 194(3):133–148, January 2008.
- Roland Ewald**, Carsten Maus, Arndt Rolfs, and Adeline M. Uhrmacher. *Discrete event modeling and simulation in systems biology*. Journal of Simulation, 1(2):81–96, 2007.
- CONFERENCES & WORKSHOPS Danhua Peng, **Roland Ewald**, and Adeline M. Uhrmacher. *Towards Semantic Model Composition via Experiments*. ACM SIGSIM Conference on Principles of Advanced Discrete Simulation (PADS), 2014.
- Roland Ewald**. *Using AI Planning to Automate the Performance Analysis of Simulators*. Proc. of the International Conference on Simulation Tools and Techniques (SIMUTools), 2014.
- Sebastian Nähring, Carsten Maus, **Roland Ewald** and Adeline M. Uhrmacher. *From Standardized Modeling Formats to Modeling Languages and back — an Exploration based on SBML and ML-Rules*. Proc. of the Winter Simulation Conference, IEEE Computer Society, 2013.
- Tobias Helms, **Roland Ewald**, Stefan Rybacki, Adeline M. Uhrmacher. *A Generic Adaptive Simulation Algorithm for Component-based Simulation Systems*. ACM SIGSIM Conference on Principles of Advanced Discrete Simulation (PADS), 2013.
- Jonathan Wienß, Michael Stein, **Roland Ewald**. *Evaluating Simulation Software Components with Player Rating Systems*. In Proc. of the 6th International ICST Conference on Simulation Tools and Techniques (SIMUTools), 2013. (**Best Paper Award**.)
- Martin Luboschik, Stefan Rybacki, **Roland Ewald**, Benjamin Schwarze, Heidrun Schumann, Adeline M. Uhrmacher. *Interactive Visual Exploration of Simulator Accuracy: A Case Study for Stochastic Simulation Algorithms*. Invited Paper, in Proc. of the Winter Simulation Conference, 2012.
- Jan Himmelspace, **Roland Ewald**, Stefan Leye, and Adeline M. Uhrmacher. *Enhancing the scalability of simulations by embracing multiple levels of parallelization*. In Proc. of the 2010 International Workshop on High Performance Computational Systems Biology, 2010.

- Roland Ewald**, René Schulz, and Adelinde M. Uhrmacher. *Selecting simulation algorithm portfolios by genetic algorithms*. In IEEE Workshop on Principles of Advanced and Distributed Simulation (PADS), pages 48–56, 2010. (**Shortlisted for Best Paper Award**.)
- Bing Wang, Jan Himmelspace, **Roland Ewald**, Yiping Yao, and Adelinde M. Uhrmacher. *Experimental analysis of logical process simulation algorithms in JAMES II*. In Proc. of the Winter Simulation Conference, pages 1167–1179, 2009.
- Christina Bohk, **Roland Ewald**, and Adelinde M. Uhrmacher. *Probabilistic population projection with James II*. Proc. of the Winter Simulation Conference, pages 2008–2019. IEEE Computer Society, 2009.
- Roland Ewald** and Adelinde M. Uhrmacher. *Automating the runtime performance evaluation of simulation algorithms*. Proc. of the Winter Simulation Conference, pages 1079–1091. IEEE Computer Society, 2009.
- Roland Ewald**, Jan Himmelspace, Matthias Jeschke, Stefan Leye, and Adelinde M. Uhrmacher. *Performance issues in evaluating models and designing simulation algorithms*. In Proc. of the 2009 International Workshop on High Performance Computational Systems Biology, pages 71–80. IEEE CPS, 2009.
- Roland Ewald**, Stefan Leye, and Adelinde M. Uhrmacher. *An efficient and adaptive mechanism for parallel simulation replication*. In Proc. of the 23rd ACM/IEEE/SCS Workshop on Principles of Advanced and Distributed Simulation (PADS), pages 104–113, 2009.
- Roland Ewald**, Adelinde Uhrmacher, and Kaustav Saha. *Data mining for simulation algorithm selection*. In Proc. of the SIMUTools’09: 2nd International Conference on Simulation Tools and Techniques, 2009.
- Roland Ewald**, Johannes Rössel, Jan Himmelspace, and Adelinde M. Uhrmacher. *A plug-in - based architecture for random number generation in simulation systems*. In Proc. of the Winter Simulation Conference, pages 836–844, 2008.
- Jan Himmelspace, **Roland Ewald**, and Adelinde M. Uhrmacher. *A flexible and scalable experimentation layer*. In Proc. of the Winter Simulation Conference, pages 827–835, 2008.
- Stefen Leye, Jan Himmelspace, Matthias Jeschke, **Roland Ewald**, and Adelinde M. Uhrmacher. *A grid-inspired mechanism for coarse-grained experiment execution*. In Proc. of the 12th IEEE/ACM International Symposium on Distributed Simulation and Real-Time Applications (DS-RT), pages 7–16, 2008.
- Matthias Jeschke and **Roland Ewald**. *Large-scale design space exploration of SSA*. In Computational Methods in Systems Biology (CMSB 2008), volume 5307 of Lecture Notes in Computer Science, pages 211–230, 2008.
- Alke Martens, Jan Himmelspace, and **Roland Ewald**. *Modeling, simulation and games*. In Proc. der Tagungen Mensch und Computer 2008, Delfi 2008 und Cognitive Design 2008, pages 349–354, 2008.
- Adelinde Uhrmacher, Jan Himmelspace, Matthias Jeschke, Mathias John, Stefan Leye, Carsten Maus, Mathias Röhl, and **Roland Ewald**. *One modelling formalism & simulator is not enough! A perspective for computational biology based on James II*. In Proc. of the 1st International Workshop on Formal Methods in Systems Biology, volume 5054 of Lecture Notes in Bioinformatics, pages 123–138, 2008.
- Roland Ewald**, Jan Himmelspace, and Adelinde M. Uhrmacher. *An algorithm selection approach for simulation systems*. In IEEE Workshop on Principles of Advanced and Distributed Simulation (PADS), pages 91–98, 2008.
- Matthias Jeschke, Alfred Park, **Roland Ewald**, Richard Fujimoto, and Adelinde M. Uhrmacher. *Parallel and distributed spatial simulation of chemical reactions*. In Proc. of the 22nd ACM/IEEE/SCS Workshop on Principles of Advanced and Distributed Simulation (PADS), pages 51–59, 2008.
- Adelinde M. Uhrmacher, **Roland Ewald**, Mathias John, Carsten Maus, Matthias Jeschke, and Susanne Biermann. *Combining micro and macro-modeling in DEVS for computational biology*. In Proc. of the Winter Simulation Conference, pages 871–880, 2007.
- Jan Himmelspace, **Roland Ewald**, Stefan Leye, and Adelinde M. Uhrmacher. *Parallel and distributed simulation of parallel DEVS models*. In Proc. of the SpringSim’07, DEVS Integrative M&S Symposium, pages 249–256, 2007.

Roland Ewald, Jan Himmelspace, and Adelinde M. Uhrmacher. *A non-fragmenting partitioning algorithm for hierarchical models*. Proc. of the Winter Simulation Conference, pages 848–855, 2006.

Adelinde M. Uhrmacher, Jan Himmelspace, Mathias Röhl, and **Roland Ewald**. *Introducing Variable Ports and Multi-Couplings for Cell Biological Modeling in DEVS*. In Proc. of the Winter Simulation Conference, pages 832–840, 2006.

Roland Ewald, Jan Himmelspace, Adelinde M. Uhrmacher, Dan Chen, and Georgios K. Theodoropoulos. *A simulation approach to facilitate parallel and distributed discrete-event simulator development*. In Proc. of the 10th IEEE International Symposium on Distributed Simulation and Real Time Applications (DS-RT), pages 209–218, 2006.

Roland Ewald, Dan Chen, Georgios K. Theodoropoulos, Michael Lees, Brian Logan, Ton Oguara, and Adelinde M. Uhrmacher. *Performance Analysis of Shared Data Access Algorithms for Distributed Simulation of Multi-Agent Systems*. In Proc. of the 20th ACM/IEEE/SCS Workshop on Principles of Advanced and Distributed Simulation (PADS), pages 29–36, 2006.

MISCELLANEOUS
(NOT ALWAYS
PEER-
REVIEWED)

Johannes Schützel, **Roland Ewald**, and Adelinde M. Uhrmacher. *A General Foundation for Formalism-Specific Instrumentation Languages*, Poster, Winter Simulation Conference, 2013.

Robert Engelke and **Roland Ewald**. *Configuring Simulation Algorithms with ParamILS*, Poster, Winter Simulation Conference, 2012.

Christina Bohk, **Roland Ewald**, and Roland Rau. *Towards a Generalized Subpopulation Support for Stochastic Population Projections*, Poster, Winter Simulation Conference, 2012.

Roland Ewald and Adelinde M Uhrmacher. *Setting up Simulation Experiments with SESSL*, Poster, Winter Simulation Conference, 2012.

Tobias Helms, Stefan Rybacki, **Roland Ewald**, and Adelinde M Uhrmacher. *An Adaptive Simulator for ML-Rules*, Poster, Winter Simulation Conference, 2012.

Sebastian Nähring, Carsten Maus, **Roland Ewald**, and Adelinde M Uhrmacher. *Automated Transformation Between Modeling Languages with Different Expressiveness: Challenges and Results From a Use Case with SBML and ML-Rules*, Poster, Winter Simulation Conference, 2012.

Bing Wang, Jan Himmelspace, **Roland Ewald**, Yiping Yao, and Adelinde M Uhrmacher. *An experimental analysis environment for logical process simulation algorithms*, Poster, SIMUTools'09, 2009.

Jan Himmelspace, Mathias Röhl, **Roland Ewald**, and Adelinde M Uhrmacher. *Plug'n simulate: Scalability as a key requirement for SOA-based M&S?*, Position Paper, Workshop on Net-Centric Modeling & Simulation, 2008.

Alke Martens, Jan Himmelspace, and **Roland Ewald**. *Spiele und Simulation*. In Proc. of the International Scientific E-Learning Baltics Conference, pages 53–62, 2008.

Matthias Jeschke, **Roland Ewald**, Alfred Park, Richard Fujimoto, and Adelinde M. Uhrmacher. *A parallel and distributed discrete event approach for spatial cell-biological simulations*. ACM SIGMETRICS Performance Evaluation Review, Invited Paper, 35(4):22–31, March 2008.

Roland Ewald, Enrico Gutzeit, Sebastian Schwanke, Adelinde Uhrmacher, Christian Lange, Susanne Biermann, and Carsten Maus. *Multi-level modeling with DEVS - a critical inspection and steps towards a feasible approach*, Poster, Winter Simulation Conference, 2006.

Dan Chen, **Roland Ewald**, Georgios K. Theodoropoulos, and Tonworio Oguara. *Data management in distributed simulation of complex systems*. Technical Report CSR-06-06, University of Birmingham, School of Computer Science, July 2006.

Gregory Batt, Jeremy T. Bradley, **Roland Ewald**, François Fages, Holger Hermans, Jane Hillston, Peter Kemper, Alke Martens, Pieter Mosterman, Flemming Nielson, Oleg Sokolsky, and Adelinde M. Uhrmacher. *06161 working groups' report: The challenge of combining simulation and verification*, Dagstuhl-Seminar, 2006.

Further Scientific Activities

SERVICE

- Roles as a chair:
 - Program co-chair of SIMUTools 2014
 - Co-chair of mini-track '*Performance Issues of Simulation Software*', WSC 2012
 - Publicity Chair SIMUTools 2011
- Program committees:
 - ACM SIGSIM PADS 2013–15
 - WSC 2014 (Environmental and Sustainability Applications Track)
 - SIMUTools 2013
 - ScalCom 2012
 - WSC 2012 (Simulation Methods and Tools Track)
 - SimulTech 2011–13
 - SIMUTools 2010
 - SIMUL 2009
- Reviewer for Journals:
 - ACM Transactions on Modeling and Computer Simulation
 - ACM Computing Surveys
 - SIMULATION: Transactions of The Society for Modeling and Simulation International
 - IET Systems Biology
 - BMC Bioinformatics
 - BMC Systems Biology
 - PLoS ONE
 - IEEE Industrial Informatics
- Reviewer for conferences:
 - TMS/DEVS (2011)
 - DS-RT (2009)
 - SIMUTools (2009–11)
 - PADS (2007, 2010–12)
 - MATES (2007, 2011)
 - WSC (2006, 2007, 2009)
 - CMSB (2006, 2007)

PROFESSIONAL ORGANIZATIONS

ACM/SIGSIM, GI (German Computer Society), Java User Group Rostock

TALKS

Using AI Planning to Automate the Performance Analysis of Simulators
6th International Conference on Simulation Tools and Techniques (SimuTools), March 2014.

A Day in the Life of a Bug — sinnvoll zu Open Source Projekten beitragen
Talk series 'First Steps towards Open Source Software', University of Rostock, May 2013.

Evaluating Simulation Software Components with Player Rating Systems
6th International Conference on Simulation Tools and Techniques (SimuTools), March 2013.

Domain Specific Languages (DSLs) entwickeln und anwenden
Java User Group Rostock, January 2013.

Statische Analyse von Java-Code in der Praxis
Talk series 'Software Engineering Tools', University of Rostock, May 2012.

SCALA: ein kurzer Überblick
Java User Group Rostock, November 2011.

Online Configuration of Efficient Spatial and Non-Spatial SSA-type Simulators
1st Sino-German Symposium on Parallel and Distributed Discrete-event Simulation, Experimental Validation, and Multi-Scale Applications in Computational Systems Biology, February 2011.

Simulation Algorithm Selection
DFG-Inspection GRK dIEM oSiRiS, June 2010.

Selecting Simulation Algorithm Portfolios by Genetic Algorithms
Workshop on Principles of Advanced and Distributed Simulation (PADS), May 2010.

Automating the Runtime Performance Evaluation of Simulation Algorithms
Winter Simulation Conference (WSC), December 2009.

An Efficient and Adaptive Mechanism for Parallel Simulation Replication
Workshop on Principles of Advanced and Distributed Simulation (PADS), June 2009.

Data Mining for Simulation Algorithm Selection
2nd International Conference on Simulation Tools and Techniques (SimuTools), March 2009.

A plug-in - based architecture for random number generation in simulation systems
Winter Simulation Conference (WSC), December 2008.

An Algorithm Selection Approach for Simulation Systems
Workshop on Principles of Advanced and Distributed Simulation (PADS), June 2008.

A Non-Fragmenting Partitioning Algorithm for Hierarchical Models
Winter Simulation Conference (WSC), December 2006.

A Simulation Approach to Facilitate Parallel and Distributed Discrete-Event Simulator Development
Int'l Symposium on Distributed Simulation and Real Time Applications (DS-RT), October 2006.

TEACHING

- Winter semester 2011/12
 - Problem class for lecture *Artificial Intelligence*
- Winter semester 2010/11
 - Problem class for lecture *Artificial Intelligence*
 - Problem class for lecture *Continuous and Hybrid Systems Modeling and Simulation*
- Summer semester 2010
 - Problem class for lecture *Modellierung und Simulation*
- Winter semester 2009/10
 - Problem class for lecture *Continuous and Hybrid Systems Modeling and Simulation*
 - Problem class for lecture *Artificial Intelligence*
- Summer semester 2009
 - Problem class for lecture *Methods of Applied Artificial Intelligence*
 - Problem class for lecture *Algorithms and Data Structures*
- Winter semester 2008/09
 - Problem class for lecture *Continuous and Hybrid Systems Modeling and Simulation*
 - Problem class for lecture *Modeling and Simulation*
- Summer semester 2008
 - Advanced seminar *Games and Simulation* (with two colleagues)
 - Problem class for lecture *Methods of Applied Artificial Intelligence*
 - Problem class for lecture *Algorithms and Data Structures*
- Winter semester 2007/08
 - Problem class for lecture *Continuous and Hybrid Systems Modeling and Simulation*
- Summer semester 2007
 - Problem class for lecture *Methods of Applied Artificial Intelligence*
- Winter semester 2006/07
 - Proseminar *Simulation Systems and their Applications*

ADVISED THESES & PAPERS

- (Second Advisor) MSc thesis *Sequential Bayesian updating for Detection and Prediction of Change-Points in Financial Data*, 2013
- MSc student project *Extraction of soccer tactics and strategies from game data*, 2013
- MSc student project *Forward Selection of Features for the Performance Prediction of Simulation Algorithms*, 2013
- BSc thesis *Dynamic state space representation for adaptive simulation algorithms*, 2013
- BSc thesis *Performance Analysis of Simulation Algorithms via Metamodeling*, 2013
- Literature research paper *Metamodeling approaches and their applicability to simulation algorithm performance analysis*, 2012

- MSc student project *Ranking of JAMES II-Plugins via the TrueSkill Rating System*, 2012
- MSc thesis *Adaptive Runtime-Configuration of ML-Rules Simulations*, 2012
- BSc thesis *Possibilities for an Automatic Transformation between ML-Rules and SBML Models*, 2012.
- BSc thesis *Evolutionary Methods for Selecting Herbicide Combinations in CeBrUs*, 2012.
- Literature research paper *Rule-based Modeling Approaches for Systems Biology*, 2012.
- Literature research paper *Evolutionary Optimization Methods and their Application to Agricultural Sciences*, 2012
- Research paper *Planung und Simulation in logistischen Seehafenhinterland-Prozessen*, 2011.
- Bachelor thesis *Incremental Construction of Simulation Algorithm Portfolios*, 2011.
- Literature research paper *Algorithm Portfolios and their Applicability to Simulation Problems*, 2011.
- Research paper *Entwicklung und Evaluation eines ML-DEVS Simulators für JAMES II*, 2009.
- Diploma thesis *Grid-Inspired Simulation of Computationally Intensive Models*, 2008.
- Diploma thesis *Parallele Optimierung von Simulationsmodellen*, 2008.
- Diploma thesis *Parameteroptimierung und Sensitivitätsanalyse in James II*, 2007.