

CURRICULUM VITAE

CHRISTOPH M. KIRSCH

CONTACT

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RESEARCH INTERESTS

Principled engineering of concurrent software systems
Embedded, real-time, and concurrent programming
Virtual execution environments

EDUCATION

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

Since September 2008 Visiting Researcher (Sponsor: Prof. Raja Sengupta)
Department of Civil and Environmental Engineering
University of California at Berkeley
Berkeley, California, USA

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

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

2007 IBM Faculty Award

PUBLICATIONS

CONFERENCE/WORKSHOP PAPERS/POSTERS

- [1] 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.](#)
- [2] T.A. Henzinger, C.M. Kirsch, E.R.B. Marques, and A. Sokolova. Distributed, modular HTL. In *Proc. Real-Time Systems Symposium (RTSS)*. IEEE, 2009. [Click here for PDF file.](#)
- [3] 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.](#)
- [4] H. Röck, J. Auerbach, D.F. Bacon, and C.M. Kirsch. 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.](#)
- [5] S.S. Craciunas, C.M. Kirsch, H. Payer, H. Röck, and A. Sokolova. Programmable temporal isolation through variable-bandwidth servers. In *Proc. Symposium on Industrial Embedded Systems (SIES)*. IEEE, 2009. [Click here for PDF file.](#)
- [6] S.S. Craciunas, C.M. Kirsch, H. Payer, H. Röck, and A. Sokolova. Everyone virtualizes everything but time. Poster at the IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2009. [Click here for PDF file.](#)
- [7] K. Hedrick, J. Jariyasunant, C.M. Kirsch, J. Love, E. Pereira, R. Sengupta, and M. Zennaro. 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.](#)
- [8] S.S. Craciunas, C.M. Kirsch, H. Payer, H. Röck, and A. Sokolova. 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.](#)
- [9] H. Payer, M.A.A. Sanvido, Z.Z. Bandic, and C.M. Kirsch. 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.](#)
- [10] S.S. Craciunas, C.M. Kirsch, H. Röck, and R. Trummer. 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.](#)
- [11] S.S. Craciunas, C.M. Kirsch, H. Payer, A. Sokolova, H. Stadler, and R. Staudinger. A compacting real-time memory management system. In *Proc. USENIX Annual Technical Conference*, 2008. [Click here for PDF file.](#)
- [12] 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.](#)
- [13] K. Chatterjee, A. Ghosal, D. Iercan, C.M. Kirsch, T.A. Henzinger, C. Pinello, and A.L. Sangiovanni-Vincentelli. 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.](#)
- [14] C.M. Kirsch and R. Wilhelm. Grand challenges in embedded software. In *Proc. International Conference on Embedded Software (EMSOFT)*, pages 2–6. ACM, 2007.

- [15] A. Ghosal, D. Iercan, C.M. Kirsch, T.A. Henzinger, and A.L. Sangiovanni-Vincentelli. 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.
- [16] J. Auerbach, D.F. Bacon, D. Iercan, C.M. Kirsch, V.T. Rajan, H. Röck, and R. Trummer. 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.
- [17] A. Ghosal, T.A. Henzinger, D. Iercan, C.M. Kirsch, and A.L. Sangiovanni-Vincentelli. A hierarchical coordination language for interacting real-time tasks. In *Proc. International Conference on Embedded Software (EMSOFT)*. ACM, 2006. Click here for PDF file.
- [18] 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.
- [19] 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.
- [20] C.M. Kirsch. Threading by appointment. In *Proc. Monterey Workshop*. CRC Press, 2004. Click here for PDF file.
- [21] T.A. Henzinger and C.M. Kirsch. A typed assembly language for real-time programs. In *Proc. International Conference on Embedded Software (EMSOFT)*, pages 104–113. ACM, 2004. Click here for PDF file.
- [22] A. Ghosal, T.A. Henzinger, C.M. Kirsch, and M.A.A. Sanvido. Event-driven programming with logical execution times. In *Proc. International Workshop on Hybrid Systems: Computation and Control (HSCC)*, volume 2993 of *LNCS*, pages 357–371. Springer, 2004. Click here for PDF file.
- [23] T.A. Henzinger, C.M. Kirsch, and S. Matic. Schedule-carrying code. In *Proc. International Conference on Embedded Software (EMSOFT)*, volume 2855 of *LNCS*, pages 241–256. Springer, 2003. Click here for PDF file.
- [24] 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)*, pages 315–326. ACM, 2002. Click here for PDF file.
- [25] T.A. Henzinger, C.M. Kirsch, R. Majumdar, and S. Matic. Time safety checking for embedded programs. In *Proc. International Workshop on Embedded Software (EMSOFT)*, volume 2491 of *LNCS*, pages 76–92. Springer, 2002. Click here for PDF file.
- [26] C.M. Kirsch, M.A.A. Sanvido, T.A. Henzinger, and W. Pree. A Giotto-based helicopter control system. In *Proc. International Workshop on Embedded Software (EMSOFT)*, volume 2491 of *LNCS*, pages 46–60. Springer, 2002. Click here for PDF file.
- [27] 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)*, volume 2211 of *LNCS*, pages 166–184. Springer, 2001. Click here for PDF file.
- [28] 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.
- [29] T.B. Brown, T.A. Henzinger, C.M. Kirsch, A. Pasetti, and W. Pree. A reusable and platform-independent framework for distributed control systems. In *Proc. Digital Avionics Systems Conference (DASC)*. IEEE, 2001. Click here for PDF file.
- [30] 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.

- [31] H. Ganzinger, U. Hustadt, C. Meyer, and R. Schmidt. A resolution-based decision procedure for extensions of K4. In *Proc. Workshop on Advances in Modal Logic (AiML)*, volume 2 of *Lecture Notes*. CSLI Publications, Stanford, CA, 1998. [Click here for PDF file.](#)
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- [33] H. Ganzinger, C. Meyer, and C. Weidenbach. Soft typing for ordered resolution. In *Proc. International Conference on Automated Deduction (CADE)*, volume 1249 of *LNCS*. Springer, 1997. [Click here for PDF file.](#)
- [34] P. Graf and C. Meyer. Advanced indexing operations on substitution trees. In *Proc. International Conference on Automated Deduction (CADE)*, volume 1104 of *LNCS*. Springer, 1996. [Click here for PDF file.](#)

JOURNAL PAPERS

- [1] J. Auerbach, D.F. Bacon, D. Iercan, C.M. Kirsch, V.T. Rajan, H. Röck, and R. Trummer. Low-latency time-portable real-time programming with Exotasks. *ACM Transactions on Embedded Computing Systems (TECS)*, 8(2):1–48, January 2009.
- [2] S.S. Craciunas, C.M. Kirsch, and H. Röck. I/O Resource management through system call scheduling. *ACM Operating Systems Review (OSR), Special Issue on Research and Developments in the Linux Kernel*, July 2008. [Click here for PDF file.](#)
- [3] T.A. Henzinger and C.M. Kirsch. The Embedded Machine: Predictable, portable real-time code. *ACM Transactions on Programming Languages and Systems (TOPLAS)*, 29(6):33–61, October 2007.
- [4] T.A. Henzinger, B. Horowitz, and C.M. Kirsch. Giotto: A time-triggered language for embedded programming. *Proceedings of the IEEE*, 91(1):84–99, January 2003. [Click here for PDF file.](#)
- [5] T.A. Henzinger, C.M. Kirsch, M.A.A. Sanvido, and W. Pree. From control models to real-time code using Giotto. *IEEE Control Systems Magazine (CSM)*, 23(1):50–64, February 2003. [Click here for PDF file.](#)

INVITED PAPERS

- [1] D.F. Bacon, P. Cheng, D. Grove, M. Hind, V.T. Rajan, E. Yahav, M. Hauswirth, C.M. Kirsch, D. Spoonhauer, and M.T. Vechev. High-level real-time programming in Java. In *Proc. International Conference on Embedded Software (EMSOFT)*. ACM, 2005. [Click here for PDF file.](#)
- [2] C.M. Kirsch. Principles of real-time programming. In *Proc. International Workshop on Embedded Software (EMSOFT)*, volume 2491 of *LNCS*, pages 61–75. Springer, 2002. [Click here for PDF file.](#)

PROCEEDINGS

- [1] Christoph M. Kirsch and Mahmut T. Kandemir, editors. *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, 2009. ACM.
- [2] Christoph M. Kirsch and Reinhard Wilhelm, editors. *ACM & IEEE International Conference on Embedded Software, EMSOFT 2007, Salzburg, Austria, September 30 - October, 3, 2007, Proceedings*, New York, NY, USA, 2007. ACM.
- [3] Thomas A. Henzinger and Christoph M. Kirsch, editors. *Embedded Software, First International Workshop, EMSOFT 2001, Tahoe City, CA, USA, October, 8-10, 2001, Proceedings*, volume 2211 of *LNCS*. Springer, 2001.

BOOK CHAPTERS

- [1] I. Lee, J. Leung, and S.H. Son, editors. *Handbook of Real-Time and Embedded Systems*, chapter The Evolution of Real-Time Programming. CRC Press, 2007.
- [2] T. Samad and G. Balas, editors. *Software-Enabled Control: Information Technology for Dynamical Systems*, chapter "Embedded Control Systems Development with Giotto". IEEE Press and Wiley-Interscience, 2003.

SYSTEM PAPERS

- [1] R. Alur, L. de Alfaro, R. Grosu, T.A. Henzinger, M. Kang, C.M. Kirsch, R. Majumdar, F. Mang, and B.Y. Wang. 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, C. Meyer, C. Cohrs, T. Engel, and E. Keen. SPASS v0.77. *Journal of Automated Reasoning*, 21(1), 1998.

TECHNICAL REPORTS

- [1] S.S. Craciunas, C.M. Kirsch, and A. Sokolova. Response time versus utilization in scheduler overhead accounting. Technical Report 2009-03, Department of Computer Sciences, University of Salzburg, August 2009. [Click here for PDF file.](#)
- [2] S.S. Craciunas, C.M. Kirsch, H. Payer, H. Röck, and A. Sokolova. Concurrency and scalability versus fragmentation and compaction with compact-fit. Technical Report 2009-02, Department of Computer Sciences, University of Salzburg, April 2009. [Click here for PDF file.](#)
- [3] S.S. Craciunas, C.M. Kirsch, H. Röck, and A. Sokolova. Real-time scheduling for workload-oriented programming. Technical Report 2008-02, Department of Computer Sciences, University of Salzburg, September 2008. [Click here for PDF file.](#)
- [4] S.S. Craciunas, C.M. Kirsch, and H. Röck. Shaping process semantics. Technical Report 2007-01, Department of Computer Sciences, University of Salzburg, April 2007. [Click here for PDF file.](#)
- [5] M. Törngren, D. Henriksson, O. Redell, C.M. Kirsch, J. El-Khoury, D. Simon, Y. Sorel, H. Zdenek, and K.-E. Årzén. Co-design of control systems and their real-time implementation — a tool survey. Technical Report KTH/MMK/R-06/11-SE, Department of Machine Design, Royal Institute of Technology (KTH), Stockholm, Sweden, September 2006. [Click here for PDF file.](#)
- [6] A. Ghosal, T.A. Henzinger, D. Iercan, C.M. Kirsch, and A.L. Sangiovanni-Vincentelli. Hierarchical timing language. Technical Report UCB/EECS-2006-79, EECS Department, University of California, Berkeley, May 2006. [Click here for PDF file.](#)
- [7] C.M. Kirsch and H. Röck. Traffic shaping system calls using threading by appointment. Technical Report T009, Department of Computer Sciences, University of Salzburg, August 2005. [Click here for PDF file.](#)
- [8] C.M. Kirsch. Threading by appointment. Technical Report T003, Department of Computer Sciences, University of Salzburg, September 2004. [Click here for PDF file.](#)
- [9] C.M. Kirsch, T.A. Henzinger, and M.A.A. Sanvido. A programmable microkernel for real-time systems. Technical Report UCB//CSD-03-1250, University of California at Berkeley, California, June 2003. [Click here for PDF file.](#)
- [10] T.A. Henzinger, C.M. Kirsch, and S. Matic. Schedule-carrying code. Technical Report UCB//CSD-03-1230, University of California at Berkeley, California, February 2003. [Click here for PDF file.](#)

- [11] C.M. Kirsch. The Embedded Machine. Technical Report UCB//CSD-01-1137, University of California at Berkeley, California, March 2001. Click here for PDF file.
- [12] T.A. Henzinger, B. Horowitz, and C.M. Kirsch. Giotto: A time-triggered language for embedded programming. Technical Report UCB//CSD-00-1121, University of California at Berkeley, California, 2000. Click here for PDF file.
- [13] F. Jacquemard, C. Meyer, and C. Weidenbach. Unification in extensions of shallow equational theories. Technical Report MPI-I-98-2-002, Max Planck Institute for Computer Science, Saarbrücken, Germany, January 1998. Click here for PDF file.
- [14] P. Graf and C. Meyer. Extended path-indexing. Technical Report MPI-I-93-253, Max Planck Institute for Computer Science, Saarbrücken, Germany, December 1993. Click here for PDF file.

THESES

- [1] C. Meyer. *Soft Typing for Clausal Inference Systems*. Phd thesis, Saarland University, Saarbrücken, Germany, 1999. Click here for PDF file.
- [2] C. Meyer. Parallel unit resulting resolution. Master's thesis, Saarland University, Saarbrücken, Germany, 1996. Click here for PDF file.

SOFTWARE

1. 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>
2. The Jarol Project: A Java Infrastructure for Control Systems, with Bernhard Kast, Eduardo Marques, and Rainer Trummer. Web: <http://jarol.cs.uni-salzburg.at>
3. The JAviator Project: Quadrotor UAV Software Entirely Written in Java, with Harald Röck and Rainer Trummer. Web: <http://javiator.cs.uni-salzburg.at>
4. The TAP Project: Concurrent Programming with Threading by Appointment, with Silviu Craciunas and Harald Röck. Web: <http://tap.cs.uni-salzburg.at>
5. 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>
6. 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>
7. 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>
8. 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>
9. PURR: Parallel Unit Resulting Resolution, a concurrent first-order theorem prover with advanced indexing operations, see Master's Thesis.
10. ACID: A Collection of Indexing Data Structures, implemented in C and Prolog, with Peter Graf.

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>

LECTURES

INVITED TALKS

1. Tentative title: *Short-term Memory for Self-collecting Mutators: Towards Time- and Space-predictable Virtualization*, Computer Science Symposium, IST Austria, Klosterneuburg, Austria, May 2010.
2. *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.](#)
3. *Trends and Challenges in Embedded Systems Research*, Österreichische Forschungsförderungsgesellschaft (FFG), Vienna, Austria, May, 2007. [Click here for PDF file.](#)
4. *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](#)
5. *Shaping Process Semantics*, Monterey Workshop on Composition of Embedded Systems: Scientific and Industrial Issues, Paris, France, October 2006. [Click here for PDF file.](#)
6. *Threading by Appointment*, Monterey Workshop on Software Engineering Tools: Compatibility and Integration, Vienna, Austria, October 2004. [Click here for PDF file.](#)
7. *Embedded Systems Frontiers*, Bundesministerium für Verkehr, Innovation und Technologie, Vienna, Austria, July 2003. [Click here for PDF file.](#)
8. *Principles of Real-Time Programming*, Second International Workshop on Embedded Software (EMSOFT), Grenoble, France, October 2002. [Click here for PDF file.](#)

PANEL

1. *Collaboration and Virtualization in Cyber-Physical Systems*, CPS Forum, Cyber-Physical Systems Week, San Francisco, California, April 2009. [Click here for PDF file](#)

COLLOQUIA

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

1. *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.](#)
2. *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.](#)
3. *Designing a Compositional Real-Time Operating System*, ARTIST Summer School on Embedded Systems Design, Shanghai, China, July 2008. [Click here for PDF file.](#)
4. *From Control Models to Real-Time Code Using Giotto*, Summer School on Embedded Systems (EmSys), Salzburg, Austria, June 2003. [Click here for PDF file.](#)
5. *Principles of Real-Time Programming*, Summer School on Embedded Systems (EmSys), Salzburg, Austria, June 2003. [Click here for PDF file.](#)

SEMINARS

1. *Distributed, Modular HTL*, Department of Electrical Engineering and Information Technology, Technical University of Munich, Munich, Germany, June 2009. [Click here for PDF file.](#)
2. *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.](#)
3. *The JAviator: Time-Portable Programming in Java and C*, Hitachi Global Storage Technologies, San Jose, California, September 2008. [Click here for PDF file.](#)
4. *The JAviator: Time-Portable Programming in Java*, Sun Microsystems, Palo Alto, California, September 2008. [Click here for PDF file.](#)
5. *Tiptoe: A Compositional Real-Time Operating System (Process Model and Scheduler)*, EPFL, Lausanne, Switzerland, May 2008. [Click here for PDF file.](#)
6. *Tiptoe: A Compositional Real-Time Operating System (Process Model and Scheduler)*, ETHZ, Zürich, Switzerland, May 2008. [Click here for PDF file.](#)
7. *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.](#)
8. *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.](#)
9. *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.](#)
10. *High-Level Programming of Real-Time Software Systems*, University of Lugano, Lugano, Switzerland, March 2006. [Click here for PDF file.](#)
11. *The JAviator Project*, Center for Hybrid and Embedded Software Systems, UC Berkeley, Berkeley, California, February 2006. [Click here for PDF file.](#)
12. *High-Level Programming of Real-Time and Concurrent Software Systems*, Purdue University, West Lafayette, Indiana, December 2005. [Click here for PDF file.](#)
13. *Traffic Shaping System Calls Using Threading by Appointment*, UC Berkeley, Berkeley, California, September 2005. [Click here for PDF file.](#)
14. *Traffic Shaping System Calls Using Threading by Appointment*, UCLA, Los Angeles, California, August 2005. [Click here for PDF file.](#)
15. *The Embedded Machine: Status and Future Directions*, IBM T.J. Watson Research Center, Hawthorne, New York, March 2005. [Click here for PDF file.](#)
16. *Threading by Appointment*, Center for Collaborative Control of Unmanned Vehicles, UC Berkeley, Berkeley, California, February 2005. [Click here for PDF file.](#)
17. *Real-Time Programming Based on Schedule-Carrying Code*, McGill University, Montreal, Canada, January, 2004. [Click here for PDF file.](#)
18. *The Embedded Machine: Predictable, Portable Real-Time Code*, Verimag, Grenoble, France, November 2001. [Click here for PDF file.](#)
19. *Giotto: A Time-triggered Language for Embedded Programming*, Honeywell, Minneapolis, Minnesota, September 2001. [Click here for PDF file.](#)
20. *Embedded Control Systems Development with Giotto*, Stanford University, Palo Alto, California, November 2000. [Click here for PDF file.](#)

GROUP

POSTDOC

Ana Sokolova, PhD, Technical University of Eindhoven (since 2007).

PHD STUDENTS

Andreas Haas (since 2009); Clemens Krainer (since 2009); Hannes Payer (since 2007); Silviu Craciunas (since 2006); Eduardo Marques (visiting from University of Porto, since 2006); Harald Röck (since 2005); Rainer Trummer (since 2005); Daniel Iercan, PhD, Technical University of Timisoara, 2008.

MASTERS STUDENTS

Martin Aigner (since 2010); Andreas Löcker (since 2007); Clemens Krainer, *JNavigator - An Autonomous Navigation System for the JAviator Quadrotor Helicopter*, 2009; Andreas Haas, *Expiration Classes for Implicit Memory Management*, 2009; Wolfgang Kreil, *Cubic UWB-based Soft Walls for a Micro-UAV*, 2009; Horst Stadler, *A Virtualized Real-Time I/O Subsystem*, 2008; Hannes Payer, *A Compacting Real-Time Memory Management System*, 2007; Bernhard Kast, *Jarol: A Java Control Infrastructure*, 2007; Harald Röck, *Threading by Appointment*, 2006; Marcus Harringer, *Real-Time Java Programming with Logical Execution Times and Real-Time Garbage Collection*, 2005.

TEACHING

UNDERGRADUATE COURSE

Compiler Construction, University of Salzburg, Summer 2010. *Compiler Construction*, University of Salzburg, Summer 2009.

GRADUATE COURSES

Embedded Software Engineering, University of Salzburg, Winter 2009/2010; *Advanced Operating Systems*, University of Salzburg, Winter 2009/2010; *Compiler Construction*, University of Salzburg, Summer 2008; *Operating Systems*, University of Salzburg, Winter 2007/2008; *Compiler Construction*, University of Salzburg, Summer 2007; *Embedded Software Engineering*, University of Salzburg, Winter 2006/2007; *Operating Systems*, University of Salzburg, Winter 2006/2007; *Compiler Construction*, University of Salzburg, Summer 2006; *Theory of Computational Systems*, University of Salzburg, Summer 2006; *Embedded Software Engineering*, University of Salzburg, Winter 2005/2006; *Operating Systems*, University of Salzburg, Winter 2005/2006; *Compiler Construction*, University of Salzburg, Summer 2005; *Theory of Computational Systems*, University of Salzburg, Summer 2005; *Computational Systems Engineering*, University of Salzburg, Winter 2004/2005; *Embedded Software Engineering*, University of Salzburg, Winter 2004/2005; *Embedded Software Engineering*, UC Berkeley (EECS2900), Spring 2002; *Embedded Software Engineering*, UC Berkeley (EECS2900), Spring 2001.

GRADUATE SEMINARS

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 2007/2008; *Software Systems Seminar*, University of Salzburg, Summer 2007; *Computational Systems Seminar*, University of Salzburg, Summer 2004.

PROFESSIONAL ACTIVITIES

CONFERENCE FOUNDER

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

PROFESSIONAL SOCIETIES

Vice-Chair, ACM Special Interest Group on Embedded Systems (SIGBED), 2009–2011.

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).

PROGRAM COMMITTEE 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).

ORGANIZING COMMITTEE CHAIR

Embedded Systems Week (ESWEEK), 2007.

GUEST EDITOR

Journal of Design Automation for Embedded Systems, 2009.

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;

MEMBER OF CONFERENCE PROGRAM COMMITTEES

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 (ICSOFT), 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

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

MEMBER OF WORKSHOP PROGRAM COMMITTEES

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

National Science Foundation (NSF).

JOURNAL REVIEWER

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

ACM SIGPLAN/SIGACT 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 SIGPLAN Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2003; ACM SIGPLAN 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.

SUMMER SCHOOL ORGANIZER

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

RESEARCH GRANTS

NATIONAL (AUSTRIA)

- 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

- 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
- Edward A. Lee, Professor, University of California, Berkeley, USA, eal@eecs.berkeley.edu
- Joseph Sifakis, Professor, Verimag, Grenoble, France, joseph.sifakis@imag.fr
- Marilyn Wolf, Professor, Georgia Institute of Technology, USA, wolf@ece.gatech.edu