

Lawrence Rauchwerger

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Education

Ph.D. in Computer Science, University of Illinois at Urbana-Champaign, 1995.

Ph.D. Thesis: *Run-Time Parallelization: A Framework for Parallel Computation*.

Thesis advisor: David Padua.

M.S. in Electrical Engineering, Stanford University, 1987.

M.S. Research Area: Manufacturing Science and Technology for VLSI (Equipment Modeling).

Engineer in Electronics and Telecommunications, Polytechnic Institute,

Department of Electronic Engineering, 1980, Bucharest, Romania.

Diploma Project: Design and Implementation of an Alphanumeric and Graphic Display.

Research Interests

Compilers for parallel and distributed computing

Parallel and distributed C++ libraries.

Adaptive runtime optimizations.

Architectures for parallel computing.

Honors & Awards

NSF Faculty Early Career Development (CAREER) Award, 1998–2002.

Elected Member, International Federation of Information Processing (IFIP), WG3.10, 2003.

IBM Faculty Award 2007 and 2008.

Intel Faculty Award 2005

TEES Fellow, College of Engineering, Texas A&M University 2002-2003.

TEES Fellow, College of Engineering, Texas A&M University 2005-2006.

TEES Select Young Faculty Award, College of Engineering, Texas A&M University 2000-2001

(awarded to two junior faculty each year by the College of Engineering).

Best student paper award, with Silviu Rus, Int. Conf. on Supercomputing, New York, NY, 2002.

Intel Foundation Graduate Fellowship, 1994.

NASA (Langley) High Performance Computing Consortium (HPCC) Graduate Fellowship, 1994.

Experience

Professor, Department of Computer Science and Engineering, Texas A&M University. (9/06 – present)

Co-Director, PARASOL Laboratory (3/98 – present)

Texas A&M University High Performance Computing Steering Committee. (1999 – present)

Visiting Professor, INRIA Futurs, Orsay, France. (9/04 – 11/04, 7/06 – 8/06, 07/08)
 IBM T. J. Watson Research Center, Yorktown Heights, NY. (10/03 – 8/04)

Associate Professor, Department of Computer Science, Texas A&M University. (9/01 – 8/06)

Assistant Professor, Department of Computer Science, Texas A&M University. (8/96 – 08/31/01)

Visiting Scientist, AT&T Research Laboratories, Murray Hill, NJ. (6/96-8/96)

Visiting Assistant Professor, Center for Supercomputing R&D, University of Illinois. (9/95-5/96)

Research Assistant, Center for Supercomputing R&D, University of Illinois. (1/89-5/92, 1/94-5/94)

Teaching Assistant, Computer Science Department, University of Illinois. (1/93-12/93)

Summer Intern, IBM T.J. Watson Research Center, Yorktown Heights, NY. (Summer 1992)

Research Assistant, Center for Integrated Systems, Stanford University. (1986–1988)

R & D Engineer, Varian Associates Inc., Thin Film Technology Division, R&D, Palo Alto, CA. (1984–1985)

Design Engineer, Beckman Instruments Inc., Scientific Instruments Division, Irvine, CA. (1983-1984)

Design Engineer, The Felix Computer Company, R. & D. Department, Bucharest, Romania. (1980–1982)

Research Grants

“Adaptive Parallel Processing for Dynamic Applications” *The National Science Foundation* (CAREER Program) (CCR-9734471), PI: L. Rauchwerger, \$237,000, (includes \$10,000 in REU Supplements, 1999, \$27,000 matching supplement, 2000.) June 1, 1998 – May 31, 2004

“Motion Planning Based Techniques for Modeling & Simulating Molecular Motions” (CCF-0830753), *The National Science Foundation*, PI: N. Amato, co-PI: L. Rauchwerger, \$370,000, 09/15/08–09/14/11.

“A Compositional Approach to Scalable Parallel Software” (CCF-0833199), *The National Science Foundation* (HECURA Program), PI: L. Rauchwerger, co-PIs: N. Amato, B. Stroustrup, \$1,000,000, 09/01/08–08/31/11.

“Institute for Applied Mathematics and Computational Science (IAMCS),” *King Abdullah University of Science and Technology (KAUST)*, PI: J. Calvin, co-PIs: M. Adams, G. Almes, N. Amato, P. Balbuena, W. Bangerth, R. Carroll, C. Douglas, C. Economides, Y. Efendiev, M. Genton, J.-L. Guermond, C. Hansen, J. Hendler, J. Huang, T. Ioerger, C. Johnson, M. Jun, G. Kanschat, P. Kuchment, R. Lazarov, F. Liang, B. Mallick, J. Pasciak, G. Petrova, B. Popov, L. Rauchwerger, H. Sang, G. Qin, W. Rundell, V. Sarin, B. Stroustrup, V. Taylor, J. Walton, W. Zhao. \$25,000,000, 06/01/08–05/31/13.

“Hybrid Analysis for Advanced Restructuring Compilers”, *IBM*, PI: L. Rauchwerger. \$15,000 2007 and \$20,000 2008.

“ARI-LA: A Framework for Developing Novel Detection Systems Focused on Interdicting Shielded HEU” (0736202), *The National Science Foundation* (DNDO-NSF Academic Research Initiative), PI: Warren F. Miller, Jr., co-PIs: M. Adams, N. Amato, W. Bangerth, D. R. Boyle, W. S. Charlton, S. G. Choi, Y. Ding, G. M. Gaukler, J.-L. Guermond, G. Kanschat, P. Kuchment, Y. Kuo, S. P. Khatri, E. W. Lindquist, J. C. Ragusa, L. Rauchwerger, C. Sprecher, A. Vedlitz, September 2007 – August 2010, \$1,440,000, Competitive and subject to peer review.

- “Center for Radiative Shock Hydrodynamics (CRASH),” *The Department of Energy, PSAAP Program*, PI: P. Drake (Michigan); co-PIs: K. Powell (Michigan), J. Holloway (Michigan), Q. Stout (Michigan), M. Adams (Nuclear Engineering, TAMU), N. Amato (CSE, TAMU), T. Gombosi (Michigan), S. Karni (Michigan), E. Larsen (Michigan), B. van Leer (Michigan), B. Mallick (Statistics, TAMU), W. Martin (Michigan), J. Morel (Nuclear Engineering, TAMU), P. Roe (Michigan), L. Rauchwerger (CSE, TAMU), I. Sokolov (Michigan), K. Thornton (Michigan), G. Toth (Michigan). \$17,000,000 (Texas A&M portion \$1,850,000), 04/15/08–03/31/13.
- “CCF: Collaborative Research: Next Generation Compilers for Emerging Multicore Systems,” *The National Science Foundation* PI: L. Rauchwerger co-PIs: G. Dos Reis, B. Stroustrup, (TAMU), D. Padua, M. Garzaran (UIUC). \$480,000 (Texas A&M portion), June 01, 2007 – May 31, 2010.
- “CRS–AES: Collaborative Research: SoftCheck: Compiler and Run-Time Technology for Efficient Fault Detection and Correction in Low nm-Scale Multicore Chips,” *The National Science Foundation* PIs: Maria Garzaran (UIUC) and L. Rauchwerger \$110,000 (Texas A&M portion), August 2006 – July 2008.
- “STAPL: A High Productivity Parallel Programming Infrastructure,” *Intel Corporation*, PI: L. Rauchwerger, \$60,000, November 03, 2005.
- “SmartApps: Middle-ware for Adaptive Applications on Reconfigurable Platforms,” *The Department of Energy, Office of Science (Operating/Runtime Systems for Extreme Scale Scientific Computation Program)*, PI: L. Rauchwerger, co-PIs: M. Adams (Nuclear Engineering), N. Amato, B. Stroustrup, O. Krieger (IBM), J. Moreira (IBM), V. Sarkar (IBM), D. Quinlan (LLNL), \$1,500,000 (Texas A&M portion) September 1, 2004 – August 31, 2007.
- “ITR/NGS: STAPL: A Software Infrastructure for Computational Biology and Physics” (ACI-0326350), *The National Science Foundation (Medium ITR Program)*, PI: L. Rauchwerger, co-PIs: N. Amato, B. Stroustrup, M. Adams (Nuclear Engineering), \$416,000, November 1, 2003 – October 31, 2007.
- “Efficient Massively Parallel Adaptive Algorithm for Time-Dependent Transport on Arbitrary Spatial Grids,” *The Department of Energy*, PI: M. Adams (Nuclear Engineering), co-PIs: N. Amato, P. Nelson, L. Rauchwerger, \$1,668,827, May 1, 2002 – March 31, 2006.
- “Geometry Connectivity and Simulation of Cortical Networks”, *Texas Higher Education Coordinating Board*, PI: N. Amato co-PI: L. Rauchwerger \$240,000 January 1, 2002 - August 31, 2004.
- “ITR/SY: Smart Apps: An Application Centric Approach to Scientific Computing”, *The National Science Foundation* (ACR-0113971), PI: L. Rauchwerger, co-PI: N. Amato, \$463,809, September 1, 2001 – August 31, 2005.
- “ITR/AP: A Motion Planning Approach to Protein Folding Simulation”, *The National Science Foundation* (CCR-0113974), PI:N. Amato, co-PI: L. Rauchwerger, \$318,000, September 1, 2001 – August 31, 2005.
- “SmartApps: Smart Applications for Heterogeneous Computing,” (EIA-9975018), *The National Science Foundation (Next Generation Software Program)*, PI: L. Rauchwerger, co-PI: N. Amato, J. Torrellas (Univ. Illinois at Urbana-Champaign), \$610,000 October 1, 1999 – August 31, 2003.
- “PARASOL: An Adaptive Framework for Parallel Processing” (ACI-9872126), *The National Science Foundation*, PI: L. Rauchwerger, co-PI: N. Amato, \$199,662, January 1, 1999 – December 31, 2002.
- “Efficient Massively-Parallel Implementation of Modern Deterministic Transport Calculations” (B347886), *Department of Energy (ASCI ASAP Level 2 and 3 Programs)*, PI: M. Adams (Nuclear Engineering), co-PIs: N. Amato, P. Nelson, L. Rauchwerger, \$889,000, October 21, 1998 – March 31, 2002.
- “Parallel Algorithms for Graph Cycle Detection,” *Sandia National Laboratory*, PI: L. Rauchwerger, \$93,448, September 1, 1999 – January 15, 2002.

“Develop the How-to of a Qualified Compiler and Linker”, *Aerospace Vehicle Space Institute (AVSI)*, PI: L. Rauchwerger, March 01, 2001 – January 31, 2002. \$45,500,

Fellowship, Equipment, and Software Grants

“Student Travel Support for the 16th International Conference on Parallel Architecture and Compiler Techniques (PACT), September 2007,” *The National Science Foundation*, PI: Lawrence Rauchwerger, Co-PI: Nancy M. Amato, \$12,000, September 1, 2007 – August 31, 2008.

“CRI: A Cluster Testbed for Experimental Research in High Performance Computing” *The National Science Foundation*, PI: V. Taylor co-PI: N. Amato, L. Rauchwerger, \$537,000, May 15, 2006 – April 30, 2009.

“Workshop NGS: Support for the Workshop on Languages and Compilers for Parallel Computing (LCPC),” *The National Science Foundation*, PI: Lawrence Rauchwerger, Co-PI: Nancy M. Amato, \$15,000, September 1, 2003 – August 31, 2004.

“MRI: Development of Brain Tissue Scanner,” *The National Science Foundation*, PI: B. McCormick, co-PIs: N. Amato, J. Fallon (UCI), L. Rauchwerger, \$105,000 + \$153,000 funds from Texas A&M. September 1, 2000–July 31, 2001.

“Education/Research Equipment Grant – HP V-class Shared Memory Multiprocessor Upgrade,” *Hewlett-Packard*, PI: Lawrence Rauchwerger and Nancy Amato, May 2000, approximately \$580,000.

“Research Equipment Grant – 16 Processor V-class Shared Memory Multiprocessor Server,” *Hewlett-Packard Co.*, PI: L. Bhuyan, co-PIs: N. Amato, L. Rauchwerger, \$1,200,000, 1998.

“Fellowships in Robotics, Training Science, Mobil Computing and High Performance Computing” (P200A80305), *U.S. Department of Education (GAANN Fellowship Program)*, PI: R. Volz, co-PIs: N. Amato, L. Everett, J. Welch, co-Investigators: L. Rauchwerger, J. Trinkle, N. Vaidya, J. Yen, Texas A&M University, \$601,224, August 15, 1998 – August 14, 2001.

Professional Service & Activities

External Reviewer

University of Houston’s Grants to Enhance and Advance Research (GEAR) Program, 2008.

NSF Panelist

1998, 1999, 2000, 2002, 2008.

Editorial Board Member

Int. Journal of Parallel Processing (IJPP), since 2003.

Guest Editor:

Int. Journal of Parallel Computing, 2002, Special Issue on Selected Papers from IWACT’2001. Journal of Parallel Computing, Special Issue on *Parallel Processing for Irregular Applications*, 2000.

Int. Journal of Parallel Computing, 2000, Special Issue on Selected Papers from ICS’99.

Steering Committee Member:

Workshop on Languages and Compilers for Parallel Computing (LCPC), since 2007.

Int. Conf. on Parallel Architectures and Compilation Techniques (PACT) (2007–2010).

Program Chair

16th Int. Conf. on Parallel Architectures and Compilation Techniques (PACT), 2007.

16th Workshop on Languages and Compilers for Parallel Computing (LCPC), 2003.

Program Committee Member:

Int. Symp. on Computer Architecture (ISCA), 2008.
Exploiting Parallelism using Transactional Memory and Hardware Assisted Methods (EPHAM), 2008.
IEEE Int. Conf. on Computational Science and Engineering (CSE), 2008.
Int. Conf. on High Performance Embedded Architectures & Compilers (HiPEAC), 2007, 2008, 2009.
Int. Conf. on Parallel and Distributed Systems (ICPADS), 2007
ACM SIGPLAN Symp. on Library-Centric Software Design (LCSD), 2007.
Int. Conf. for High Performance Computing and Communications (SC07), 2007.
Int. Parallel and Distributed Processing Symp. (IPDPS), 2002, 2006, 2007.
Int. W-shop on High-Level Parallel Programming Models and Supportive Environments(HIPS), 2007.
ACM Int. Conf. on Supercomputing (ICS), 2000, 2006, 2007.
Int. Conf. on High-Performance Embedded Architectures and Compilers (HiPEAC), Belgium, 2007.
Int. Conf. on High Performance Computing (HiPC), India, 2000, 2003, 2007, 2008.
Int. Conf. on Computer Design (ICCD), 2006.
Int. Conf. on High Performance Computing and Communications (HPCC), 2006.
ACM Int. Conf. on Computing Frontiers, Italy, 2006.
Int. IEEE W-shop on High Performance Computational Biology (HICOMB), 2005;
Int. Conf. on High Performance Computing and Communications (HPCC-05), Italy, 2005;
Workshop on Languages and Compilers for Parallel Computing (LCPC), 2002, 2004, 2005;
Workshop on Patterns in High Performance Computing, Champaign, IL, 2005;
ACM SIGPLAN Symp. Principles and Practice of Parallel Programming (PPoPP), 2005;
High Performance Computer Architecture Conf. (HPCA), 2001, 2002, 2004;
Int. Symp. on Parallel Architectures, Algorithms and Networks (I-SPAN), Philippines, 2002;
Int. Conf. on Parallel Processing (ICPP), 1999, 2000;
Int. Conf. on Compiler Construction (CC), 1999, 2000;
Int. Conf. on Parallel Architecture and Compilation Techniques (PACT), 1999;
First Workshop on Parallel Computing for Irregular Applications, Orlando, FL, January 1999;

Workshop and Publications Chair:

High Performance Computer Architecture Conf. (HPCA-6), Toulouse, France, January 2000.

Exhibits Chair:

ACM Int. Conf. on Supercomputing (ICS'02), New York, NY, June 2002.

Referee for Scientific Journals and Conferences.

Senior Member IEEE, Member ACM and IFIP WG3.10.

Associate Member HiPEAC

Significant University and Departmental Service and Activities

Texas A&M University High Performance Computing Steering Committee, 1999 – present.

Senator, Faculty Senate, Texas A&M University, 2001–2005.

Faculty Search Committee, 2002–2003, 2004–2005, 2006–2007, 2007–2008.

Department Head Search Committee, 2001–2002.

Endowed Chair Search Committee, 2001–2002.

Computer Engineering Committee, 2002-2003.

Graduate Advisory Committee (GAC), 2001–2002, 2006–present

Colloquium Committee. 1998–1999, 1999–2000, 2001–2002 (Chair). 2002–2003 (Chair).
Advisory Committee 2001-2002.
Computer Services Advisory Committee, 1997–1998.
Graduate Admissions and Awards Committee, 2000–2001, 2004–2005, 2006-2007.
Library Committee. 1998–1999, 1999–2000 (Chair).
Total Quality Management (TQM). 1997–1998.

Courses Taught

Special Summer Course:

“Parallel Programming Models”, ACACES 2007: Third International Summer School on Advanced Computer Architecture and Compilation for Embedded Systems July 15–20, 2007 L’Aquila, Italy.

Graduate:

CPSC-605: Advanced Compiler Design (Fall 96, 97, 98, 99, 00, 01, 02; Spring 05, 07, 09)
CPSC-614: Computer Architecture (Spring 03)
CPSC-654: Supercomputing (Spring 99, 01, 06, 08)
CPSC-681: Graduate Seminar (Spring 07, 08, Fall 08)
CPSC-689: Advanced Topics in Compiler Design (Spring 00, 02, 03)
CPSC-689: Special Topics: Runtime Systems for Parallel Computing (Spring 06)

Undergraduate:

CPSC-434: Compiler Design (Spring 97, 98, 99, 00, 01, 02, 05, 06, 07, 08)
CPSC-481: Undergraduate Seminar (Spring 07, 08, Fall 09)

Research Supervision

Post Doctoral

Mauro Bianco, Ph.D., Oct. 2007 – present.

Graduated PhD Students

Alin Jula, Ph.D. August 2008. “Improving with Dynamic Memory Allocation”

Current position: SAP Research Labs, Palo Alto, CA.

Silvius Rus, Ph.D. December 2006, “Hybrid Analysis and its Application to Dynamic Compiler Optimization”

Current position: Google, Mountain View, CA.

Hao Yu, Ph.D. August 2004, “Run-time Optimizations of Adaptive Irregular Applications.”

Current position: IBM T.J. Watson Research Center, Yorktown Heights, NY

Ye Zhang, Ph.D. (UIUC) May 1999, (co-advised with Prof. Josep Torrellas, University of Illinois), “Hardware for Speculative Run-time Parallelization in Distributed Shared-Memory Multiprocessors”,

Current position: Oracle Corporation, CA.

Graduated Masters Students

Devang Patel, M.S. August 1998, “Compiler Integration of Speculative Run-Time Parallelization.”

Current position: Software Engineer, Apple Computer, Sunnyvale, CA.

Francisco Arzu, M.S. Summer 2000, “STAPL: Standard Templates Adaptive Parallel Library.”

Current position: Consultant and partner, ClinicalWeb.com, Austin, TX

Julio Carvallo De Ochoa, M.S., Summer 2000, “Parallelization of Loops with Recurrence and Unknown Iteration Space”,

Current position: Software Engineer, Wayne Industries, Austin, TX.

William McLendon III, M.S., Fall 2001, “Parallel Detection and Elimination of Strongly Connected Components for Radiation and Transport Sweeps”,

Current position: Software Engineer, Scalable Computing Systems Dept., Sandia National Laboratory, Albuquerque, NM.

Mothi Mohan Ram Thoppae, M.S. (EE), Fall 2001, “Hardware and Software Co-techniques for Branch Prediction”,

Current position: Component Design Engineer, Intel Corporation, Santa Clara, CA.

Timmie Smith, M.C.S., Summer 2002,

Current Position: Ph.D. Student, Texas A&M University, Dept. of Computer Science.

Steven Saunders, M.S., Spring 2003, “A Parallel Communication Infrastructure for STAPL”,

Current Position: Software Engineer, Raytheon, Dallas, TX.

Francis Dang, M.S., Spring 2007, “Speculative Parallelization of Partially Parallel Loops”,

Current Position: Supercomputing Center, Texas A&M University, College Station, TX.

Tao Huang, M.S., Spring 2007, “Generic Implementation of Parallel Prefix Sums”,

First Position: VMware, CA.

Current Graduate Students

Marinus Pennings, research area: Parallelizing Compilers, run-time optimization and compilation.

Ioannis Papadopoulos, research area: Operating Systems for SmartApps and STAPL.

Timmie G. Smith, research area: Parallel C++ Library,

Gabriel Tanase, research area: Parallel C++ Library,

Nathan Thomas, research area: Parallel C++ Library.

Shuai Ye, research area: Parallel C++ Library,

Undergraduate Research Projects

Alexandar Vitorovic, Belgrade University, Fall 08, Compilers.

Michael Souza, Longwood University, Summer 07, STAPL.

William Harris, Purdue University, Summer 06, Speculative Parallelization. Current Position: Univ. of Wisconsin

Aditya Awasthi, IIT, India, Summer 06, STAPL.

Saransh Mittal, IIT, India, Summer 06, STAPL.

Carson Brownle, Summer 2005, CS REU Program. Visualization tool for graphs.

Anna Tikhonova, Summer 2005, CRA-W DMP Program, Parallel algorithms in STAPL. Current Position: UC Davis, CA

Armando Solar, Nuclear radiation transport simulation. 01/01 – 07/03.

Current Position: Assistant Professor, MIT

Reshma Ananthakrishnan, Test suite for STAPL, 04/01 – 05/04.

Current Position: Microsoft, Redmond, WA

Andrew Cox, Software Branch Prediction, 9/00 - 5/01. Current Position: Microsoft, Redmond, WA

Steven Saunders, Adaptive RMI for STAPL, 1/00 - 12/00. Current Position: Raytheon, Dallas, TX

Carrie Searcey, Java Parallel Library, 5/00 - 8/00. Current Position: IBM, Raleigh, NC
Michael Peter, Hardware for speculative run-time parallelization, 1/99-7/99.
Current Position: PhD student, TU Dresden, Germany.
Francis Dang, Run-time parallelization (CPSC 485 project), 6/98 - 6/99.
Current Position: Supercomputing Center, Texas A&M
William McLendon, Performance Monitoring (CPSC 485 project), 6/98 - 6/99.
Current Position: Sandia National Labs, Albuquerque, NM.
Timmie Smith, STAPL: Standard Parallel Adaptive C++ Library, (CPSC 485 project) 7/99 - 12/99.
Current Position: PhD student. Texas A&M.

Invited Presentations (Selected, last 5 years)

Panel: “Can machine learning help to solve the multicore code generation issues?” at the third SMART09 workshop, Paphos, Cyprus, 2009.

“Parallel Programming Models”, ACACES 2007: Third International Summer School on Advanced Computer Architecture and Compilation for Embedded Systems July 15–20, 2007 L’Aquila, Italy (short course).

“Automatic Parallelization with Hybrid Analysis”,
UT San Antonio, Nov. 2008.
ScalPerf, Bertinoro, Italy, Sept. 2008.
UT Austin, TX, March 2008.
IIT Kanpur, India, December 2007.
IBM Austin Research Labs, Austin, TX, March 2007.
Dagstuhl Seminar 07361 on Programming Models for Ubiquitous Parallelism, Schloss Dagstuhl, Wadern, Germany, Sept. 2007.
School of Information and Computer Science, Irvine, CA, Feb. 2007,
SIAM Conf. on Computational Science and Engineering, San Francisco, CA, February, 2006.
IBM, T.J. Watson, Yorktown Heights, NY, April, 2005.
HP, Cupertino, CA, Feb. 2006
Compiler & Architecture Int. Seminar, IBM Haifa Research Labs, Haifa, Israel, December, 2005.
Fudan University, Shanghai, China, December, 2005.

“STAPL: A High Productivity Parallel Programming Environment”, Universite de Versailles, Versailles, July 2008
Electricite de France (EDF), Paris, July, 2008
Dagstuhl Seminar 07361 on Programming Models for Ubiquitous Parallelism, Schloss Dagstuhl, Wadern, Germany, Sept. 2007.
IFIP WG 2.11 Annual Meeting, Schloss Dagstuhl, Wadern, Germany, January 25, 2006.

“Efficient Massively Parallel Adaptive Algorithms for Time-Dependent Transport on Arbitrary Grids.”
SIAM Conf. on Computational Science and Engineering, San Francisco, CA, February, 2006.

“SmartApps: Middleware for Adaptive Applications on Reconfigurable Platforms”,
FAST-OS PI Meeting/Workshop, Boston, MA, June, 2006,
FAST-OS PI Meeting/Workshop, Rockville, MD, June, 2005.

“STAPL: A High Productivity Programming Infrastructure for Parallel & Distributed Computing”,
Workshop on Patterns in High Performance Computing, Urbana, IL, May, 2005.
2005 SIAM Conf. on Computational Science and Engineering, Orlando, FL, February, 2005.

- “SmartApps: Adaptive Applications for High Productivity / High Performance”,
 UPC, Barcelona, Spain, December, 2004
 Technical University, Delft, The Netherlands, November, 2004
 Workshop on Scalable Approaches to High Performance and High Productivity Computing, Bertinoro
 Int. Center for Informatics (ScalPerf04), Italy, September 2004.
 Universita di Pisa, Italy, November, 2004.
 INRIA, Paris, France, 2004.
 IBM, T.J. Watson, Yorktown Heights, NY, 2004.
- “STAPL: A High Productivity Programming Infrastructure for Parallel and Distributed Computing”,
 Workshop on Domain Specific Languages for Numerical Optimization Argonne National Laboratory,
 August 18-20, 2004.
 IFIP WG3.10, London, UK, February, 2004.
- “Memory Consistency Issues in STAPL”,
 DAGSTUHL Seminar: Hardware and Software Consistency Models: Programmability and Performance,
 Schloss Dagstuhl, Wadern, Germany, October 2003.

Publications in Refereed Journals, Conferences and Workshops

(Organized by topic; most papers available at <http://parasol.tamu.edu/~rwerger/>)

Compilers

- [1] S. Rus, M. Pennings and L. Rauchwerger, “Implementation of Sensitivity Analysis for Automatic Parallelization”, *Proc. of the 21-th Workshop on Languages and Compilers for Parallel Computing (LCPC)*, Edmonton, Canada, Aug. 2008.
- [2] S. Rus, M. Pennings and L. Rauchwerger, “Sensitivity Analysis for Automatic Parallelization on Multi-Cores”, in *Proc. of the ACM Int. Conf. on Supercomputing (ICS07)*, Seattle, WA, June 2007, pp. 263–273.
- [3] S. Rus, G. He and L. Rauchwerger, “Scalable Array SSA and Array Data Flow Analysis”, in *Proc. of the 18-th Workshop on Languages and Compilers for Parallel Computing (LCPC)*, Hawthorne, NY, 2005. *Lecture Notes in Computer Science (LNCS)*, Springer-Verlag.
- [4] S. Rus, G. He, C. Alias and L. Rauchwerger, “Region Array SSA”, in *Proc. of the 15-th Int. Conf. on Parallel Architecture and Compilation Techniques (PACT)*, Seattle, WA, 2006.
- [5] Hao Yu, Lawrence Rauchwerger, “An Adaptive Algorithm Selection Framework for Reduction Parallelization”, *IEEE Transactions on Parallel and Distributed Systems*, **17** (19),2006, pp. 1084–1096.
- [6] H. Yu, D. Zhang and L. Rauchwerger, “An Adaptive Algorithm Selection Framework”, in *Proc. of the 13th Int. Conf. on Parallel Architecture and Compilation Techniques (PACT)*, Antibes Juan-les-Pins, France, October, 2004, pp. 278–289.
- [7] S. Rus, D. Zhang and L. Rauchwerger, “The Value Evolution Graph and its Use in Memory Reference Analysis”, in *Proc. of the 13th Int. Conf. on Parallel Architecture and Compilation Techniques (PACT)*, Antibes Juan-les-Pins, France, October, 2004, pp. 243–254.

- [8] S. Rus, D. Zhang and L. Rauchwerger, “Automatic Parallelization Using the Value Evolution Graph”, in *Proc. of the 17-th Workshop on Languages and Compilers for Parallel Computing (LCPC)*, West Lafayette, IN, 2004. Also in *Lecture Notes in Computer Science (LNCS)*, **3602**, Springer-Verlag, 2005, pp. 379–393.
- [9] S. Rus, D. Zhang and L. Rauchwerger, “The Value Evolution Graph and its Use in Memory Reference Analysis”, in *Proc. of the 11-th Workshop on Compilers for Parallel Computing (CPC)*, Seon Monastery, Chiemsee, Germany, 2004, pp. 175–186. Invited Paper.
- [10] S. Rus, L. Rauchwerger and J. Hoeflinger, “Hybrid Analysis: Static & Dynamic Memory Reference Analysis”, in *Int. Journal of Parallel Programming*, Special Issue, **31**(4), 2003, pp. 251–283.
- [11] H. Yu, F. Dang, and L. Rauchwerger, “Parallel Reductions: An Application of Adaptive Algorithm Selection”, *Proc. of the 15-th Workshop on Languages and Compilers for Parallel Computing (LCPC)*, Washington, DC., July, 2002. Also in *Lecture Notes in Computer Science (LNCS)*, Springer-Verlag, **2481**, 2005, pp. 188–202.
- [12] S. Rus, L. Rauchwerger and J. Hoeflinger, “Hybrid Analysis: Static & Dynamic Memory Reference Analysis”, in *Proc. of the ACM 16-th Int. Conf. on Supercomputing (ICS02)*, New York, NY, June 2002, pp. 274–284. **Best Student Paper Award**.
- [13] F. Dang, H. Yu and L. Rauchwerger, “The R-LRPD Test: Speculative Parallelization of Partially Parallel Loops”, in *Proc. of the Int. Parallel and Distributed Processing Symposium (IPDPS2002)*, Fort Lauderdale, FL, April 2002, pp. 20–30.
- [14] L. Rauchwerger, N.M. Amato and J. Torrellas, “SmartApps: An Application Centric Approach to High Performance Computing”, in *Proc. of the 13th Annual Workshop on Languages and Compilers for Parallel Computing (LCPC)*, Yorktown Heights, NY, August 2000. Also in *Lecture Notes in Computer Science*, **2017**, Springer-Verlag, 2000, pp. 82–96.
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