

# CURRICULUM VITAE

CHRISTOPH M. KIRSCH

## CONTACT

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## RESEARCH INTERESTS

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Principled engineering of software systems  
Embedded, real-time, concurrent, and mobile programming  
Memory management and virtual execution environments

## EDUCATION

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October 1999 Dr.-Ing., Saarland University  
While at the Max Planck Institute for Computer Science  
Saarbrücken, Germany (Advisor: Prof. Harald Ganzinger)

March 1996 Dipl.-Inform., Saarland University  
While at the Max Planck Institute for Computer Science  
Saarbrücken, Germany (Advisor: Prof. Hans-Jürgen Ohlbach)

## ACADEMIC EMPLOYMENT

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Since April 2004 Full Professor and Chair of the Computational Systems Group  
Department of Computer Sciences  
University of Salzburg  
Salzburg, Austria

September 2008—August 2013 Visiting Scholar (Sponsor: Prof. Raja Sengupta)  
Department of Civil and Environmental Engineering  
University of California at Berkeley  
Berkeley, California, USA

May 2003—March 2004 Assistant Research Engineer (Sponsor: Prof. Thomas Henzinger)  
Department of Electrical Engineering and Computer Sciences  
University of California at Berkeley  
Berkeley, California, USA

November 1999—April 2003 Postdoctoral Researcher (Sponsor: Prof. Thomas Henzinger)  
Department of Electrical Engineering and Computer Sciences  
University of California at Berkeley  
Berkeley, California, USA

March 1996—October 1999 Research Assistant (Sponsor: Prof. Harald Ganzinger)  
Max Planck Institute for Computer Science  
Saarbrücken, Germany

## AWARD

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2007 IBM Faculty Award

## PUBLICATIONS

### CONFERENCE AND WORKSHOP PAPERS

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- [1] C. Krainer and C.M. Kirsch. “Cyber-Physical Cloud Computing Implemented as PaaS”. In: *Proc. Workshop on Design, Modeling, and Evaluation of Cyber-Physical Systems (CyPhy)*. ACM, 2014.
- [2] C.M. Kirsch, M. Lippautz, and H. Payer. “Fast and Scalable, Lock-free k-FIFO Queues”. In: *Proc. International Conference on Parallel Computing Technologies (PaCT)*. LNCS. Springer, 2013. Click here for PDF file.
- [3] M. Aigner et al. “Analysis of Portfolio-Style Parallel SAT Solving on Current Multi-Core Architectures”. In: *Proc. Workshop on Pragmatics of SAT (PoS)*. EPIc. EasyChair, 2013. Click here for PDF file.
- [4] M. Aigner and C.M. Kirsch. “ACDC: Towards a Universal Mutator for Benchmarking Heap Management Systems”. In: *Proc. International Symposium on Memory Management (ISMM)*. ACM, 2013. Click here for PDF file.
- [5] E. Pereira et al. “Modeling and Controlling the Structure of Heterogeneous Mobile Robotic Systems: A BigActor Approach”. In: *International Systems Conference (SysCon)*. IEEE, 2013. Click here for PDF file.
- [6] E. Pereira et al. “BigActors - A Model for Structure-aware Computation”. In: *Proc. International Conference on Cyber-Physical Systems (ICCPs)*. ACM, 2013. Click here for PDF file.
- [7] T.A. Henzinger et al. “Quantitative Relaxation of Concurrent Data Structures”. In: *Proc. Symposium on Principles of Programming Languages (POPL)*. ACM, 2013. Click here for PDF file.
- [8] S.S. Craciunas and C.M. Kirsch. “The Power of Isolation”. In: *Proc. International Conference on Embedded and Ubiquitous Computing (EUC)*. IEEE, 2012. Click here for PDF file.
- [9] A. Haas et al. “How FIFO is Your Concurrent FIFO Queue?” In: *Proc. OOPSLA Workshop on Relaxing Synchronization for Multicore and Manycore Scalability (RACES)*. 2012. Click here for PDF file.
- [10] C.M. Kirsch et al. “Performance, Scalability, and Semantics of Concurrent FIFO Queues”. In: *Proc. International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP)*. LNCS. Springer, 2012. Click here for PDF file.
- [11] C.M. Kirsch and H. Payer. “Incorrect Systems: It’s not the Problem, It’s the Solution”. In: *Proc. Design Automation Conference (DAC)*. ACM, 2012. Click here for PDF file.
- [12] C.M. Kirsch et al. “Cyber-Physical Cloud Computing: The Binding and Migration Problem”. In: *Proc. International Conference on Design, Automation and Test in Europe (DATE)*. 2012. Click here for PDF file.
- [13] C.M. Kirsch, H. Payer, and H. Röck. “Hierarchical PLABs, CLABs, TLABs in Hotspot”. In: *Proc. International Conference on Systems (ICONS)*. 2012. Click here for PDF file.
- [14] H. Chen et al. “Cloud Computing on Wings: Applications to Air Quality”. In: *Proc. American Astronautical Society Guidance and Control Conference (AASGNC)*. AAS, 2012. Click here for PDF file.
- [15] C.M. Kirsch et al. “Runtime Programming through Model-Preserving, Scalable Runtime Patches”. In: *Proc. International Conference on Application of Concurrency to System Design (ACSD)*. IEEE, 2011, pp. 77–86. Click here for PDF file.
- [16] C.M. Kirsch et al. “Brief Announcement: Scalability versus Semantics of Concurrent FIFO Queues”. In: *Proc. Symposium on Principles of Distributed Computing (PODC)*. ACM, 2011, pp. 331–332. Click here for PDF file.
- [17] M. Aigner et al. “Short-term Memory for Self-collecting Mutators”. In: *Proc. International Symposium on Memory Management (ISMM)*. ACM, 2011. Click here for PDF file.
- [18] C.M. Kirsch et al. “Runtime Programming through Model-Preserving, Scalable Runtime Patches”. In: *Proc. International Workshop on Formal Aspects of Component Software (FACS), Doctoral Track*. Vol. 6921. LNCS. Springer, 2010, pp. 290–294. Click here for PDF file.
- [19] S.S. Craciunas, C.M. Kirsch, and A. Sokolova. “Power-aware Temporal Isolation with Variable-Bandwidth Servers”. In: *Proc. International Conference on Embedded Software (EMSOFT)*. ACM, 2010. Click here for PDF file.

- [20] S.S. Craciunas et al. "Information-Acquisition-as-a-Service for Cyber-Physical Cloud Computing". In: *Proc. Workshop on Hot Topics in Cloud Computing (HotCloud)*. USENIX, 2010. Click here for PDF file.
- [21] S.S. Craciunas, C.M. Kirsch, and A. Sokolova. "Response Time versus Utilization in Scheduler Overhead Accounting". In: *Proc. Real-Time and Embedded Technology and Applications Symposium (RTAS)*. IEEE, 2010. Click here for PDF file.
- [22] T.A. Henzinger et al. "Distributed, Modular HTL". In: *Proc. Real-Time Systems Symposium (RTSS)*. IEEE, 2009. Click here for PDF file.
- [23] S.S. Craciunas, C.M. Kirsch, and A. Sokolova. "A Workload-oriented Programming Model for Temporal Isolation with VBS". In: *Online Proc. Workshop on Reconciling Performance with Predictability (RePP)*. 2009. Click here for PDF file.
- [24] H. Röck et al. "Avoiding Unbounded Priority Inversion in Barrier Protocols Using Gang Priority Management". In: *Proc. International Workshop on Java Technologies for Real-time and Embedded Systems (JTRES)*. ACM, 2009. Click here for PDF file.
- [25] S.S. Craciunas et al. "Programmable Temporal Isolation through Variable-Bandwidth Servers". In: *Proc. Symposium on Industrial Embedded Systems (SIES)*. IEEE, 2009. Click here for PDF file.
- [26] K. Hedrick et al. "CSL: A Language to Specify and Re-Specify Mobile Sensor Network Behaviors". In: *Proc. Real-Time and Embedded Technology and Applications Symposium (RTAS)*. IEEE, 2009. Click here for PDF file.
- [27] S.S. Craciunas et al. "Programmable Temporal Isolation in Real-Time and Embedded Execution Environments". In: *Proc. Workshop on Isolation and Integration in Embedded Systems (IIES)*. ACM, 2009. Click here for PDF file.
- [28] H. Payer et al. "Combo Drive: Optimizing Cost and Performance in a Heterogeneous Storage Device". In: *Proc. Workshop on Integrating Solid-state Memory into the Storage Hierarchy (WISH)*. 2009. Click here for PDF file.
- [29] S.S. Craciunas et al. "The JAviator: A High-Payload Quadrotor UAV with High-Level Programming Capabilities". In: *Proc. AIAA Guidance, Navigation and Control Conference (GNC)*. 2008. Click here for PDF file.
- [30] S.S. Craciunas et al. "A Compacting Real-Time Memory Management System". In: *Proc. USENIX Annual Technical Conference*. 2008. Click here for PDF file.
- [31] C.M. Kirsch, L. Lopes, and E.R.B. Marques. "Semantics-Preserving and Incremental Runtime Patching of Real-Time Programs". In: *Proc. Workshop on Adaptive and Reconfigurable Embedded Systems (APRES)*. 2008. Click here for PDF file.
- [32] K. Chatterjee et al. "Logical Reliability of Interacting Real-Time Tasks". In: *Proc. International Conference on Design, Automation and Test in Europe (DATE)*. 2008. Click here for PDF file.
- [33] C.M. Kirsch and R. Wilhelm. "Grand Challenges in Embedded Software". In: *Proc. International Conference on Embedded Software (EMSOFT)*. ACM, 2007, pp. 2–6.
- [34] A. Ghosal et al. "Separate Compilation of Hierarchical Real-Time Programs into Linear-Bounded Embedded Machine Code". In: *Online Proc. Workshop on Automatic Program Generation for Embedded Systems (APGES)*. 2007. Click here for PDF file.
- [35] J. Auerbach et al. "Java Takes Flight: Time-portable Real-time Programming with Exotasks". In: *Proc. ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES)*. ACM, 2007. Click here for PDF file.
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- [37] C.M. Kirsch, M.A.A. Sanvido, and T.A. Henzinger. "A Programmable Microkernel for Real-Time Systems". In: *Proc. ACM/USENIX Conference on Virtual Execution Environments (VEE)*. ACM, 2005. Click here for PDF file.
- [38] T.A. Henzinger, C.M. Kirsch, and S. Matic. "Composable Code Generation for Distributed Giotto". In: *Proc. ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES)*. ACM, 2005. Click here for PDF file.

- [39] C.M. Kirsch. “Threading by Appointment”. In: *Proc. Monterey Workshop*. CRC Press, 2004. Click here for PDF file.
- [40] T.A. Henzinger and C.M. Kirsch. “A Typed Assembly Language for Real-Time Programs”. In: *Proc. International Conference on Embedded Software (EMSOFT)*. ACM, 2004, pp. 104–113. Click here for PDF file.
- [41] A. Ghosal et al. “Event-driven Programming with Logical Execution Times”. In: *Proc. International Workshop on Hybrid Systems: Computation and Control (HSCC)*. Vol. 2993. LNCS. Springer, 2004, pp. 357–371. Click here for PDF file.
- [42] T.A. Henzinger, C.M. Kirsch, and S. Matic. “Schedule-Carrying Code”. In: *Proc. International Conference on Embedded Software (EMSOFT)*. Vol. 2855. LNCS. Springer, 2003, pp. 241–256. Click here for PDF file.
- [43] T.A. Henzinger and C.M. Kirsch. “The Embedded Machine: Predictable, Portable Real-Time Code”. In: *Proc. ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*. ACM, 2002, pp. 315–326. Click here for PDF file.
- [44] T.A. Henzinger et al. “Time Safety Checking for Embedded Programs”. In: *Proc. International Workshop on Embedded Software (EMSOFT)*. Vol. 2491. LNCS. Springer, 2002, pp. 76–92. Click here for PDF file.
- [45] C.M. Kirsch et al. “A Giotto-Based Helicopter Control System”. In: *Proc. International Workshop on Embedded Software (EMSOFT)*. Vol. 2491. LNCS. Springer, 2002, pp. 46–60. Click here for PDF file.
- [46] T.A. Henzinger, B. Horowitz, and C.M. Kirsch. “Giotto: A Time-triggered Language for Embedded Programming”. In: *Proc. International Workshop on Embedded Software (EMSOFT)*. Vol. 2211. LNCS. Springer, 2001, pp. 166–184. Click here for PDF file.
- [47] T.A. Henzinger, B. Horowitz, and C.M. Kirsch. “Embedded Control Systems Development with Giotto”. In: *Proc. ACM SIGPLAN Workshop on Languages, Compilers, and Tools for Embedded Systems (LCTES)*. ACM, 2001. Click here for PDF file.
- [48] T.B. Brown et al. “A Reusable and Platform-Independent Framework for Distributed Control Systems”. In: *Proc. Digital Avionics Systems Conference (DASC)*. IEEE, 2001. Click here for PDF file.
- [49] H. Ganzinger, C. Meyer, and M. Veanes. “The Two-Variable Guarded Fragment with Transitive Relations”. In: *Proc. Symposium on Logic in Computer Science (LICS)*. IEEE, 1999. Click here for PDF file.
- [50] H. Ganzinger et al. “A Resolution-Based Decision Procedure for Extensions of K4”. In: *Proc. Workshop on Advances in Modal Logic (AiML)*. Vol. 2. Lecture Notes. CSLI Publications, Stanford, CA, 1998. Click here for PDF file.
- [51] F. Jacquemard, C. Meyer, and C. Weidenbach. “Unification in Extensions of Shallow Equational Theories”. In: *Proc. International Conference on Rewriting Techniques and Applications (RTA)*. Vol. 1379. LNCS. Springer, 1998. Click here for PDF file.
- [52] H. Ganzinger, C. Meyer, and C. Weidenbach. “Soft Typing for Ordered Resolution”. In: *Proc. International Conference on Automated Deduction (CADE)*. Vol. 1249. LNCS. Springer, 1997. Click here for PDF file.
- [53] P. Graf and C. Meyer. “Advanced Indexing Operations on Substitution Trees”. In: *Proc. International Conference on Automated Deduction (CADE)*. Vol. 1104. LNCS. Springer, 1996. Click here for PDF file.

## JOURNAL PAPERS

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- [1] S.S. Craciunas et al. “Temporal Isolation in Real-Time Systems: The VBS Approach”. In: *Software Tools for Technology Transfer (STTT)* 15.3 (2013), pp. 189–209. Click here for PDF file.
- [2] A. Ghosal et al. “Separate Compilation of Hierarchical Real-Time Programs into Linear-bounded Embedded Machine Code”. In: *Science of Computer Programming* 77.2 (2012), pp. 96–112.
- [3] J. Auerbach et al. “Low-Latency Time-portable Real-time Programming with Exotasks”. In: *ACM Transactions on Embedded Computing Systems (TECS)* 8.2 (Jan. 2009), pp. 1–48. Click here for PDF file.
- [4] S.S. Craciunas, C.M. Kirsch, and H. Röck. “I/O Resource Management through System Call Scheduling”. In: *ACM Operating Systems Review (OSR), Special Issue on Research and Developments in the Linux Kernel* (July 2008). Click here for PDF file.

- [5] T.A. Henzinger and C.M. Kirsch. “The Embedded Machine: Predictable, Portable Real-Time Code”. In: *ACM Transactions on Programming Languages and Systems (TOPLAS)* 29.6 (Oct. 2007), pp. 33–61. Click here for PDF file.
- [6] T.A. Henzinger, B. Horowitz, and C.M. Kirsch. “Giotto: A Time-triggered Language for Embedded Programming”. In: *Proceedings of the IEEE* 91.1 (Jan. 2003), pp. 84–99. Click here for PDF file.
- [7] T.A. Henzinger et al. “From Control Models to Real-Time Code using Giotto”. In: *IEEE Control Systems Magazine (CSM)* 23.1 (Feb. 2003), pp. 50–64. Click here for PDF file.

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## INVITED PAPERS

- [1] A. Haas et al. “Distributed Queues in Shared Memory—Multicore Performance and Scalability through Quantitative Relaxation”. In: *Proc. International Conference on Computing Frontiers*. ACM, 2013. Click here for PDF file.
- [2] D.F. Bacon et al. “High-Level Real-Time Programming in Java”. In: *Proc. International Conference on Embedded Software (EMSOFT)*. ACM, 2005. Click here for PDF file.
- [3] C.M. Kirsch. “Principles of Real-Time Programming”. In: *Proc. International Workshop on Embedded Software (EMSOFT)*. Vol. 2491. LNCS. Springer, 2002, pp. 61–75. Click here for PDF file.

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## PROCEEDINGS

- [1] Gernot Heiser and Christoph M. Kirsch, eds. *ACM European Conference on Computer Systems, EuroSys 2011, Salzburg, Austria, April 10 - 13, 2011, Proceedings*. New York, NY, USA: ACM, 2011.
- [2] Christoph M. Kirsch and Mahmut T. Kandemir, eds. *ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems, LCTES 2009, Dublin, Ireland, June 19 - 20, 2009, Proceedings*. New York, NY, USA: ACM, 2009.
- [3] Christoph M. Kirsch and Reinhard Wilhelm, eds. *ACM & IEEE International Conference on Embedded Software, EMSOFT 2007, Salzburg, Austria, September 30 - October, 3, 2007, Proceedings*. New York, NY, USA: ACM, 2007.
- [4] Thomas A. Henzinger and Christoph M. Kirsch, eds. *Embedded Software, First International Workshop, EMSOFT 2001, Tahoe City, CA, USA, October, 8-10, 2001, Proceedings*. Vol. 2211. LNCS. Springer, 2001.

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## BOOK CHAPTERS

- [1] C.M. Kirsch and A. Sokolova. “The Logical Execution Time Paradigm”. In: *Advances in Real-Time Systems*. 2012, pp. 103–120.
- [2] “Handbook of Real-Time and Embedded Systems”. In: ed. by I. Lee, J. Leung, and S.H. Son. CRC Press, 2007. Chap. The Evolution of Real-Time Programming.
- [3] “Software-Enabled Control: Information Technology for Dynamical Systems”. In: ed. by T. Samad and G. Balas. IEEE Press and Wiley-Interscience, 2003. Chap. “Embedded Control Systems Development with Giotto”.

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## SYSTEM PAPERS

- [1] R. Alur et al. “jMocha: A Model Checking Tool that Exploits Design Structure”. In: *Proc. International Conference on Software Engineering (ICSE)*. 2001. Click here for PDF file.
- [2] C. Weidenbach et al. “SPASS v0.77”. In: *Journal of Automated Reasoning* 21.1 (1998).

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## SHORT TALKS AND POSTERS

- [1] M. Dodds, A. Haas, and C.M. Kirsch. *Fairness vs. Linearizability in a Concurrent FIFO Queue*. Short Talk at the Joint Euro-TM/MEDIAN Workshop on Dependable Multicore and Transactional Memory Systems (DMTM), 2014.

- [2] E. Pereira et al. *A Networked Robotic System and its Use in an Oil Spill Monitoring Exercise*. Short Talk at the International Workshop on the Swarm at the Edge of the Cloud. 2013. [Click here for PDF file](#).
- [3] J. Huang, C.M. Kirsch, and R. Sengupta. *Scalability of Vehicle Networks through Vehicle Virtualization*. Poster at the International Workshop on the Swarm at the Edge of the Cloud. 2013. [Click here for PDF file](#).
- [4] H. Payer, H. Röck, and C.M. Kirsch. *Get What You Pay For: Providing Performance Isolation in Virtualized Execution Environments*. Poster at the ACM SIGOPS European Systems Conference (EuroSys). 2010. [Click here for PDF file](#).
- [5] S.S. Craciunas et al. *Everyone Virtualizes Everything But Time*. Poster at the IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS). 2009. [Click here for PDF file](#).

## TECHNICAL REPORTS

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- [1] M. Dodds, A. Haas, and C.M. Kirsch. *Fast Concurrent Data-Structures Through Explicit Timestamping*. Tech. rep. 2014-03. Department of Computer Sciences, University of Salzburg, Feb. 2014. [Click here for PDF file](#).
- [2] C.M. Kirsch, M. Lippautz, and H. Payer. *Fast and Scalable k-FIFO Queues*. Tech. rep. 2012-04. Department of Computer Sciences, University of Salzburg, June 2012. [Click here for PDF file](#).
- [3] T.A. Henzinger et al. *Quantitative Relaxation of Concurrent Data Structures*. Tech. rep. 2012-03. Department of Computer Sciences, University of Salzburg, May 2012. [Click here for PDF file](#).
- [4] C.M. Kirsch et al. *Performance, Scalability, and Semantics of Concurrent FIFO Queues*. Tech. rep. 2011-03. Department of Computer Sciences, University of Salzburg, Sept. 2011. [Click here for PDF file](#).
- [5] S.S. Craciunas, C.M. Kirsch, and A. Sokolova. *The Power of Isolation*. Tech. rep. 2011-02. Department of Computer Sciences, University of Salzburg, July 2011. [Click here for PDF file](#).
- [6] C.M. Kirsch et al. *Runtime Programming through Model-Preserving, Scalable Runtime Patches*. Tech. rep. 2010-08. Department of Computer Sciences, University of Salzburg, Dec. 2010. [Click here for PDF file](#).
- [7] C.M. Kirsch, H. Payer, and H. Röck. *Scal<sub>μ</sub>: Non-Linearizable Computing Breaks the Scalability Barrier*. Tech. rep. 2010-07. Department of Computer Sciences, University of Salzburg, Nov. 2010. [Click here for PDF file](#).
- [8] M. Aigner et al. *Short-term Memory for Self-collecting Mutators - Revised Version*. Tech. rep. 2010-06. Department of Computer Sciences, University of Salzburg, Oct. 2010. [Click here for PDF file](#).
- [9] M. Aigner et al. *Short-term Memory for Self-collecting Mutators*. Tech. rep. 2010-03. Department of Computer Sciences, University of Salzburg, Apr. 2010. [Click here for PDF file](#).
- [10] S.S. Craciunas, C.M. Kirsch, and A. Sokolova. *Power-aware Temporal Isolation with Variable-Bandwidth Servers*. Tech. rep. 2010-02. Department of Computer Sciences, University of Salzburg, Apr. 2010. [Click here for PDF file](#).
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- [13] S.S. Craciunas et al. *Real-Time Scheduling for Workload-oriented Programming*. Tech. rep. 2008-02. Department of Computer Sciences, University of Salzburg, Sept. 2008. [Click here for PDF file](#).
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- [16] A. Ghosal et al. *Hierarchical Timing Language*. Tech. rep. UCB/EECS-2006-79. EECS Department, University of California, Berkeley, May 2006. [Click here for PDF file](#).

- [17] C.M. Kirsch and H. Röck. *Traffic Shaping System Calls Using Threading by Appointment*. Tech. rep. T009. Department of Computer Sciences, University of Salzburg, Aug. 2005. Click here for PDF file.
- [18] C.M. Kirsch. *Threading by Appointment*. Tech. rep. T003. Department of Computer Sciences, University of Salzburg, Sept. 2004. Click here for PDF file.
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- [24] P. Graf and C. Meyer. *Extended Path-Indexing*. Tech. rep. MPI-I-93-253. Saarbrücken, Germany: Max Planck Institute for Computer Science, Dec. 1993. Click here for PDF file.

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## THESES

- [1] C. Meyer. “Soft Typing for Clausal Inference Systems”. PhD Thesis. Saarbrücken, Germany: Saarland University, 1999. Click here for PDF file.
- [2] C. Meyer. “Parallel Unit Resulting Resolution”. Master’s Thesis. Saarbrücken, Germany: Saarland University, 1996. Click here for PDF file.

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## SOFTWARE

1. The Scal Project: High-Performance, Multicore-Scalable Data Structures, with Andreas Haas, Thomas A. Henzinger, Michael Lippautz, Hannes Payer, Ali Sezgin, and Ana Sokolova. Web: <http://scal.cs.uni-salzburg.at>
2. The Tiptoe Project: A Compositional Real-Time Operating System, with Silviu Craciunas, Hannes Payer, Harald Röck, Ana Sokolova, and Horst Stadler. Web: <http://tiptoe.cs.uni-salzburg.at>
3. The Jarol Project: A Java Infrastructure for Control Systems, with Bernhard Kast, Eduardo Marques, and Rainer Trummer. Web: <http://jarol.cs.uni-salzburg.at>
4. The Javiator Project: Quadrotor UAV Software Entirely Written in Java, with Joshua Auerbach, David Bacon, Harald Röck, and Rainer Trummer. Web: <http://javiator.cs.uni-salzburg.at>
5. The TAP Project: Concurrent Programming with Threading by Appointment, with Silviu Craciunas and Harald Röck. Web: <http://tap.cs.uni-salzburg.at>
6. The HTL Project: Compositional Real-Time Programming in a Hierarchical Timing Language, with Arkadeb Ghosal, Thomas A. Henzinger, Daniel Iercan, and Alberto L. Sangiovanni-Vincentelli. Web: <http://htl.cs.uni-salzburg.at>
7. Giotto: An Embedded Programming Language, Compiler, and Runtime System for Distributed Control Systems, with Arkadeb Ghosal, Thomas A. Henzinger, Slobodan Matic, and Marco A.A. Sanvido. Web: <http://embedded.eecs.berkeley.edu/giotto>
8. jMocha: A Model Checking Tool that Exploits Design Structure, with Rajeev Alur, Luca de Alfaro, Radu Grosu, Thomas A. Henzinger, Minsu Kang, Rupak Majumdar, Freddy Mang, and Bow-Yaw Wang. Web: <http://embedded.eecs.berkeley.edu/research/mocha>

9. SPASS v0.77: An Automated Theorem Prover for First-Order Logic with Equality, with Christoph Weidenbach, Christian Cohrs, Thorsten Engel, and Enno Keen. Web: <http://spass.mpi-sb.mpg.de>
10. PURR: Parallel Unit Resulting Resolution, a concurrent first-order theorem prover with advanced indexing operations, see Master's Thesis.
11. ACID: A Collection of Indexing Data Structures, implemented in C and Prolog, with Peter Graf.

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## HARDWARE

1. The JAviator: A Quadrotor Helicopter and Software Laboratory for Time-Portable Java Programming, with Rainer Trummer. Web: <http://javiator.cs.uni-salzburg.at>

## TALKS

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### INVITED TALKS

1. *Distributed Queues in Shared Memory—Multicore Performance and Scalability through Quantitative Relaxation*, ACM Computing Frontiers, Ischia, Italy, May 2013. Click here for PDF file.
2. *Inexact Software Is the Solution*, CASA Workshop, Tampere, Finland, October 2012. Click here for PDF file.
3. *Incorrect Systems: It's not the Problem, It's the Solution*, EC2 Workshop, Berkeley, California, July 2012. Click here for PDF file.
4. *Incorrect Systems: It's not the Problem, It's the Solution*, Austrian Computer Science Day, University of Vienna, Austria, June 2012. Click here for PDF file.
5. *Virtualizing Time, Space, and Power for Cyber-Physical Cloud Computing*, ARTIST Workshop on Rigorous Embedded Design, Salzburg, Austria, April 2011. Click here for PDF file.
6. *Short-term Memory for Self-collecting Mutators: Towards Time- and Space-predictable Virtualization*, Computer Science Symposium, IST Austria, Klosterneuburg, Austria, May 2010. Click here for PDF file.
7. *Tiptoe: A Compositional Real-Time Operating System (Memory Management)*, ARTIST Workshop on Foundations and Applications of Component-Based Design, Salzburg, Austria, September 2007. Click here for PDF file.
8. *Trends and Challenges in Embedded Systems Research*, Österreichische Forschungsförderungsgesellschaft (FFG), Vienna, Austria, May, 2007. Click here for PDF file.
9. *Shaping Process Semantics (and the JAviator: A Flying MoCC Laboratory)*, ARTIST Workshop on Models of Computation and Communication, Zürich, Switzerland, November 2006. Click here for PDF file
10. *Shaping Process Semantics*, Monterey Workshop on Composition of Embedded Systems: Scientific and Industrial Issues, Paris, France, October 2006. Click here for PDF file.
11. *Threading by Appointment*, Monterey Workshop on Software Engineering Tools: Compatibility and Integration, Vienna, Austria, October 2004. Click here for PDF file.
12. *Embedded Systems Frontiers*, Bundesministerium für Verkehr, Innovation und Technologie, Vienna, Austria, July 2003. Click here for PDF file.
13. *Principles of Real-Time Programming*, Second International Workshop on Embedded Software (EMSOFT), Grenoble, France, October 2002. Click here for PDF file.

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### PANELS

1. *Looking at Past Data to Improve the Future*, Embedded Systems Week, Montreal, Canada, October 2013.
2. *Vehicular Wireless Networks: What should the future hold?*, International Symposium on Wireless Vehicular Communications (WiVeC), San Francisco, California, September 2011.
3. *Collaboration and Virtualization in Cyber-Physical Systems*, CPS Forum, Cyber-Physical Systems Week, San Francisco, California, April 2009. Click here for PDF file



## COLLOQUIA

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1. *Time-Portable Programming the JAviator in Tiptoe OS*, Department of Computer Science and Engineering, UC Riverside, California, October 2008. [Click here for PDF file.](#)
2. *Tiptoe: A Compositional Real-Time Operating System (Memory Management)*, Center for Embedded Computer Systems, UC Irvine, California, March 2008. [Click here for PDF file.](#)

## SUMMER SCHOOLS

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1. *Virtualizing Time, Space, and Power for Cyber-Physical Cloud Computing*, Georgia Tech Summer School on Cyber-Physical Systems, Atlanta, Georgia, USA, June, 2011. [Click here for PDF file.](#)
2. *Explicit, Dynamic Memory Management with Temporal and Spatial Guarantees*, ARTIST Summer School on Embedded Systems Design, Buenos Aires, Argentina, August 2009. [Click here for PDF file.](#)
3. *Explicit, Dynamic Memory Management with Temporal and Spatial Guarantees*, ARTIST Summer School on Embedded Systems Design, Beijing, China, July 2009. [Click here for PDF file.](#)
4. *Designing a Compositional Real-Time Operating System*, ARTIST Summer School on Embedded Systems Design, Shanghai, China, July 2008. [Click here for PDF file.](#)
5. *From Control Models to Real-Time Code Using Giotto*, Summer School on Embedded Systems (EmSys), Salzburg, Austria, June 2003. [Click here for PDF file.](#)
6. *Principles of Real-Time Programming*, Summer School on Embedded Systems (EmSys), Salzburg, Austria, June 2003. [Click here for PDF file.](#)

## TUTORIAL

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1. *The Logical Execution Time Paradigm*, Tutorials on Time-Predictable and Composable Architectures for Dependable Embedded Systems, ESWEEK, Taipei, Taiwan, October 2011. [Click here for PDF file.](#)

## SEMINARS

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1. *Distributed Queues: Faster Pools and Better Queues*, Oracle, Belmont, California, December 2012. [Click here for PDF file.](#)
2. *Distributed Queues: Faster Pools and Better Queues*, Stanford University, Palo Alto, California, December 2012. [Click here for PDF file.](#)
3. *Incorrect Systems: It's not the Problem, It's the Solution*, DREAMS Seminar, UC Berkeley, Berkeley, California, July 2012. [Click here for PDF file.](#)
4. *The Next Frontier of Cloud Computing is in the Clouds, Literally*, AI-Systems-Robotics Seminar, CS Department, Cornell University, Ithaca, New York, February 2011. [Click here for PDF file.](#)
5. *The Next Frontier of Cloud Computing is in the Clouds, Literally*, CS Department, UC Davis, Davis, California, February 2011. [Click here for PDF file.](#)
6. *Scal<sub>2</sub>: Non-Linearizable Computing Breaks the Scalability Barrier*, Center for Hybrid and Embedded Software Systems, UC Berkeley, Berkeley, California, November 2010. [Click here for PDF file.](#)
7. *Short-term Memory for Self-collecting Mutators*, Center for Hybrid and Embedded Software Systems, UC Berkeley, Berkeley, California, September 2010. [Click here for PDF file.](#)
8. *The Next Frontier of Cloud Computing is in the Clouds, Literally*, Google Tech Talk, Mountain View, California, September 2010. [Click here for PDF file.](#)
9. *Short-term Memory for Self-collecting Mutators*, CSAIL, MIT, Boston, Massachusetts, May 2010. [Click here for PDF file.](#)

10. *Distributed, Modular HTL*, Department of Electrical Engineering and Information Technology, Technical University of Munich, Munich, Germany, June 2009. Click here for PDF file.
11. *Time-Portable Programming the JAviator in the Tiptoe VM*, Center for Hybrid and Embedded Software Systems, UC Berkeley, Berkeley, California, January 2009. Click here for PDF file.
12. *The JAviator: Time-Portable Programming in Java and C*, Hitachi Global Storage Technologies, San Jose, California, September 2008. Click here for PDF file.
13. *The JAviator: Time-Portable Programming in Java*, Sun Microsystems, Palo Alto, California, September 2008. Click here for PDF file.
14. *Tiptoe: A Compositional Real-Time Operating System (Process Model and Scheduler)*, EPFL, Lausanne, Switzerland, May 2008. Click here for PDF file.
15. *Tiptoe: A Compositional Real-Time Operating System (Process Model and Scheduler)*, ETHZ, Zürich, Switzerland, May 2008. Click here for PDF file.
16. *Tiptoe: A Compositional Real-Time Operating System (Memory Management)*, IBM T.J. Watson Research Center, Hawthorne, New York, September 2007. Click here for PDF file.
17. *Time-Portable Real-Time Programming with Exotasks*, Center for Hybrid and Embedded Software Systems, UC Berkeley, Berkeley, California, February 2007. Click here for PDF file.
18. *An Introduction to Logical Execution Time Programming*, Center for Collaborative Control of Unmanned Vehicles, UC Berkeley, Berkeley, California, September 2006. Click here for PDF file.
19. *High-Level Programming of Real-Time Software Systems*, University of Lugano, Lugano, Switzerland, March 2006. Click here for PDF file.
20. *The JAviator Project*, Center for Hybrid and Embedded Software Systems, UC Berkeley, Berkeley, California, February 2006. Click here for PDF file.
21. *High-Level Programming of Real-Time and Concurrent Software Systems*, Purdue University, West Lafayette, Indiana, December 2005. Click here for PDF file.
22. *Traffic Shaping System Calls Using Threading by Appointment*, UC Berkeley, Berkeley, California, September 2005. Click here for PDF file.
23. *Traffic Shaping System Calls Using Threading by Appointment*, UCLA, Los Angeles, California, August 2005. Click here for PDF file.
24. *The Embedded Machine: Status and Future Directions*, IBM T.J. Watson Research Center, Hawthorne, New York, March 2005. Click here for PDF file.
25. *Threading by Appointment*, Center for Collaborative Control of Unmanned Vehicles, UC Berkeley, Berkeley, California, February 2005. Click here for PDF file.
26. *Real-Time Programming Based on Schedule-Carrying Code*, McGill University, Montreal, Canada, January, 2004. Click here for PDF file.
27. *The Embedded Machine: Predictable, Portable Real-Time Code*, Verimag, Grenoble, France, November 2001. Click here for PDF file.
28. *Giotto: A Time-triggered Language for Embedded Programming*, Honeywell, Minneapolis, Minnesota, September 2001. Click here for PDF file.
29. *Embedded Control Systems Development with Giotto*, Stanford University, Palo Alto, California, November 2000. Click here for PDF file.

## GROUP

### POSTDOCS

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Rainer Trummer, Dr. Tech., University of Salzburg (since 2011); Ana Sokolova, PhD, Technical University of Eindhoven (since 2007).

### PHD STUDENTS

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Martin Aigner (since 2012); Andreas Haas (since 2009); Clemens Krainer (since 2009); Michael Lippautz (since 2011).

### GRADUATED PHD STUDENTS

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Hannes Payer, Dr. Tech., University of Salzburg, 2012 (*Multicore Scalability of Concurrent Objects*); Harald Röck, Dr. Tech., University of Salzburg, 2012 (*Tiptoe: A Virtual Execution Environment for Real-Time and Embedded Systems*); Eduardo Marques, PhD, University of Porto, 2011, co-advised (*Runtime Programming*); Rainer Trummer, Dr. Tech., University of Salzburg, 2011 (*Design and Implementation of the JAviator Quadrotor - An Aerial Software Testbed*); Silviu Craciunas, Dr. Tech., University of Salzburg, 2010 (*Programmable Temporal Isolation for High-Performance and Real-Time Systems*); Daniel Iercan, PhD, Technical University of Timisoara, 2008, co-advised (*Contributions to the Development of Real-Time Programming Techniques and Technologies*).

### MASTERS STUDENTS

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Andreas Rottmann (since 2010);

### GRADUATED MASTERS STUDENTS

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Andreas Löcker, Dipl.-Ing., University of Salzburg, 2013 (*Generalized Polygons for Soft-wallling a Micro UAV*); Martin Aigner, Dipl.-Ing., University of Salzburg, 2012 (*Short-term Memory for the C Programming Language*); Stephanie Stroka, Dipl.-Ing., University of Salzburg, 2012 (*Short-term Regions: A Region-based Short-term Memory Allocator*); Michael Lippautz, Dipl.-Ing., University of Salzburg, 2011 (*Self-collecting Goroutines: Short-term Memory Management in Go*); Florian Landolt, Dipl.-Ing., University of Salzburg, 2011 (*High-Throughput Inter-Domain Multicast on the Xen Hypervisor*); Andreas Unterweger, Dipl.-Ing., University of Salzburg, 2011 (*Performance Analysis of Short-Term Memory in a State-of-the-Art H.264 Video Encoder*); Clemens Krainer, Dipl.-Ing., University of Salzburg, 2009 (*JNavigator - An Autonomous Navigation System for the JAviator Quadrotor Helicopter*); Andreas Haas, Dipl.-Ing., University of Salzburg, 2009 (*Expiration Classes for Implicit Memory Management*); Wolfgang Kreil, Dipl.-Ing., University of Salzburg, 2009 (*Cubic UWB-based Soft Walls for a Micro-UAV*); Horst Stadler, Dipl.-Ing., University of Salzburg, 2008 (*A Virtualized Real-Time I/O Subsystem*); Hannes Payer, Dipl.-Ing., University of Salzburg, 2007 (*A Compacting Real-Time Memory Management System*); Bernhard Kast, Dipl.-Ing., University of Salzburg, 2007 (*Jarol: A Java Control Infrastructure*); Harald Röck, Dipl.-Ing., University of Salzburg, 2006 (*Threading by Appointment*); Marcus Harringer, Dipl.-Ing., University of Salzburg, 2005 (*Real-Time Java Programming with Logical Execution Times and Real-Time Garbage Collection*).

## TEACHING

### UNDERGRADUATE COURSES

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*Compiler Construction*, University of Salzburg, Summer 2014. *Operating Systems*, University of Salzburg, Winter 2013. *Compiler Construction*, University of Salzburg, Summer 2013. *Compiler Construction*, University of Salzburg, Summer 2012. *Compiler Construction*, University of Salzburg, Summer 2011. *Compiler Construction*, University of Salzburg, Summer 2010. *Compiler Construction*, University of Salzburg, Summer 2009.

## GRADUATE COURSES

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*Advanced Operating Systems*, University of Salzburg, Winter 2013; *Advanced Operating Systems*, University of Salzburg, Winter 2011; *Embedded Software Engineering*, University of Salzburg, Winter 2011; *Embedded Software Engineering*, University of Salzburg, Winter 2010; *Embedded Software Engineering*, University of Salzburg, Winter 2009; *Advanced Operating Systems*, University of Salzburg, Winter 2009; *Compiler Construction*, University of Salzburg, Summer 2008; *Operating Systems*, University of Salzburg, Winter 2007; *Compiler Construction*, University of Salzburg, Summer 2007; *Embedded Software Engineering*, University of Salzburg, Winter 2006; *Operating Systems*, University of Salzburg, Winter 2006; *Compiler Construction*, University of Salzburg, Summer 2006; *Theory of Computational Systems*, University of Salzburg, Summer 2006; *Embedded Software Engineering*, University of Salzburg, Winter 2005; *Operating Systems*, University of Salzburg, Winter 2005; *Compiler Construction*, University of Salzburg, Summer 2005; *Theory of Computational Systems*, University of Salzburg, Summer 2005; *Computational Systems Engineering*, University of Salzburg, Winter 2004; *Embedded Software Engineering*, University of Salzburg, Winter 2004; *Embedded Software Engineering*, UC Berkeley (EECS290O), Spring 2002; *Embedded Software Engineering*, UC Berkeley (EECS290O), Spring 2001.

## GRADUATE SEMINARS

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*Concurrency and Memory Management Seminar*, University of Salzburg, Summer 2014; *Concurrency and Memory Management Seminar*, University of Salzburg, Summer 2013; *Concurrency and Memory Management Seminar*, University of Salzburg, Summer 2012; *Concurrency and Memory Management Seminar*, University of Salzburg, Winter 2010; *Software Systems Seminar*, University of Salzburg, Summer 2010; *Software Systems Seminar*, University of Salzburg, Summer 2009; *Software Systems Seminar*, University of Salzburg, Summer 2008; *Compositionality Seminar*, University of Salzburg, Winter 2007; *Software Systems Seminar*, University of Salzburg, Summer 2007; *Computational Systems Seminar*, University of Salzburg, Summer 2004.

## PROFESSIONAL ACTIVITIES

### CONFERENCE FOUNDER

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Co-Founder, First International Workshop on Embedded Software (EMSOFT), Tahoe City, California, October 2001 (T. Henzinger, EPFL, Co-Founder).

### MEMBER OF EDITORIAL BOARDS

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Open Access Journal on Advances in Software Engineering (ASE); ACM Transactions on Design Automation of Electronic Systems (TODAES), 2011–2013.

### GUEST EDITOR

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Co-Editor, Special Issue on “Probabilistic Embedded Computing”, ACM Transactions on Embedded Computing Systems, 2012 (to appear; V. Mooney, Georgia Institute of Technology, Co-Editor); Co-Editor, Special Issue on “ESWEEK 2007 Best Papers”, Journal of Design Automation for Embedded Systems, 2009 (R. Wilhelm, Saarland University, Co-Editor).

### PROFESSIONAL SOCIETIES

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Chair, ACM Special Interest Group on Embedded Systems (SIGBED), 2011–2013; Treasurer, European Chapter of the ACM Special Interest Group on Operating Systems (SIGOPS), 2011–2015; Vice-Chair, ACM Special Interest Group on Embedded Systems (SIGBED), 2009–2011.

### STEERING COMMITTEE CHAIR

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Chair, ACM/IEEE International Conference on Embedded Software (EMSOFT), 2013–2017 (W. Yi, Uppsala, Vice-Chair).

## MEMBER OF CONFERENCE STEERING COMMITTEES

ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES); ACM/IEEE International Conference on Embedded Software (EMSOFT); Embedded Systems Week (ESWEEK), 2007.

## GENERAL CHAIR

General Chair, European Systems Conference (EuroSys), 2011; General Chair, ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2009; General Co-Chair, Embedded Systems Week (ESWEEK), 2008 (N. Dutt, UC Irvine, General Co-Chair).

## ORGANIZING COMMITTEE CHAIR

Embedded Systems Week (ESWEEK), 2007.

## SUMMER SCHOOL ORGANIZER

Co-Organizer, Summer School on Embedded Systems (EmSys), Salzburg, Austria, June 2003 (W. Pree, University of Salzburg, Co-Organizer).

## SPECIAL SESSION ORGANIZER

Special Session on “Probabilistic Embedded Computing”, Design Automation Conference (DAC), 2012; Special Session on “Virtualization in Embedded Systems”, Design Automation Conference (DAC), 2011.

## PROGRAM COMMITTEE CHAIR

Track Chair, “Embedded Systems Software”, International Conference on Computer-Aided Design (ICCAD), 2012; Subcommittee Chair, “Embedded Software and Tools”, Design Automation Conference (DAC), 2011; Topic Chair, “Model-Based Design for Embedded Systems”, Design Automation and Test in Europe (DATE), 2011 (R. Majumdar, Max-Planck-Institute for Software Systems, Topic Co-Chair); Track Chair, “Design and Verification of Embedded Real-Time Systems”, IEEE International Real-Time Systems Symposium (RTSS), 2010; Topic Co-Chair, “Model-Based Design for Embedded Systems”, Design Automation and Test in Europe (DATE), 2010 (A. Benveniste, INRIA Rennes, Topic Co-Chair); PC Co-Chair, ACM/IEEE International Conference on Embedded Software (EMSOFT), 2007 (R. Wilhelm, Saarland University, PC Co-Chair).

## MEMBER OF CONFERENCE PROGRAM COMMITTEES

European Systems Conference (EuroSys), 2015; ACM/IEEE International Conference on Embedded Software (EMSOFT), 2014; IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2014, Track on “Hardware/Software Co-Design”; ACM/IEEE International Conference on Embedded Software (EMSOFT), 2013; ACM International Conference on Computing Frontiers, 2013, Track on “Probabilistic Computing”; Design Automation and Test in Europe (DATE), 2013, Track on “Model-Based Design and Verification for Embedded Systems”; International Conference on Formal Modeling and Analysis of Timed Systems (FORMATS 2012); ACM/IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE), 2012; IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2011, Track on “Embedded Systems Software”; IEEE International Real-Time Systems Symposium (RTSS), 2011, Track on “Design and Verification of Embedded Real-Time Systems”; ACM/IEEE International Conference on Embedded Software (EMSOFT), 2011; IEEE International Conference on Engineering of Complex Computer Systems (ICECCS), 2011; ACM/IEEE International Conference on Embedded Software (EMSOFT), 2010; ACM Conference on Object-Oriented Programming, Systems, Languages and Applications (OOPSLA), 2010; ACM/IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE), 2010; International Conference on Hybrid Systems: Computation and Control (HSCC), 2010; European Systems Conference (EuroSys), 2010; IEEE International Real-Time

Systems Symposium (RTSS), 2009, Track on “Design and Verification of Embedded Real-Time Systems”; IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2009; IEEE/IFIP International Conference on Embedded and Ubiquitous Computing (EUC), 2009, Track on “Embedded Systems and Hardware-Software Codesign”; ACM/IEEE International Conference on Embedded Software (EMSOFT), 2009; Design Automation and Test in Europe (DATE), 2009, Track on “Model-Based Design for Embedded Systems”; ACM/IEEE International Conference on Embedded Software (EMSOFT), 2008; IEEE Conference on Automation Science and Engineering (IEEE-CASE), 2008, Track on “Hybrid and Discrete Event Systems”; ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2008; IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2008, Track on “Real-Time and Embedded Applications / Benchmarks”; Design Automation and Test in Europe (DATE), 2008, Track on “Model-Based Design for Embedded Systems”; ACM/IEEE International Conference on Embedded Software (EMSOFT), 2007; Conference on Coordination Models and Languages (Coordination), 2007; Design Automation and Test in Europe (DATE), 2007, Track on “Model-Based Design for Embedded Systems”; European Systems Conference (EuroSys), 2007; International Conference on Software and Data Technologies (ICSOT), 2006; Joint Modular Languages Conference (JMLC), 2006; ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2006; IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2006, Track on “Development, Verification, and Debug Tools for Real-Time and Embedded Systems”; European Systems Conference (EuroSys), 2006; ACM Conference on Object-Oriented Programming, Systems, Languages and Applications (OOPSLA), 2005; ACM International Conference on Embedded Software (EMSOFT), 2005; ACM/USENIX Conference on Virtual Execution Environments (VEE), 2005; ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2005; Joint Modular Languages Conference (JMLC), 2003.

#### MEMBER OF EXTERNAL REVIEW COMMITTEE

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International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2010.

#### MEMBER OF WORKSHOP PROGRAM COMMITTEES

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Workshop on Exploiting Concurrency Efficiently and Correctly (EC2), 2014; Workshop on Analytic Virtual Integration of Cyber-Physical Systems (AVICPS), 2012; Workshop on Adaptive and Reconfigurable Embedded Systems (APRES), 2012; Workshop on Java Technologies for Real-time and Embedded Systems (JTRES), 2011; Workshop on Adaptive and Reconfigurable Embedded Systems (APRES), 2011; Workshop on Java Technologies for Real-time and Embedded Systems (JTRES), 2010; Workshop on Adaptive and Reconfigurable Embedded Systems (APRES), 2009; Workshop on Adaptive and Reconfigurable Embedded Systems (APRES), 2008; Workshop on Automatic Program Generation for Embedded Systems (APGES), 2007; Workshop on Java Technologies for Real-time and Embedded Systems (JTRES), 2005.

#### MEMBER OF PHD COMMITTEES

---

Christos Sofronis, *Embedded Code Generation from High-Level Heterogeneous Components*, Université Joseph Fourier, Grenoble, France, 2006 (P. Caspi and S. Tripakis, Verimag, Advisors); Claudiu Farcas, *Towards Portable Real-Time Software Components*, University of Salzburg, Salzburg, Austria, 2006 (W. Pree, University of Salzburg, Advisor).

#### PROPOSAL REVIEWER

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National Science Foundation (NSF); Portuguese Foundation for Science and Technology (FCT).

#### JOURNAL REVIEWER

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IEEE Transactions on Computers; ACM Transactions on Programming Languages and Systems; ACM Transactions on Embedded Computing Systems; Journal of Systems Architecture; Journal of Applied Logic; Journal of Logic and Computation; Science of Computer Programming; ETRI Journal; IEEE Computer

Magazine; IEEE Control Systems Magazine; IEEE Transactions on Software Engineering; IEEE Transactions on Robotics and Automation; International Journal of Foundations of Computer Science; IEEE Transactions on Vehicular Technology.

## CONFERENCE REVIEWER

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International Symposium on Distributed Autonomous Robotic Systems (DARS), 2012; ACM Symposium on Principles of Programming Languages (POPL), 2008; International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), 2005; International Conference on Real-Time and Embedded Computing Systems and Applications (RTCSA), 2004; IEEE International Real-Time Systems Symposium (RTSS), 2003; ACM Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2003; ACM Conference on Programming Language Design and Implementation (PLDI), 2003; International Workshop on Embedded Software (EMSOFT), 2002; International Workshop on Computer Science Logic (CSL), 1999; International Conference on Automated Deduction (CADE), 1999; International Conference on Rewriting Techniques and Applications (RTA), 1998; International Workshop on Computer Science Logic (CSL), 1997; International Conference on Automated Deduction (CADE), 1997; International Conference on Rewriting Techniques and Applications (RTA), 1997.

## RESEARCH GRANTS

### NATIONAL (AUSTRIA)

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- Co-Principal Investigator, *Rigorous Systems Engineering* (National Research Network), Austrian Science Fund (FWF), Grant S11404-N23 (R. Bloem, TU Graz, Speaker), 3/2011–2/2015, EUR 328,230.-
- Principal Investigator, *ArtistDesign* (Supplemental Support), Austrian Federal Ministry of Science and Research, Grant 651.394/0001-II/2/2009, 11/2009–12/2011, EUR 4,898.-
- Principal Investigator, *Embedded Systems Week 2007*, Österreichische Forschungsförderungsgesellschaft (FFG), FIT-IT Initiative, Grant 812443, 10/2006–10/2007, EUR 25,000.-
- Principal Investigator, *Concurrent Programming with Threading by Appointment*, Austrian Science Fund (FWF), Grant P18913-N15, 5/2006–4/2010, EUR 352,390.49
- Co-Principal Investigator, *DES Center—Dependable Embedded Systems Center*, Österreichische Forschungsförderungsgesellschaft (FFG), FIT-IT Initiative, Grant 809242 (H. Kopetz, TU Vienna, Co-PI), 2/2005–1/2006, EUR 20,000.-

### INTERNATIONAL

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- Principal Investigator, *ACDC4GC*, Google Inc., 7/2013–6/2014, EUR 80,000.-
- Senior Personnel, *CPS: Medium: Making Cloud Computing Sense, Act, and Move (SAM)*, National Science Foundation (NSF), Grant CNS-1136141 (R. Sengupta, UC Berkeley, PI; K. Hedrick, UC Berkeley, Co-PI), 9/2011–8/2014, US\$1,100,000.-
- Co-Principal Investigator, *Short-term Memory Lifespan Estimation and Runtime*, Österreichischer Austauschdienst (OeAD), Grant AR 16/2011 (S. Yovine, University of Buenos Aires, Co-PI), 6/2011–5/2013, EUR 5,600.-
- Core Partner, *ArtistDesign*, European Commission, Network of Excellence (NoE), 1/2008–12/2011, EUR 78,368.-
- Principal Investigator, *The JAviator Project*, IBM T.J. Watson Research Center, Hawthorne, NY, USA, 2006–2007, US\$ 55,000.-

## REFERENCES

- Rajeev Alur, Professor, University of Pennsylvania, USA, alur@cis.upenn.edu

- Thomas A. Henzinger, Professor, Institute of Science and Technology Austria, tah@ist.ac.at
- Martin Rinard, Professor, Massachusetts Institute of Technology, USA, rinard@lcs.mit.edu
- Joseph Sifakis, Professor, Verimag, Grenoble, France, joseph.sifakis@imag.fr
- Lothar Thiele, Professor, ETH Zurich, Switzerland, thiele@ethz.ch
- Marilyn Wolf, Professor, Georgia Institute of Technology, USA, wolf@ece.gatech.edu