

# Hermann Daniel Neider

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## Work Experience

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**University of Illinois at Urbana-Champaign** **Urbana-Champaign, Illinois, USA**  
*Research stay with Prof. Madhusudan Parthasarathy* *08/2011 – 10/2011*  
Developed a technique to learn universally quantified invariants of programs manipulating linear data structures, presented at the 25<sup>th</sup> International Conference on Computer Aided Verification.

**RWTH Aachen University** **Aachen, Germany**  
*Research Assistant* *08/2008 – present*

- Worked in the fields of automata theory, formal methods, graph-based two-player games, logics, and verification.
- Developed and extended *libalf*, an open-source C++ library for learning finite-state machines; available at <http://libalf.informatik.rwth-aachen.de>.
- Teaching assistant for freshman courses (300 up to 500 students) on automata theory and formal languages; teaching assistant for master courses (about 100 students) on advanced automata theory, algorithmic learning theory, and games on graphs; supervisor of seminars on automata theory.

**Deutsche Post AG (German Postal Service)** *10/2005 – 03/2006*  
*Internship in the course of the Operations Research class*  
Developed new approaches to sorting and distribution of mail.

## Education

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**RWTH Aachen University** **Aachen, Germany**  
*Ph.D. in Computer Science* *08/2008 – present*  
Topic of my thesis is “Algorithmic Learning in Verification and Synthesis”.

**RWTH Aachen University** **Aachen, Germany**  
*Diplom-Wirtschaftsinformatiker* *04/2005 – 07/2008*  
*(equivalent to Master of Business Administration), final grade “very good”*

- Topic of my thesis is “Introducing an enterprise-wide ERP-system at an automotive supplier” (in German).
- Minors in Management and Operations Research.

**RWTH Aachen University** **Aachen, Germany**  
*Diplom-Informatiker* *10/2002 – 11/2007*  
*(equivalent to Master of Science in Computer Science), final grade “excellent”*

- Topic of my thesis is “Learning Automata for Streaming XML Documents”.
- Specialization in automata theory, logics, and games.
- Minor in Economics.

## Skills

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**Languages:** Native language German, fluent in English, basics in French.

**Programming Languages:** Good programming skills in C++ and Java.

## Awards

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- Springorum award of RWTH Aachen for graduating with final grade “excellent”.
- Best paper award at “Informatiktage 2008” of the German Informatics Society.

## Presentations

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- Regular Model Checking Using Solver Technologies and Automata Learning. 5<sup>th</sup> NASA Formal Methods Symposium; May 2013, NASA Ames Research Center, Moffett Field, CA, USA.
- Learning Minimal Deterministic Automata from Inexperienced Teachers. 6<sup>th</sup> International Symposium On Leveraging Applications of Formal Methods; October 2012, Heraklion, Greece.
- Computing Minimal Separating DFAs and Regular Invariants Using SAT and SMT Solvers. 10<sup>th</sup> International Symposium on Automated Technology for Verification and Analysis; October 2012, Thiruvananthapuram, India.
- Down the Borel Hierarchy: Solving Muller Games via Safety Games. 3<sup>rd</sup> International Symposium on Games, Automata, Logics and Formal Verification; September 2012, Naples, Italy.
- libalf Development. Workshop on Development and Evaluation of Software in Science; November 2011, Kerkrade, The Netherlands.
- (Learning) Small Strategies for Safety Games. 9<sup>th</sup> International Symposium on Automated Technology for Verification and Analysis; October 2011 Taipei, Taiwan.
- Reachability Games on Automatic Graphs. 15<sup>th</sup> International Conference on Implementation and Application of Automata; August 2010, Winnipeg, Canada.
- libalf: The Automata Learning Framework. 22<sup>nd</sup> International Conference on Computer Aided Verification; July 2010, Edinburgh, UK.

## Publications

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Benedikt Bollig, Joost-Pieter Katoen, Carsten Kern, Martin Leucker, Daniel Neider, and David R. Piegdon. libalf: The Automata Learning Framework. In *22nd International Conference on Computer Aided Verification (CAV 2010)*, volume 6174 of LNCS, pages 360–364. Springer, 2010.

Pranav Garg, Christof Löding, P. Madhusudan, and Daniel Neider. Learning Universally Quantified Invariants of Linear Data Structures. In *25th International Conference on Computer Aided Verification (CAV 2013)*, volume 8044 of LNCS, pages 813–829. Springer, 2013.

Martin Leucker and Daniel Neider. Learning Minimal Deterministic Automata from Inexperienced Teachers. In *5th International Symposium on Leveraging Applications of Formal Methods, Verification and Validation. (ISoLA 2012)*, volume 7609 of LNCS, pages 524–538. Springer, 2012.

Daniel Neider. Reachability Games on Automatic Graphs. In *15th International Conference Implementation and Application of Automata (CIAA 2010)*, volume 6482 of *LNCS*, pages 222–230. Springer, 2010.

Daniel Neider. Small Strategies for Safety Games. In *9th International Symposium on Automated Technology for Verification and Analysis (ATVA 2011)*, volume 6996 of *LNCS*, pages 306–320. Springer, 2011.

Daniel Neider. Computing Minimal Separating DFAs and Regular Invariants Using SAT and SMT Solvers. In *10th International Symposium on Automated Technology for Verification and Analysis (ATVA 2012)*, volume 7561 of *LNCS*, pages 354–369. Springer, 2012.

Daniel Neider and Nils Jansen. Regular Model Checking Using Solver Technologies and Automata Learning. In *5th International NASA Formal Method Symposium (NFM 2013)*, volume 7871 of *LNCS*, pages 16–31. Springer, 2013.

Daniel Neider, Roman Rabinovich, and Martin Zimmermann. Down the Borel Hierarchy: Solving Muller Games via Safety Games. In *Proceedings Third International Symposium on Games, Automata, Logics and Formal Verification (GandALF 2012)*, volume 96 of *EPTCS*, pages 169–182, 2012.