Curriculum Vitæ

Personal Data

Name	Ulrich Carsten Meyer, Prof. Dr.-Ing.
Citizenship	German
Born	10. Nov. 1971 in Dudweiler, Germany
Social Status	married, two children
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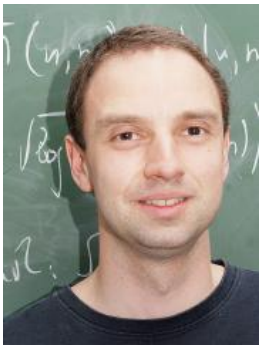

Education and Positions

Secondary School	1982-1991	Staatliches Gymnasium Sulzbach; Abitur (1.0)
Master's Study [1]	1991 - 1997	Computer Science (Minor: Economics) at Univ. des Saarlandes, Saarbrücken; Grade : Very Good (1.1)
Ph.D. research [2]	1997 - 2002	Univ. des Saarlandes & Max-Planck Institute (MPI) for Computer Science, Saarbrücken. Advisor: Prof. Dr. Kurt Mehlhorn, Grade : Summa Cum Laude. Thesis awarded with the Dr.-Eduard-Martin Prize.
Guest Researcher	01-02/2002	Hungarian Academy of Sciences
Postdoc/Research Associate	2002 - 2005	MPI Informatik, Saarbrücken
Visiting Assistant Professor	02-04/2003	Duke University, Durham, NC, USA
Senior Researcher (W2)	2005 - 2007	MPI Informatik, Saarbrücken
Full Professor (W3, tenured)	2007 -	J.W. Goethe University, Frankfurt/Main
Offer Full Professorship (declined)	2011	Vienna University of Technology
Coordinator	2014 -	DFG SPP 1736 (Algorithms for Big Data)

Grants

- *DFG SPP 1736 (Algorithms for Big Data)*, Coordinator of DFG priority research programme on algorithms for big data. Total funding volume (both periods) about 10 Mio EUR plus overheads for 2014 – 2020. Own share: over 1.8 Mio EUR (1 237 300 EUR for coordination measures and 577 000 EUR for research project DynAmO).
- *MADALGO - Center for Massive Data Algorithmics*, a Center of the Danish National Research Foundation. As a funded partner the group at Frankfurt receives about 348 000 EUR plus significant travel support for the periods 03/2008 - 02/2011 and 03/2012 - 02/2015.
- *Foundations of memory-efficient information processing for FAIR computing,* funded by the BMBF with 180 000 EUR for the period 07/2009 - 12/2012.
- *LOEWE-CSC: An energy-efficient high-performance compute cluster,* funded by the DFG and the state of Hesse with about 4 900 000 EUR in total for 2009/2010. Interdisciplinary application of 27 working groups at Goethe University Frankfurt.
- *Algorithms for Modern Hardware: Flash Memory*, 10/2007 - 09/2013, funded with about 455 000 EUR by the DFG within the "Schwerpunktprogramm" 1307 *Algorithm Engineering.*
- *Algorithm Engineering for Large Graphs and Memory Hierarchies*, 2002 - 2007, (together with Prof. Dr. P. Sanders, Karlsruhe), funded in total with 450 000 EUR by the DFG within the "Schwerpunktprogramm" 1126 *Algorithmik großer und komplexer Netzwerke.*
- Participation in and/or co-writing the proposals for the multi-site EU-projects ALCOM-IT, ALCOM-FT, and ALTEC-KIT and the GIF-project *Graph Algorithms: Theory and Practice.*

Awards and Honors

2011	Award *Germany Land of Ideas* for Ecosort (together with KIT Karlsruhe)
2010, 2009	Records in the JouleSort Competition (together with KIT Karlsruhe)
2003	Best Dissertation Award, University of Saarland

Selected Program Committees

- Symposium on Discrete Algorithms (SODA) '18
- European Symp. on Algorithms (ESA) '16, '10 (Co-Chair), '06, '04
- Int. Colloq. on Automata, Languages and Programming (ICALP) '15, '07
- Symposium on Parallelism in Algorithms and Architectures (SPAA) '14, '03
- Int. Parallel and Distributed Processing Symposium (IPDPS) '09, '06
- Scandinavian Symposium and Workshops on Algorithm Theory (SWAT) '10
- Workshop on Algorithm Eng. & Experim. (ALENEX) '17, '16, '14 (Co-Chair), '10, '04
- International Symposium on Experimental Algorithms (SEA) '17, '11, '10, '06 (WEA)
- Int. Conf. on High Performance Computing (HiPC) '09, '07

Referee for most major conferences and journals related to algorithmics.

Publications

Theses

[1] U. Meyer. *Design and Analysis of Sequential and Parallel Single–Source Shortest–Paths Algorithms.* PhD thesis, Universität des Saarlandes, 2002.

[2] U. Meyer. Deterministische Simulation einer PRAM auf Gitterrechnern. Master thesis (in German), Universität des Saarlandes, 1995.

Refereed Conference Papers

[3] M. Hamann, U. Meyer, M. Penschuck, and D. Wagner. I/O-efficient Generation of Massive Graphs Following the LFR Benchmark. In *Proc. 19th Workshop on Algorithm Engineering and Experiments (ALENEX)*, SIAM, 2017.

[4] S. Ashkiani, A. Davidson, U. Meyer, and J. Owens. GPU Multisplit. In *Proc. 21st Symposium on Principles and Practice of Parallel Programming (PPoPP)*, pages 12:1–12:13, ACM, 2016.

[5] U. Meyer and M. Penschuck. Generating Massive Scale-Free Networks under Resource Constraints. In *Proc. 18th Workshop on Algorithm Engineering and Experiments (ALENEX)*, pages 32–52, SIAM, 2016.

[6] A. Kovács, U. Meyer, and C. Ventre. Mechanisms with Monitoring for Truthful RAM Allocation. In *Proc. 11th International Conference on Web and Internet Economics (WINE)*, volume 9470 of *LNCS*, pages 398–412. Springer, 2015.

[7] D. Ajwani, U. Meyer, and D. Veith. An I/O-efficient Distance Oracle for Evolving Real-World Graphs. In *Proc. 17th Workshop on Algorithm Engineering and Experiments (ALENEX)*, pages 159–172. SIAM, 2015.

[8] A. Beckmann, U. Meyer, and D. Veith. An Implementation of I/O-Efficient Dynamic Breadth-First Search Using Level-Aligned Hierarchical Clustering. In *Proc. 21st Annual European Symposium on Algorithms (ESA)*, *LNCS*, Springer, 2013.

[9] D. Ajwani, U. Meyer, and D. Veith. I/O-efficient hierarchical diameter approximation. In *Proc. 20th Annual European Symposium on Algorithms (ESA)*, *LNCS*, Springer, 2012.

[10] M. Wibral, P. Wollstadt, U. Meyer, N. Pampu, V. Priesemann, and R. Vicente. Revisiting Wiener's principle of causality – interaction-delay reconstruction using transfer entropy, and multivariate analysis on delay-weighted graphs. In *Proc 4th Int. Conf. of the IEEE EMBS (EMBC)*, 2012.

[11] A. Beckmann, J. Fedorowicz, J. Keller, and U. Meyer. A structural analysis of the A5/1 state transition graph. In *Proc. 1st Workshop on Graph Inspection and Traversal Engineering (GRAPHITE), EPTCS*, 2012.

[12] D. Ajwani, A. Beckmann, U. Meyer, and D. Veith. I/O-efficient approximation of graph diameters by parallel cluster growing – a first experimental study. *10th Workshop on Parallel Systems and Algorithms (PASA)*, 2012.

[13] U. Meyer, A. Negoescu, and V. Weichert. New Bounds for Old Algorithms: On the Average-Case Behavior of Classic Single-Source Shortest Path Approaches. In *Proc. 1st. Int. ICST Conference on Theory and Practice of Algorithms in (Computer) Systems (TAPAS)*, volume 6595 of *LNCS*, pages 217–228, Springer, 2011.

[14] A. Beckmann, U. Meyer, P. Sanders, and J. Singler. Energy-Efficient Sorting using Solid State Disks. In *Proc. 1st Int. Green Computing Conference (IGCC)*, pages 191–202, IEEE, 2010.

[15] A. Kovacs, U. Meyer, G. Moruz, and A. Negoescu. Online Paging for Flash Memory Devices. In *Proc. 20th Int. Symposium on Algorithms and Computation (ISAAC)*, volume 5878 of *LNCS*, pages 352–361. Springer, 2009.

[16] D. Ajwani, A. Beckmann, R. Jacob, U. Meyer, and G. Moruz. On Computational Models for Flash Memory Devices. In *Proc. 8th Int. Symposium on Experimental Algorithms (SEA)*, volume 5526 of *LNCS*, pages 16–27. Springer, 2009.

[17] U. Meyer and V. Osipov. Design and Implementation of a Practical I/O-efficient Shortest Paths Algorithm. In *Proc. 11th Workshop on Algorithm Engineering and Experiments (ALENEX)*, pages 85–96. SIAM, 2009.

[18] U. Meyer. On Trade-Offs in External-Memory Diameter-Approximation. In *Proc. 11th Scandinavian Workshop on Algorithm Theory (SWAT)*, volume 5124 of *LNCS*, pages 426-436. Springer, 2008.

[19] D. Ajwani, I. Malinger, U. Meyer, and S. Toledo. Characterizing the performance of Flash memory storage devices and its impact on algorithm design. In *Proc. 7th Intern. Workshop on Experimental Algorithms (WEA)*, volume 5038 of *LNCS*, pages 208-219. Springer, 2008.

[20] U. Meyer. On Dynamic Breadth-First Search in External-Memory. In *Proc. 25th Annual Symposium on Theoretical Aspects of Computer Science (STACS)*, pages 551–560, IBFI Dagstuhl, 2008. Electronically available under http://drops.dagstuhl.de/opus/volltexte/2008/1316.

[21] D. Ajwani, U. Meyer, and V. Osipov. Improved external memory BFS implementations. In *Proc. 9th Workshop on Algorithm Engineering and Experiments (ALENEX)*, pages 3–12. SIAM, 2007.

[22] U. Meyer and N. Zeh. I/O-Efficient Undirected Shortest Paths with Unbounded Edge Lengths. In *Proc. 14th Ann. European Symposium on Algorithms (ESA)*, volume 4168 of *LNCS*, pages 540–551. Springer, 2006.

[23] D. Ajwani, T. Friedrich, and U. Meyer. An $O(n^{2.75})$ algorithm for online topological ordering. In *Proc. 10th Scandinavian Workshop on Algorithm Theory (SWAT)*, volume 4059 of *LNCS*, pages 53–64. Springer, 2006.

[24] D. Ajwani, R. Dementiev, and U. Meyer. A Computational Study of External-Memory BFS Algorithms. In *Proc. 17th Ann. Symp. on Discrete Algorithms*, ACM–SIAM, 2006.

[25] S. Funke, A. Kesselmann, U. Meyer, and M. Segal. A simple improved distributed algorithm for minimum CDS in unit disk graphs. In *1st IEEE Intern. Conf. on Wireless and Mobile Computing, Networking and Communications (WiMob)*, IEEE, 2005.

[26] L. Arge, U. Meyer, and L. Toma. External memory algorithms for diameter and all-pairs shortest-paths on sparse graphs. In *Proc. ICALP 2004*, volume 3142 of *LNCS*, pages 146–157. Springer, 2004.

[27] G. Brodal, R. Fagerberg, U. Meyer, and N. Zeh. Cache-oblivious data structures and algorithms for undirected breadth-first search and shortest paths. In *Proc. SWAT 2004*, volume 3111 of *LNCS*, pages 480–492. Springer, 2004.

[28] U. Meyer and N. Zeh. I/O-efficient undirected shortest paths. In *Proc. 11th Ann. European Symposium on Algorithms (ESA)*, volume 2832 of *LNCS*, pages 434–445. Springer, 2003.

[29] L. Laura, S. Leonardi, U. Meyer, S. Millozzi, and J. Sibeyn. Algorithms and experiments for the webgraph. In *Proc. 11th Ann. European Symposium on Algorithms (ESA)*, volume 2832 of *LNCS*, pages 703–714. Springer, 2003.

[30] K. Mehlhorn and U. Meyer. External-memory breadth-first search with sublinear I/O. In *Proc. 10th Ann. European Symposium on Algorithms (ESA)*, volume 2461 of *LNCS*, pages 723–735. Springer, 2002.

[31] U. Meyer. Buckets strike back: Improved parallel shortest paths. In *Proc. 16th Intern. Parallel and Distributed Processing Symposium (IPDPS 2002)*. IEEE, 2002.

[32] J. F. Sibeyn, J. Abello, and U. Meyer. Heuristics for semi-external depth first search on directed graphs. In *Proc. Symposium on Parallel Algorithms and Architectures (SPAA)*, pages 282–292. ACM, 2002.

[33] L. Arge, U. Meyer, L. Toma, and N. Zeh. On external-memory planar depth first search. In *Proc. 7th Intern. Workshop on Algorithms and Data Structures (WADS 2001)*, volume 2125 of *LNCS*, pages 471–482. Springer, 2001.

[34] S. Edelkamp and U. Meyer. Theory and practice of time-space trade-offs in memory limited search. In *Proc. Joint German/Austrian Conference on Artificial Intelligence (KI-2001)*, volume 2174 of *LNAI*, pages 169–184. Springer, 2001.

[35] U. Meyer. External memory BFS on undirected graphs with bounded degree. In *Proc. 12th Ann. Symp. on Discrete Algorithms*, pages 87–88. ACM–SIAM, 2001.

[36] U. Meyer. Heaps are better than buckets: Parallel shortest paths on unbalanced graphs. In *Proc. Euro-Par 2001 Parallel Processing*, volume 2150 of *LNCS*, pages 343–351. Springer, 2001.

[37] U. Meyer. Single-source shortest-paths on arbitrary directed graphs in linear average-case time. In *Proc. 12th Ann. Symp. on Discrete Algorithms*, pages 797–806. ACM–SIAM, 2001.

[38] U. Meyer and P. Sanders. Parallel shortest path for arbitrary graphs. In *Proc. Euro-Par 2000 Parallel Processing*, volume 1900 of *LNCS*, pages 461–470. Springer, 2000.

[39] K. Brengel, A. Crauser, U. Meyer, and P. Ferragina. An experimental study of priority queues in external memory. In *Proc. 3rd Intern. Workshop on Algorithm Engineering (WAE-99)*, volume 1668 of *LNCS*, pages 345–359. Springer, 1999.

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[42] U. Meyer and P. Sanders. Δ-stepping: A parallel shortest path algorithm. In *Proc. 6th Ann. European Symposium on Algorithms (ESA)*, volume 1461 of *LNCS*, pages 393–404. Springer, 1998.

[43] U. Meyer and J. F. Sibeyn. Gossiping large packets on full-port tori. In *Proc. Euro-Par 1998 Parallel Processing*, volume 1470 of *LNCS*, pages 1040–1046. Springer, 1998.

[44] M. Kaufmann, U. Meyer, and J. F. Sibeyn. Matrix transpose on meshes: Theory and practice. In *Proc. 11th International Parallel Processing Symposium (IPPS-97)*, pages 315–319. IEEE, 1997.

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[46] M. Kaufmann, U. Meyer, and J. F. Sibeyn. Towards practical permutation routing on meshes. In *Proc. 6th IEEE Symposium on Parallel and Distributed Processing*, pages 656–663. IEEE, 1994.

Refereed Journal Papers

[47] A. Kovács, U. Meyer, G. Moruz, and A. Negoescu. The optimal structure of algorithms for α-paging. In *Information Processing Letters*, 115(12):932–938, 2015.

[48] P. Wollstadt, U. Meyer, and M. Wibral. A Graph Algorithmic Approach to Separate Direct from Indirect Neural Interactions. In *PLoS ONE* 10(10):e0140530, 2015.

[49] U. Meyer and V. Weichert. Algorithm Engineering für moderne Hardware. *Informatik Spektrum*, 36(2):153–161, 2013.

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[51] A. Beckmann, U. Meyer, P. Sanders, and J. Singler. Energy-Efficient Sorting using Solid State Disks. *Sustainable Computing: Informatics and Systems* (Elsevier), 1(2):151–163, June 2011.

[52] D. Ajwani, T. Friedrich, and U. Meyer. An $O(n^{2.75})$ algorithm for incremental topological ordering. *ACM Transactions on Algorithms*, 4(4), 2008.

[53] S. Funke, A. Kesselman, U. Meyer, and M. Segal. A simple improved distributed algorithm for minimum CDS in unit disk graphs. *ACM Transactions on Sensor Networks*, 2(3):444–453, 2006.

[54] D. Donato, L. Laura, S. Leonardi, U. Meyer, S. Millozzi, and J. F. Sibeyn. Algorithms and Experiments for the Webgraph. *Journal of Graph Algorithms and Applications*, 10(2), 2006.

[55] L. Arge, U. Meyer, L. Toma, and N. Zeh. On external-memory planar depth first search. *Journal of Graph Algorithms and Applications*, 7(2):105–129, 2003.

[56] U. Meyer. Average–case complexity of single–source shortest–paths algorithms: Lower and upper bounds. *Journal of Algorithms*, 48:91–134, 2003.

[57] U. Meyer and P. Sanders. Δ-stepping: A parallelizable shortest path algorithm. *Journal of Algorithms*, 49:114–152, 2003.

[58] U. Meyer and J. F. Sibeyn. Oblivious gossiping on tori. *Journal of Algorithms*, 42(1):1–19, 2002.

[59] A. Crauser, P. Ferragina, K. Mehlhorn, U. Meyer, and E. A. Ramos. Randomized external-memory algorithms for line segment intersection and other geometric problems. *International Journal of Computational Geometry and Applications*, 11(3):305–338, June 2001.

[60] K. Brengel, A. Crauser, P. Ferragina, and U. Meyer. An experimental study of priority queues in external memory. *Journal of Experimental Algorithmics*, 5, 2000.

[61] A. Crauser, P. Ferragina, K. Mehlhorn, U. Meyer, and E. A. Ramos. I/O-optimal computation of segment intersections. In *Proc. DIMACS Workshop on External Algorithms and Visualization*, volume 50 of *DIMACS Series in Discr. Math. and Theor. Comp. Sci.*, pages 131–138. AMS, 1999.

[62] M. Kaufmann, U. Meyer, and J. F. Sibeyn. Matrix transpose on meshes: Theory and practice. *Computers and Artificial Intelligence*, 16(2):107–140, 1997.

Books Edited

[63] C. C. McGeoch and U. Meyer (Eds.). *Proceedings of the Sixteenth Workshop on Algorithm Engineering and Experiments (ALENEX 2014)*. SIAM, 2014.

[64] M. de Berg and U. Meyer (Eds.). *Algorithms - ESA 2010, 18th Annual European Symposium, Part I*, volume 6346 of *LNCS*. Springer, 2010.

[65] M. de Berg and U. Meyer (Eds.). *Algorithms - ESA 2010, 18th Annual European Symposium, Part II*, volume 6347 of *LNCS*. Springer, 2010.

[66] U. Meyer, P. Sanders, and J. F. Sibeyn (Eds.). *Algorithms for Memory Hierarchies*, volume 2625 of *LNCS*. Springer, 2003.

Chapters in Books

[67] R. Jacob, U. Meyer, and L. Toma. List Ranking. In *Encyclopedia of Algorithms (2nd Edition)*, pages 1117–1121, Springer, 2016.

[68] U. Meyer and N. Zeh. I/O-Model. In *Encyclopedia of Algorithms (2nd Edition)*, pages 943–947, Springer, 2016.

[69] U. Meyer. Via Detours to I/O-Efficient Shortest Paths. In *Efficient Algorithms*, volume 5760 of *LNCS*, pages 219–232. Springer, 2009.

[70] D. Ajwani, R. Dementiev, U. Meyer, and V. Osipov. Breadth first search on massive graphs. In *The Shortest Path Problem: Ninth DIMACS Implementation Challenge*. Pages 291–308. AMS Press, 2009.

[71] D. Ajwani and U. Meyer. Design and engineering of external memory traversal algorithms for general graphs. In *Algorithmic of Large and Complex Networks*, volume 5515 of *LNCS*, pages 1–31. Springer, 2009.

[72] I. Katriel and U. Meyer. Elementary graph algorithms in external memory. In *Algorithms for Memory Hierarchies*, volume 2625 of *LNCS*, pages 62–84. Springer, 2003.