From Lothar Thiele

Site: Phds

Supervised Phd Theses

The following list contains some of the PhD theses that have been supervised by me during my time at the University of Saarland, Saarbruecken and at the ETH Zurich.

1. Juergen Teich: A Compiler for Application-Specific Processor Arrays. PhD Thesis, Institute of Microelectronics, University of Saarland, Saarbruecken, Germany, 1993.

2. Ulrich Arzt: COMPAR - Ein Compiler für massiv parallele Architekturen. PhD Thesis, Institute of Microelectronics, University of Saarland, Saarbruecken, Germany, 1994.

3. Wolfgang Backes: The Structure of Longest Paths in Periodic Graphs. PhD Thesis, Institute of Microelectronics, University of Saarland, Saarbruecken, Germany, 1994. Postscript

4. Christian Heckler: Automatische Parallelisierung und parallele Gitterbasisreduktion. PhD Thesis, Institute of Microelectronics, University of Saarland, Saarbruecken, Germany, 1995. Postscript

5. Alexander Bachmann: Systematischer Entwurf heterogener Multiprozessorsysteme. PhD Thesis, Institute of Microelectronics, University of Saarland, Saarbruecken, Germany, 1995. Postscript

6. Jean-Paul Theis: Parallel Processor Architectures for Image Processing. PhD Thesis, Institute of Microelectronics, University of Saarland, Saarbruecken, Germany, 1996.

7. Joachim Koenig--Baltes: Online-Verfahren der Ganzzahlarithmetik und ihre Realisierung in einem Koprozessor. PhD Thesis, Institute of Microelectronics, University of Saarland, Saarbruecken, Germany, 1996.

8. Lee Zhang: Scheduling and allocation with integer linear programming. PhD Thesis, Institute of Microelectronics, University of Saarland, Saarbruecken, Germany, 1996. Postscript

9. Tobias Blickle: Theory of evolutionary algorithms and applications to system design. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, 1996. Postscript

10. Rob Esser: An object oriented approach to embedded system design. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, 1996. Postscript

11. Martin Gerber: Parallelising Molecular Dynamics for Message Passing Systems. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, November 1999. Postscript

12. Eckart Zitzler: Evolutionary Algorithms for Multiobjective Optimization: Methods and Applications. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, December 1999. Postscript

13. Martin Naedele: On the Modeling and Evaluation of Real-Time Systems. PhD Thesis , Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, March 2000. Postscript

14. Karsten Strehl: Symbolic Methods Applied to Formal Verification and Synthesis in Embedded Systems Design. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, March 2000. Postscript

15. Joern Janneck: Syntax and semantics of graphs - An approach to the specifcation of visual notations for discrete-event systems. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, June 2000. Postscript

16. Matthias Gries: Algorithm-Architecture Trade-offs in Network Processor Design. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, July 2001. Postscript pdf

17. Michael Eisenring: Communication Channel Synthesis for Heterogeneous Embedded Systems. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, Oktober 2002. pdf

18. Ferdinand Gramsamer: Scalable Flow Control for Interconnection Networks. PhD Thesis , Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, March 2003. pdf

19. Samarjit Chakraborty: System-Level Timing Analysis and Scheduling for Embedded Packet Processors. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, April 2003. pdf

20. Marco Laumanns: Analysis and Applications of Evolutionary Multiobjective Optimization Algorithms. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, August 2003. pdf

21. Philipp Kutter: Montages - Engineering of Computer Languages. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, 2004. Postscript pdf

22. Andreas Hubert Moglestue: CIP Model Checking. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, 2004. pdf

23. Philipp Blum: Guaranteed Time Synchronization in Wireless and Ad-Hoc Networks. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, March 2005. pdf

24. Herbert Walder: Operating System Design for Partiallly Reconfigurable Logic Devices. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, April 2005. pdf

25. Jan Beutel: Design and Deployment of Wireless Networked Embedded Systems. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, August 2005. pdf

26. Gero Dittmann: On Instruction-Set Generation for Specialized Processors. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, August 2005. pdf

27. Alexander Maxiaguine: Modeling Multimedia Workloads for embedded system design. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, October 2005. pdf

28. Lennart Meier: Interval-Based Time Synchronization for Mobile Ad-Hoc Networks. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, December 2005. pdf

29. Jonas Greutert: Abstraction and Implementation of Predictable Packet Processing Systems. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, February 2006. pdf

30. Simon Kuenzli: Efficient Design Space Exploration for Embedded Systems. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, April 2006. pdf

31. Christian Plessl: Hardware Virtualization on a Coarse-grained Reconfigurable Processor. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, July 2006. pdf

32. Ernesto Wandeler: Modular Performance Analysis and Interface-Based Design for Embedded Real-Time Systems. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, September 2006. pdf

33. René Beutler: Improving Speech Recognition through Linguistic Knowledge. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, January, 2007. pdf

34. Matthias Dyer: Distributed Embedded Systems - Validation Strategies. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, April, 2007. pdf

35. Harald Romsdorfer: Polyglot Text-to-Speech Synthesis - Text Analysis and Prosody Control. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, January 2009. pdf

36. Clemens Moser: Power Management in Energy Harvesting Embedded Systems. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, March 2009. pdf

37. Andreas Meier: Safety-Critical Wireless Sensor Networks. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, June, 2009. pdf

38. Tobias Kaufmann: A Rule-based Language Model for Speech Recognition. PhD Thesis, Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland, October 2009. postscript

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Peer Reviewed Publications (- 2008, part of 2009)

Scientific Journals

[1] L Thiele, K Miettinen, PJ Korhonen, J Molina. **A Preference-Based Evolutionary Algorithm for Multi-Objective Optimization**. Evolutionary Computation, Vol. 17, No. 3, Pages 411-436, 2009.

[2] Clemens Moser, Lothar Thiele, Davide Brunelli and Luca Benini. **Adaptive Power Management for Environmentally Powered Systems**.
Accepted for publication in IEEE Transactions on Computers, 2009, regular papers.

[3] Davide Brunelli, Clemens Moser, Lothar Thiele and Luca Benini. **Design of a Solar Harvesting Circuit for Battery-less Embedded Systems**.
Accepted for publication in IEEE Transactions on Circuits and Systems I, 2009, regular papers.

[4] Eckart Zitzler, Lothar Thiele, Johannes Bader: **On Set-Based Multiobjective Optimization.**
IEEE Trans. Evolutionary Computation, accepted 2008.

[5] Lothar Thiele, Kaisa Miettinen, Pekka J. Korhonen, Julian Molina: **A Preference-based Evolutionary Algorithm for Multiobjective Optimization.**
Evolutionary Computation, MIT Press, accepted 2008.

[6] Simon Perathoner, Ernesto Wandeler, Lothar Thiele, Arne Hamann, Simon Schliecker, Rafik Henia, Razvan Racu, Rolf Ernst, Michael González Harbour: **Influence of Different Abstractions on the Performance Analysis of Distributed Hard Real-Time Systems.**
Design Automation for Embedded Systems, Springer Science+Business Media, LLC, accepted 2008.

[7] Karl Aberer, Gustavo Alonso, Guillermo Barrenetxea, Jan Beutel, Jacques Bovay, Henri Dubois-Ferriere, Donald Kossmann, Marc Parlange, Lothar Thiele, Martin Vetterli: **Infrastructures for a Smart Earth - The Swiss NCCR-MICS initiative.**
Praxis der Informationsverarbeitung und Kommunikation, K.G. Saur Verlag, Munich, Germany, Vol. 30, No. 1, pages 20-25, January, 2007.

[8] Clemens Moser, Davide Brunelli, Lothar Thiele, Luca Benini: **Real-Time Scheduling for Energy Harvesting Sensor Nodes.**
Real-Time Systems Journal, Springer Science+Business Media, Netherlands, Vol. 37, No. 3. pages 223-260, 2007.

[9] Ernesto Wandeler, Lothar Thiele: **Workload correlations in multi-processor hard real-time systems.**
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[10] Ernesto Wandeler, Lothar Thiele, Marcel Verhoef, Paul Lieverse: **System Architecture Evaluation Using Modular Performance Analysis - A Case Study**
Software Tools for Technology Transfer (STTT), Springer, Vol. 8, No. 6, pages 649 - 667, October, 2006.

[11] Amela Prelic, Stefan Bleuler, Philip Zimmermann, Anja Wille, Peter Bühlmann, Wilhelm Gruissem, Lars Hennig, Lothar Thiele, Eckart Zitzler: **Comparison of Biclustering Methods: A Systematic Comparison and Evaluation of Biclustering Methods for Gene Expression Data.**
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[12] Marco Laumanns, Lothar Thiele, Eckart Zitzler: **An efficient, adaptive parameter variation scheme for metaheuristics based on the epsilon-constraint method.**
European Journal of Operational Research, Elsevier, Vol. 169, No. 3, pages 932-942, March, 2006.

[13] Lothar Thiele, Ernesto Wandeler, Samarjit Chakraborty: **A Stream-Oriented Component Model for Performance Analysis of Multiprocessor DSPs.**
IEEE Signal Processing Magazine, special Issue on Hardware/Software Co-design for DSP, IEEE, Vol. 22, No. 3, pages 38--46, May, 2005.

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[15] Ernesto Wandeler, Alexandre Maxiaguine, Lothar Thiele: **Quantitative characterization of Event Streams in Analysis of Hard Real-Time Applications.**
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[68] Chuan-Yue Yang, Jian-Jia Chen, Tei-Wei Kuo, Lothar Thiele: **An Approximation Scheme for Energy-Efficient Scheduling of Real-Time Tasks in Heterogeneous Multiprocessor Systems.**
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Professional Experience

1981 - 1986 Technical University Munich Munich, Germany

Research Assistant

- Student education in Network Theory
- Research projects in Network Theory and Computing
- Software and Hardware Design

1987 Stanford University Stanford, CA

Research Associate

- Member of Information Systems Lab., Prof. T. Kailath
- Research in Computing

1988-1994 University Saarland Saarbrücken, Germany

Full Professor

- Education in Microelectronics
- Dean of Electrical Engineering Department
- Leading numerous research projects, funded by various companies and research foundations
- Research in microelectronics and computer engineering

1990 NEC C&C Laboratories Tokyo, Japan

Leave of absence

- Parallel and distributed computing at the Computer and Communications Lab, Kawasaki

1991 IBM Research Yorktown Heights, NY

Leave of absence

- Software and hardware development at the T.J. Watson Research Center

from 1994 ETH Zurich Zurich, Switzerland

Full Professor

- Education in Computer Engineering
- Leading the Computer Engineering and Networks Lab (about 80 people)
- Leading numerous research projects, funded by various companies and research foundations such as KTI, EU FP6, EU FP7, SNF
- Contracts and research projects with national and international companies such as HP, ESEC, NetEngines, InAlp, IBM, BridgeCo, Siemens
- Research in the areas of computer engineering, embedded systems, wearable and mobile computing systems, bio-inspired optimization methods
- Involved in large national and international research projects, such as ARTIST2 European Network of Excellence, SHAPES European

Integrated Project in FP 6, PREDATOR (FP7), COMBEST (FP7), Pro3D (FP7), EURETILE (FP7), MICS Mobile Information and Communication National Research Program

1999 Hewlett-Packard Palo Alto, CA

Leave of absence

- Software and hardware design at the HP Research Labs

Education

1963-1976 Various schools Aachen, Germany

- School education, final degree with distinction (best of year)

1976 Jury Superieur de Belgique Brussels, Belgium

- Final concert exam in piano (with grande distinction)

1976-1978 RWTH Aachen Aachen, Germany

- Studies in Electrical Engineering at the Technical University in Aachen

1971-1981 Technical University Munich, Germany

- Master in Electrical Engineering (with distinction, best of year)

1981-1984 Technical University Munich, Germany

- PhD (with distinction)

1984-1987 Technical University Munich, Germany

- Habilitation Thesis (venia legendi)

Major Awards

1977

- Studienstiftung des Deutschen Volkes

1986

- Award for the best PhD thesis

1987

- Outstanding Young Author Award of the IEEE

1988

- 1988 Browder J. Thompson Memorial Prize Award of the IEEE

2000

- IBM Faculty Achievement Award

2001

- IBM Faculty Achievement Award

2004

- Member of German Academy of Sciences Leopoldina

2005

- Recipient of the Honorary Blaise Pascal Chair of the University Leiden, The Netherlands

Varia

Professional Services

- Organization of several international conferences, member of steering boards (EMSOFT, FORMATS), member of program committees in major conferences, general chair of several conferences and workshops.
- Regular reviewing of large international research projects in various areas.
- Editorial board of several scientific journals such as VLSI Signal Processing, INTEGRATION, IEEE Trans. on Evolutionary Computation, IEEE Trans. on Industrial Informatics.
- Member of several scientific organizations such as IEEE and ACM, partly with organizational duties such as chairing ACM SIGBED (special interest group on embedded systems).
- Head of evaluation committees of various Information Technology and Electrical Engineering departments in Germany.
- Various institutional services within the ETH Zurich, such as representing ETH Zurich in affairs related to Bologna treaty, leading evaluation committees, study director of Information Technology and Electrical Engineering department (D-ITET), member of Hochschulversammlung, member of research commission of ETH Zurich, member of planning commission of ETH Zurich, Vice-president of KdL.
- Member of Steering Committee of the ALARI Master of Embedded System Program at University Lugano.
- Member of Advisory Board of ESI (Embedded System Institute, Eindhoven).
- Member of the Foundation Board of Hasler Foundation, Switzerland.

Research Interests

- Optimization, bio-inspired techniques for multi-objective problems
- Models, methods and software tools for the design of embedded systems
- Design of mobile information and communication systems, including wearable computing and sensor networks
- Further information about research and education: http://www.tik.ee.ethz.ch/~thiele/

Private Data

- Date and place of birth: 7th of April 1957, Aachen, Germany
- Three children (1986, 1989, 1993)
- Married since 1982

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