

Curriculum Vitae

Harald Köstler

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General information

Surname, first names: Köstler, Harald Ernst Ludwig
Title: Dr.-Ing.
Sex: Male
Date and place of birth: 27th January 1978 in Marktredwitz, Germany
Marital status: Married
Nationality: German

Current position: Akademischer Rat at the Friedrich-Alexander-University Erlangen-Nuremberg

Education and University studies

09/1984 - 07/1988: Primary school in Ebnath
09/1988 - 06/1997: Otto-Hahn-Gymnasium Marktredwitz
07/1997 - 08/1998: Civilian service at Seniorenheim Bad Berneck

11/1998 - 08/2003: Diploma in Computer science at the Friedrich-Alexander-University Erlangen-Nuremberg, Germany
11/1998 - 06/2003: Diploma in Business economics at University Hagen, Germany
07/2003: Instructor certificate from chamber of commerce and industry
since 09/2003: Mathematics student at University Hagen, Germany

09/2003 - 05/2008: PhD in Computer Science (Dr.-Ing.) at the chair of System-simulation of the University Erlangen-Nuremberg

Practical Experience

Posts in academia

- 08/1999 - 07/2003: Student assistant at the chair of product engineering of the University Erlangen-Nuremberg
Programming with HTML, Perl, Visual Studio, Microsoft Access
- 09/2003 - 05/2008: Research assistant at the chair of Systemsimulation of the University Erlangen-Nuremberg
- since 06/2008: Akademischer Rat at the chair of Systemsimulation of the University Erlangen-Nuremberg

Posts in industry

- 08/1998 - 11/1998: Internship at DMS Systemhaus, Bayreuth
Programming with Navision Financials
- 02/2001 - 10/2001: Internship at Fraunhofer-Gesellschaft, Erlangen
Pattern recognition with C,C++
- 12/2003 - 07/2004: Benchmarking project at University Erlangen-Nuremberg in cooperation with SMC (Siemens Management Consulting)

Temporary employments abroad

- 08/2004 - 10/2004: Project work at the Scientific Computing and Imaging Institute of the University of Utah, Salt Lake City, USA
- 09/2007 - 10/2007: Project work at Technion Israel Institute of Technology in Haifa

Teaching and soft skills experience

- 12/1994 - 07/2003: Private lessons at Studienkreis in Mathematics, Physics and Latin
- since 04/2000: Practical demonstration in several undergraduate and graduate computer science and mathematics courses
- 09/2003 - 07/2008: Mentor in common business administration
- since 03/2004: Mentor for elite students of the Bavarian graduate school of computational engineering, within this program experience with several soft skills courses like supervised teaching, communication skills, leading yourself and others
- 03/2007 - 07/2008: Mentor in information management and Java programming

Practical Experience (continued)

Conference, workshop, and seminar participation

- 02/2003: Parallel programming workshop at the University of Stuttgart
Programming with MPI, OpenMP in C and Fortran
- 01/2004: Winterschool on Hierarchical Matrices at the
Max-Planck-Institute for Mathematics in the Sciences
- since 06/2004: Participation in several national and international conferences
on Computer Science and Mathematics especially in Numerics
and (medical) Image Processing

Supplementary information

Language skills: English (fluent), Latin (Latinum), Spanish (basics)

Special activities, Personal Interests

1988 - 1997: Youth work at the church St. Aegidius, Ebnath

Hobbies: Squash, traveling, strategic games, languages
especially writing systems like Hebrew, Arabic, Chinese, Greek

List of Publications

- [1] M. Mayer, A. Borsdorf, H. Köstler, J. Hornegger, and U. Rüde, “Nonlinear Diffusion vs. Wavelet Based Noise Reduction in CT Using Correlation Analysis,” in *Proceedings of Vision, Modeling and Visualization*, (Saarbrücken, Germany), pp. 223–232, Aka GmbH, IOS Press, 2007.
- [2] Y. Zheng, H. Köstler, N. Thürey, and U. Rüde, “Enhanced Motion Blur Calculation with Optical Flow,” in *Proceedings of Vision, Modeling and Visualization*, (RWTH Aachen, Germany), pp. 253–260, Aka GmbH, IOS Press, 2006.
- [3] K. Ruhnau, H. Köstler, and R. Wienands, “A multigrid method for the computation of the optical flow using a curvature based regularizer,” *Numerical Linear Algebra with Applications*, vol. 15, no. 2–3, pp. 201–218, 2008.
- [4] H. Köstler, U. Rüde, M. Prümmer, and J. Hornegger, “Adaptive variational sinogram interpolation of sparsely sampled CT data,” *Proceedings of the 18th International Conference on Pattern Recognition (ICPR)*, vol. 3, pp. 778–781, 2006.
- [5] E. M. Kalmoun, H. Köstler and U. Rüde, “3D optical flow computation using a parallel variational multigrid scheme with application to cardiac C-arm CT motion,” *Image and Vision Computing*, vol. 25, no. 9, pp. 1482–1494, 2007.

List of Publications (continued)

- [6] H. Köstler, M. Stürmer, and U. Rüde, “A fast full multigrid solver for applications in image processing,” *Numerical Linear Algebra with Applications*, vol. 15, no. 2–3, pp. 187–200, 2008.
- [7] H. Köstler, C. Popa, U. Rüde, and M. Prümmer, “Towards an algebraic multigrid method for tomographic image reconstruction – improving convergence of ART,” in *European Conference on Computational Fluid Dynamics (ECCOMAS CFD)* (P. Wesseling, E. Onate, and J. Périaux, eds.), (TU Delft, Egmond aan Zee, The Netherlands), 2006.
- [8] H. Köstler, R. Schmid, U. Rüde, and C. Scheit, “A parallel multigrid accelerated Poisson solver for ab initio molecular dynamics applications,” *Computing and Visualization in Science*, 2007.
Preprint version published as Tech. Rep. 04-5.
- [9] R. Schmid, M. Tafipolsky, P. König, and H. Köstler, “Car-Parrinello molecular dynamics using real space wavefunctions,” *Physica status solidi. B. Basic research*, vol. 243, no. 5, pp. 1001–1015, 2006.
- [10] H. Köstler and U. Rüde, “An accurate multigrid solver for computing singular solutions of elliptic problems,” *Numerical Linear Algebra with Applications*, vol. 13, no. 2-3, pp. 231–249, 2006.
Also published in Proceedings of the 12th Copper Mountain Conference on Multigrid Methods.
- [11] C. Wolters, H. Köstler, C. Möller, J. Härdtlein, and A. Anwander, “Numerical approaches for dipole modeling in finite element method based source analysis,” in *International Congress Series, BIOMAG2006, 15th Int. Conf. on Biomagnetism*, vol. 1300, pp. 189–192, Elsevier Science Publishers, Amsterdam, The Netherlands, 2007.
- [12] C. Wolters, H. Köstler, C. Möller, J. Härdtlein, L. Grasedyck, and W. Hackbusch, “Numerical Mathematics of the Subtraction Method for the Modeling of a Current Dipole in EEG Source Reconstruction Using Finite Element Head Models,” *SIAM J. on Scientific Computing*, vol. 30, no. 1, pp. 24–45, 2007.
- [13] M. Mayer, A. Borsdorf, H. Köstler, J. Hornegger, and U. Rüde, “Nonlinear Diffusion Noise Reduction in CT Using Correlation Analysis,” in *3rd Russian-Bavarian Conference on Biomedical Engineering* (J. Hornegger, E. Mayr, S. Schookin, H. Feußner, N. Navab, Y. Gulyaev, K. Höller, and V. Ganzha, eds.), vol. 1, (Erlangen, Germany), pp. 155–159, Union aktuell, 2007.
- [14] H. Köstler, M. Stürmer, C. Freundl, and U. Rüde, “PDE based Video Compression in Real-Time,” Tech. Rep. 07-11, Department of Computer Science 10 (System Simulation), Friedrich-Alexander Universität Erlangen-Nürnberg, Germany, 2007.
- [15] P. Münch and H. Köstler, “Videocoding using a variational approach for decompression,” Tech. Rep. 07-1, Department of Computer Science 10 (System Simulation), Friedrich-Alexander Universität Erlangen-Nürnberg, Germany, 2007.

List of Publications (continued)

- [16] J. Han, C. Bennewitz, H. Köstler, J. Hornegger, and T. Kuwert, “Computer-Aided Validation of Hybrid SPECT/CT Scanners,” *Computerized Medical Imaging and Graphics*, 2008.
accepted.
- [17] I. Christadler, H. Köstler, and U. Rüde, “Robust and efficient multigrid techniques for the optical flow problem using different regularizers,” in *Proceedings of 18th Symposium Simulationstechnique ASIM 2005* (F. Hülsemann, M. Kowarschik, and U. Rüde, eds.), vol. 15 of *Frontiers in Simulation*, pp. 341–346, SCS Publishing House, Erlangen, Germany, 2005.
Preprint version published as Tech. Rep. 05-6.
- [18] E. M. Kalmoun, H. Köstler and U. Rüde, “Parallel multigrid computation of the 3D optical flow,” Tech. Rep. 04-4, Department of Computer Science 10 (System Simulation), Friedrich-Alexander Universität Erlangen-Nürnberg, Germany, 2004.
- [19] H. Köstler, C. Möller, and F. Deserno, “Performance Results for Optical Flow on an Opteron Cluster Using a Parallel 2D/3D Multigrid Solver,” Tech. Rep. 06-5, Department of Computer Science 10 (System Simulation), Friedrich-Alexander Universität Erlangen-Nürnberg, Germany, 2006.
- [20] H. Köstler, C. Popa, and U. Rüde, “Algebraic multigrid for general inconsistent linear systems: The correction step,” Tech. Rep. 06-4, Department of Computer Science 10 (System Simulation), Friedrich-Alexander Universität Erlangen-Nürnberg, Germany, 2006.
- [21] C. Freundl and H. Köstler, “Using ParExpPDE for the numerical solution of bioelectric field problems,” in *Proceedings of 18th Symposium Simulationstechnique ASIM 2005* (F. Hülsemann, M. Kowarschik, and U. Rüde, eds.), vol. 15 of *Frontiers in Simulation*, pp. 89–94, SCS Publishing House, Erlangen, Germany, 2005.
- [22] H. Köstler and U. Rüde, “Accurate techniques for computing singular solutions of elliptic problems,” in *Computational Science - Proceedings ICCS 2004: 4th International Conference, Part IV, Krakow, Poland* (M. Bubak, G. v. Albada, and J. Dongarra, eds.), vol. 3039 of *Lecture Notes in Computer Science*, pp. 410–417, Springer-Verlag, Berlin, Heidelberg, New York, 2004.
- [23] M. Prümmer, H. Köstler, U. Rüde, and J. Hornegger, “A full multigrid technique to accelerate an ART scheme for tomographic image reconstruction,” in *Proceedings of 18th Symposium Simulationstechnique ASIM 2005* (F. Hülsemann, M. Kowarschik, and U. Rüde, eds.), vol. 15 of *Frontiers in Simulation*, pp. 532–537, SCS Publishing House, Erlangen, Germany, 2005.