

PUBLICATIONS

CHRISTOPH M. KIRSCH

ck@cs.uni-salzburg.at
www.cs.uni-salzburg.at/~ck

CONFERENCE AND WORKSHOP PAPERS

- [1] T.A. Henzinger, C.M. Kirsch, H. Payer, A. Sezgin, and A. Sokolova. Quantitative relaxation of concurrent data structures. In *Proc. Symposium on Principles of Programming Languages (POPL)*. ACM, 2013. Click here for PDF file.
- [2] 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.
- [3] A. Haas, C.M. Kirsch, M. Lippautz, and H. Payer. 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.
- [4] C.M. Kirsch, H. Payer, H. Röck, and A. Sokolova. 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.
- [5] 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.
- [6] C.M. Kirsch, E. Pereira, R. Sengupta, H. Chen, R. Hansen, J. Huan, F. Landolt, M. Lippautz, A. Rottmann, R. Swick, R. Trummer, and D. Vizzini. 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.
- [7] 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.
- [8] H. Chen, R. Hansen, J. Huang, E. Pereira, R. Swick, D. Vizzini, R. Sengupta, C. M. Kirsch, F. Landolt, M. Lippautz, A. Rottmann, and R. Trummer. Cloud computing on wings: Applications to air quality. In *Proc. American Astronautical Society Guidance and Control Conference (AASGNC)*. AAS, 2012.
- [9] C.M. Kirsch, L. Lopes, E.R.B. Marques, and A. Sokolova. Runtime programming through model-preserving, scalable runtime patches. In *Proc. International Conference on Application of Concurrency to System Design (ACSD)*, pages 77–86. IEEE, 2011. Click here for PDF file.
- [10] C.M. Kirsch, H. Payer, H. Röck, and A. Sokolova. Brief announcement: Scalability versus semantics of concurrent FIFO queues. In *Proc. Symposium on Principles of Distributed Computing (PODC)*, pages 331–332. ACM, 2011. Click here for PDF file.
- [11] M. Aigner, A. Haas, C.M. Kirsch, M. Lippautz, A. Sokolova, S. Stroka, and A. Unterweger. Short-term memory for self-collecting mutators. In *Proc. International Symposium on Memory Management (ISMM)*. ACM, 2011. Click here for PDF file.
- [12] C.M. Kirsch, L. Lopes, E.R.B. Marques, and A. Sokolova. Runtime programming through model-preserving, scalable runtime patches. In *Proc. International Workshop on Formal Aspects of Component Software (FACS), Doctoral Track*, volume 6921 of LNCS, pages 290–294. Springer, 2010. Click here for PDF file.
- [13] 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.

- [14] S.S. Craciunas, A. Haas, C.M. Kirsch, H. Payer, H. Röck, A. Rottmann, A. Sokolova, R. Trummer, J. Love, and R. Sengupta. 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.
- [15] 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.
- [16] 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.
- [17] 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.
- [18] 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.
- [19] 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.
- [20] 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.
- [21] 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.
- [22] 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.
- [23] 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.
- [24] 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.
- [25] 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.
- [26] 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.
- [27] C.M. Kirsch and R. Wilhelm. Grand challenges in embedded software. In *Proc. International Conference on Embedded Software (EMSOFT)*, pages 2–6. ACM, 2007.
- [28] 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.
- [29] 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.

- [30] 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.
- [31] 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.
- [32] 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.
- [33] C.M. Kirsch. Threading by appointment. In *Proc. Monterey Workshop*. CRC Press, 2004. Click here for PDF file.
- [34] 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.
- [35] 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.
- [36] 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.
- [37] 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.
- [38] 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.
- [39] 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.
- [40] 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.
- [41] 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.
- [42] 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.
- [43] 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.
- [44] 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.
- [45] F. Jacquemard, C. Meyer, and C. Weidenbach. Unification in extensions of shallow equational theories. In *Proc. International Conference on Rewriting Techniques and Applications (RTA)*, volume 1379 of *LNCS*. Springer, 1998. Click here for PDF file.

- [46] 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.
- [47] 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] S.S. Craciunas, C.M. Kirsch, H. Payer, H. Röck, and A. Sokolova. Temporal isolation in real-time systems: The VBS approach. *To Appear in Software Tools for Technology Transfer*, 2012. Click here for PDF file.
- [2] A. Ghosal, D. Iercan, C.M. Kirsch, T.A. Henzinger, and A. Sangiovanni-Vincentelli. Separate compilation of hierarchical real-time programs into linear-bounded Embedded Machine code. *Science of Computer Programming*, 77(2):96–112, 2012.
- [3] 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.
- [4] 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.
- [5] 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.
- [6] 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.
- [7] 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] Gernot Heiser and Christoph M. Kirsch, editors. *ACM European Conference on Computer Systems, EuroSys 2011, Salzburg, Austria, April 10 - 13, 2011, Proceedings*, New York, NY, USA, 2011. ACM.
- [2] 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.

- [3] 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.
- [4] 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] C.M. Kirsch and A. Sokolova. The logical execution time paradigm. In *Advances in Real-Time Systems*, pages 103–120, 2012.
- [2] 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.
- [3] 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.

POSTERS

- [1] 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.](#)
- [2] 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.](#)

TECHNICAL REPORTS

- [1] C.M. Kirsch, M. Lippautz, and H. Payer. Fast and scalable k-fifo queues. Technical Report 2012-04, Department of Computer Sciences, University of Salzburg, June 2012. [Click here for PDF file.](#)
- [2] T.A. Henzinger, C.M. Kirsch, H. Payer, A. Sezgin, and A. Sokolova. Quantitative relaxation of concurrent data structures. Technical Report 2012-03, Department of Computer Sciences, University of Salzburg, May 2012. [Click here for PDF file.](#)

- [3] C.M. Kirsch, H. Payer, H. Röck, and A. Sokolova. Performance, scalability, and semantics of concurrent FIFO queues. Technical Report 2011-03, Department of Computer Sciences, University of Salzburg, September 2011. [Click here for PDF file.](#)
- [4] S.S. Craciunas, C.M. Kirsch, and A. Sokolova. The power of isolation. Technical Report 2011-02, Department of Computer Sciences, University of Salzburg, July 2011. [Click here for PDF file.](#)
- [5] C.M. Kirsch, L. Lopes, E.R.B. Marques, and A. Sokolova. Runtime programming through model-preserving, scalable runtime patches. Technical Report 2010-08, Department of Computer Sciences, University of Salzburg, December 2010. [Click here for PDF file.](#)
- [6] C.M. Kirsch, H. Payer, and H. Röck. Scal₂: Non-linearizable computing breaks the scalability barrier. Technical Report 2010-07, Department of Computer Sciences, University of Salzburg, November 2010. [Click here for PDF file.](#)
- [7] M. Aigner, A. Haas, C.M. Kirsch, and A. Sokolova. Short-term memory for self-collecting mutators - revised version. Technical Report 2010-06, Department of Computer Sciences, University of Salzburg, October 2010. [Click here for PDF file.](#)
- [8] M. Aigner, A. Haas, C.M. Kirsch, H. Payer, A. Schönegger, and A. Sokolova. Short-term memory for self-collecting mutators. Technical Report 2010-03, Department of Computer Sciences, University of Salzburg, April 2010. [Click here for PDF file.](#)
- [9] S.S. Craciunas, C.M. Kirsch, and A. Sokolova. Power-aware temporal isolation with variable-bandwidth servers. Technical Report 2010-02, Department of Computer Sciences, University of Salzburg, April 2010. [Click here for PDF file.](#)
- [10] 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.](#)
- [11] 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.](#)
- [12] 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.](#)
- [13] 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.](#)
- [14] 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.](#)
- [15] 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.](#)
- [16] 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.](#)
- [17] C.M. Kirsch. Threading by appointment. Technical Report T003, Department of Computer Sciences, University of Salzburg, September 2004. [Click here for PDF file.](#)
- [18] 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.](#)

- [19] 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.](#)
- [20] 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.](#)
- [21] 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.](#)
- [22] 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.](#)
- [23] 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 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.

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>