Elmar Peise, M.Sc.

Curriculum Vitae

Personal Data

Born	March 9, 1990 in Aachen, Germany
Office	Graduiertenschule AICES Schinkelstraße 2 52062 Aachen Germany
Phone (Office)	+49 (241) 80 99 141
Web	http://hpac.rwth-aachen.de/~peise/
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Education

since 2012 **Doctoral studies**

Degree	Doktor der Naturwissenschaften in Informatik (Ph.D. in Computer Science)
University	RTWH Aachen University
Institute	Graduate School AICES
Funding	Stipends by the excellence initiative of the Deutsche Forschungsgemeinschaft (DFG) and Deutsche Telekom Stiftung
Thesis	Performance Modeling and Prediction for Dense Linear Algebra
Graduation	Mid 2017

2009 – 2012 **M.Sc. studies**

Degree	Master of Science in Simulation Sciences
University	RWTH Aachen University
Institute	Graduate School AICES
Funding	Stipend by the excellence initiative of the Deutsche Forschungsgemeinschaft (DFG)
Thesis	Hierarchical Performance Modeling for Ranking Dense Linear Algebra Algorithms
Grade	Excellent (1.1)

2006 – 2009 **B.Sc. studies in parallel to high school**

Degree	Bachelor of Science in Informatik (Computer Science)
University	FernUniversität in Hagen
Thesis	Branch and Cut auf Meta-Berechnungsgraphen
Grade	Good (1.7)

2000 – 2009 **Gymnasium (high school)**

Degree	Allgemeine Hochschulreife
School	Geschwister-Scholl-Gymnasium Aachen
Grade	Very Good (1.2)

Awards and Fellowships

2014	Fellow Deutsche Telekom Stiftung
2013	Springorum Commemorative Coin (excellent M.Sc., RWTH)

Professional Service

2016	Session Chair for *Parallel Software Tools* at the *SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP16)*
since 2015	Program Committee Member for the *International Workshop in Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS)*
2013	Reviewer for the *11th International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms (HeteroPar 2013)*
2013	Organization of the 6th Charlemagne Distinguished Lecture, Speaker: Franco Brezzi
2012 – 2013	AICES Student Representative in Winter Semester 2012

Supervision

2015	CES Software Engineering Lab: 2 teams of 3 students each
2014	M.Sc. thesis project: Large Scale Parallel Computations in R through Elemental
2014	CES Software Engineering Lab: 1 team of 3 students
2013	UROP International: 1 student working on performance modeling on GPUs

Teaching

2015 – 2016	Lectures on performance measurements in dense linear algebra as part of the course *High Performance Matrix Computations*
2014 – 2016	Lectures on compiling, linking, libraries, and makefiles as part of the course *Introduction to Languages for Scientific Computing*
2014 – 2015	Lectures on optimizing matrix-matrix multiplication as part of the course *High Performance Matrix Computations*

Open Source Software

ELAPS	**Experimental Linear Algebra Performance Studies** Multi-platform environment for easy and fast, yet powerful performance experimentation and prototyping for dense linear algebra routines and algorithms. http://github.com/elmar-peise/ELAPS
ReLAPACK	**Recursive LAPACK Collection** Recursive algorithms as functionally equivalent but in many cases faster replacements for blocked algorithms in the Linear Algebra PACKage (LAPACK). http://github.com/elmar-peise/ReLAPACK

Open Source Software (continued)

python-lsf	**Improved interface for the LSF batch job scheduler** Python interface and user friendly command line wrappers for the IBM Load Sharing Facility (LSF) batch job scheduler. http://github.com/elmar-peise/python-lsf
drawmatrix	**Draw matrices in LaTeX!** Package for visual representations of matrices and matrix equations. http://github.com/elmar-peise/drawmatrix

Languages

German	Native
English	Fluent: 9 years of school, 6 month in the UK, english M.Sc. and doctoral studies
French	Basic Knowledge: 4 years of school

Hobbies

Sport	Swimming, climbing, badminton, sailing
Music	Violin student since 1996
Puzzles	Rubik's cube and various related puzzles
Games	All kinds of competitive and cooperative board games

Volunteering at the DLRG

since 2010	Instructor for lifeguards: 1 hour per week
since 2006	Service as a lifeguard: 25 – 30 days a year
2004 – 2016	Instructor for swimming: 1 hour per week
	Qualifications: (kept up to date)
2015	DLRG Bootsführerschein A and Sportbootführerschein Binnen (inland sport and rescue boatsman)
2015	Lehrschein (instructor and examiner for swimming and lifeguards)
2015	Kampfrichter Stufe F1 (referee for indoor rescue swimming competitions level F1)
2014	Helfer Katastrophenschutz (helper in civil protection)
2011	Sanitäter (basic paramedic)
2006	Fachausbildung Wasserrettung (advanced lifeguard)
2006	Sanitätshelfter (basic paramedic assistant)
2006	Deutsches Rettungsschwimmabzeichen (DRSA) Gold (lifeguard, gold)
2004	Deutsches Rettungsschwimmabzeichen (DRSA) Silber (lifeguard, silver)
2003	Deutsches Rettungsschwimmabzeichen (DRSA) Bronze (lifeguard, bronze)

References

Prof. Paolo Bientinesi, Ph.D.
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Germany
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Publications

2017

- Edoardo Di Napoli, Elmar Peise, Markus Hrywniak, and Paolo Bientinesi. "High-performance generation of the Hamiltonian and Overlap matrices in FLAPW methods". In: *Computer Physics Communications* 211 (Feb. 2017). High Performance Computing for Advanced Modeling and Simulation of Materials, pages 61–72. DOI: 10.1016/j.cpc.2016.10.003.

2016

- Elmar Peise and Paolo Bientinesi. *The ELAPS Framework: Experimental Linear Algebra Performance Studies*. Technical report. Under review for The International Journal of High Performance Computing Applications. AICES, RWTH Aachen University, Nov. 2016. arXiv: 1504.08035 [cs.PF].
- Rodrigo Canales, Elmar Peise, and Paolo Bientinesi. *Large Scale Parallel Computations in R through Elemental*. Technical report. Under review for the Journal of Statistical Software. AICES, RWTH Aachen University, Oct. 2016. arXiv: 1610.07310 [stat.CO].
- Elmar Peise and Paolo Bientinesi. *Recursive Algorithms for Dense Linear Algebra: The ReLAPACK Collection*. Technical report. Accepted for publication in the ACM Trans. Math. Softw. AICES, RWTH Aachen University, Feb. 2016. arXiv: 1602.06763 [cs.MS].

2015

- Elmar Peise, Diego Fabregat-Traver, and Paolo Bientinesi. "On the Performance Prediction of BLAS-based Tensor Contractions". In: *High Performance Computing Systems. Performance Modeling, Benchmarking, and Simulation: 5th International Workshop, PMBS 2014*. Volume 8966. Lecture Notes in Computer Science. Springer International Publishing, Apr. 2015, pages 193–212. DOI: 10.1007/978-3-319-17248-4_10.
- Elmar Peise and Paolo Bientinesi. "A Study on the Influence of Caching: Sequences of Dense Linear Algebra Kernels". In: *High Performance Computing for Computational Science – VECPAR 2014: 11th International Conference*. Volume 8969. Lecture Notes in Computer Science. Springer International Publishing, Apr. 2015, pages 245–258. DOI: 10.1007/978-3-319-17353-5_21.

Publications (continued)

- Elmar Peise, Diego Fabregat-Traver, and Paolo Bientinesi. "High Performance Solutions for Big-data GWAS". in: *Parallel Computing* 42.C (Feb. 2015). Parallelism in Bioinformatics, pages 75–87. DOI: 10.1016/j.parco.2014.09.005.

2014
- Elmar Peise and Paolo Bientinesi. *Cache-aware Performance Modeling and Prediction for Dense Linear Algebra*. Technical report. AICES, RWTH Aachen University, Nov. 2014. arXiv: 1409.8602 [cs.PF].

2013
- Elmar Peise, Diego Fabregat-Traver, Yurii S. Aulchenko, and Paolo Bientinesi. "Algorithms for Large-scale Whole Genome Association Analysis". In: *Proceedings of the 20th European MPI Users' Group Meeting*. EuroMPI '13. ACM, 2013, pages 229–234. DOI: 10.1145/2488551.2488577.
- Matthias Petschow, Elmar Peise, and Paolo Bientinesi. "High-Performance Solvers for Dense Hermitian Eigenproblems". In: *SIAM Journal on Scientific Computing* 35.1 (Jan. 2013), pages C1–C22. DOI: 10.1137/110848803.

2012
- Elmar Peise and Paolo Bientinesi. "Performance Modeling for Dense Linear Algebra". In: *2012 SC Companion: High Performance Computing, Networking Storage and Analysis*. SCC '12. IEEE Computer Society, Nov. 2012, pages 406–416. DOI: 10.1109/SC.Companion.2012.60.
- Elmar Peise. "Hierarchical Performance Modeling for Ranking Dense Linear Algebra Algorithms". Master's thesis. Aachen Institute for Computational Engineering Science, RWTH Aachen, May 2012. arXiv: 1207.5217 [cs.PF].

2011
- Viktor Mosenkis, Elmar Peise, and Uwe Naumann. "Branch and Bound for Optimal Jacobian Accumulation". In: *Proceedings of the Fifth SIAM Workshop on Combinatorial Scientific Computing (CSC11)*. 2011, pages 73–76.

2009
- Viktor Mosenkis, Elmar Peise, and Uwe Naumann. "Low-Memory Tour Reversal in Directed Graphs". In: *Combinatorial Scientific Computing*. Dagstuhl Seminar Proceedings 9061. Schloss Dagstuhl — Leibniz-Zentrum fuer Informatik, Germany, 2009.

Talks

2016
- *The ELAPS Framework: Experimental Linear Algebra Performance Studies* SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP'16). Université Pierre et Marie Curie, Cordeliers Campus, Paris, France, April 2016.

2014
- *On the Performance Prediction of BLAS-based Tensor Contractions*, 5th International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS14). SC14, New Orleans, LA, USA, 16 November 2014.
- *Estimating the Efficiency of BLAS-based Tensor Contractions*, Annual Report 2. AICES, RWTH Aachen, 6 November 2014.
- *A Study on the Influence of Caching: Sequences of Dense Linear Algebra Kernels*, The Ninth International Workshop on Automatic Performance Tuning (iWAPT2014), VECPAR 2014. University of Oregon and Hilton Conference Center, Eugene, Oregon, USA, July 2014.

2013
- *Algorithms for Large-scale Whole Genome Association Analysis*, PBio 2013: International Workshop on Parallelism in Bioinformatics. EuroMPI 2013, Madrid, September 2013.
- *Performance Modeling for DLA Kernels*, BLIS Retreat. University of Texas at Austin, September 2013.

Talks (continued)

- *High Performance Computational Biology: Asynchronous IO and Elemental for GWAS*, Annual Report 1. AICES, RWTH Aachen, August 2013.

2012
- *Performance Modeling for Dense Linear Algebra*, 3rd International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS12). SC12, Salt Lake City, Utah, November 2012.
- *GCC*, AICES Annual Workshop, Oktober 2012.
- *Performance Modeling for Ranking Blocked Algorithms*, Parallel Matrix Algorithms and Applications (PMAA) 2012. Birkbeck University of London, June 2012.
- *Hierarchical Performance Modeling for Ranking Dense Linear Algebra Algorithms*, Master's Thesis Colloquium, Aachen, April 2012.

2011
- *Uncertainty Theory*, AICES Annual Workshop. Monschau, October 2011.

2010
- *Debugging*, AICES Annual Workshop. Vossenack, October 2010.

Aachen, April 20, 2017

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