Rudolf Eigenmann
Curriculum Vita
February 2021

Contact Information:
University of Delaware
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Education:

Diploma (Master's) in Electrical Engineering   1980 ETH Zürich, Switzerland
PhD in Electrical Engineering / Computer Science 1988 ETH Zürich, Switzerland

Professional Experience:

1980–1987	Research Assistant, Electronics Department, ETH Zurich, Switzerland.
1988	Postdoctoral Research Associate, Electronics Department, ETH Zurich, Switzerland.
1988–1992	Senior Software Engineer and Adjunct Assistant Professor of Computer Science, Center for Supercomputing Research and Development, University of Illinois at Urbana-Champaign.
1992–1995	Visiting Research Associate Professor, Coordinated Science Laboratory and Adjunct Associate Professor, Dept. of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign.
1995–1998	Assistant Professor, School of Electrical and Computer Engineering, Purdue University. Adjunct Associate Professor, Dept. of Computer Science, University of Illinois at Urbana-Champaign. Adjunct Associate Professor, Dept. of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign.
1998–2003	Associate Professor, School of Electrical and Computer Engineering, Purdue University.
2005	Visiting Professor, Polytechnical University of Catalonia (UPC), Barcelona Spain.
2006–2008	Interim Director, Computing Research Institute, Purdue University.
2006–2008	Associate Director, Cyber Center, Purdue University.
2008–2011	Technical Director for HPC, Computing Research Institute, Purdue University.
2003–present	Professor, School of Electrical and Computer Engineering, Purdue University (courtesy appointment, since 2017)
2013–2017	Program Director, National Science Foundation, Directorate for Computer and Information Science & Engineering, Division of Advanced Cyberinfrastructure
2017	Visiting Professor, Federal Institute of Technology (ETH), Zurich, Switzerland
2020	Program Director, National Science Foundation, Directorate for Computer and Information Science & Engineering, Division of Computing and Communication Foundations (CCF)
2017–present	Professor, Department of Electrical and Computer Engineering, Department of Computer and Information Sciences (courtesy appt.), University of Delaware

Honors and Awards:

- Fellow of the IEEE

- NSF CAREER Award, 1997

- Chicago Area Alumni Young Faculty Award, 1996

- Awards for sustained and "SPECtacular" contributions to the Standard Performance Evaluation Corporation (SPEC), 1998, 1999, 2000, 2001 (four awards).

- IEEE Distinguished Visitor, 2003–2005

- Purdue University "Seed For Success," 2004. (Given to investigators for their first funding award of $1M or more).

- Best paper nomination, IEEE International Symposium on High Performance Distributed Computing, 2007, student author: Seyong Lee.

- Initiator and co-PI on the NEES Operations grant 2009-2014 (CMMI-0927178), the largest external funding award ever received by Purdue, at $105M. (Recognized annually by Purdue University, 2010–2014.)

- Best student paper nomination, ACM International Conference on Supercomputing, 2009, student co-author: Tanzima Islam.

- Best student paper award, ACM International Conference on Supercomputing, 2010, student co-author: Seyong Lee.

- Best student paper nomination, ACM International Conference on Supercomputing, 2012, student co-author: Tanzima Islam.

- Faculty-cluster award for "Big Data". Purdue-internal award of six faculty positions to initiate reseach program (with co-chair Sunil Prabhakar), 2013.

- Top-10 Most-cited PPoPP (ACM Symposium on Principles and Practice of Parallel Programming) paper between 2009 and 2014 - Seyong Lee, Seung-Jai Min and Rudolf Eigenmann, "OpenMP to GPGPU: A Compiler Framework for Automatic Translation and Optimization," 2009.

- Best paper nomination, ACM International Symposium on Principles and Practice of Parallel Programming, 2017, co-authors: Tsung Tai Yeh, Amit Sabne, Putt Sakdhnagool, and Timothy G. Rogers.

- Advisory Committee Member, Science Gateway Institute, San Diego Supercomputer Center, 2011–2013.

- XSEDE Advisory Board member, 2018-present. XSEDE is a $110M NSF Cyberinfrastructure project.

- MolSSI (National Science Foundation, The Molecular Sciences Software Institute) Advisory Board Member, 2019–present.

- Advisory Board member, Institute for Advanced Computational Science, Stony Brook University, 2020–present.

Research Grants and Contracts Received:

1. PI, DARPA contract "New Generation Parallelizing Compiler," Sept. 1992–Aug. 1995, (with: David Padua,) University of Illinois, $1,662,430.

2. ARPA AASERT supplement to above grant, $90,000, 1993-1995.

3. PI, Technical Testing Agreement between the University of Illinois and the Standard Performance Evaluation Corporation, July 1995, $4500.

4. PI, subcontract with the University of Illinois/ DARPA. "An Optimizing Compiler for Parallel Workstations and Scalable Multiprocessors." Sept 95–Aug 98, $162,510.

5. PI, "Interactive Compilers and Software Engineering Tools for High-Performance Computer Applications." Purdue Research Foundation, Sept. 1996 – Aug. 1997, $11,666.

6. Co-PI, "Hierarchical Processors-and-Memory Architecture for High Performance Computing," National Science Foundation, Sept 1996 – Jan 1997, (with: PI: José Fortes, co-PI: Valerie Taylor (Northwestern University),) $100,000.

7. Co-PI, "Symmetric Multiprocessor for Research on Parallel Architectures, Compilers, Applications and On-Demand Network-Computing," National Science Foundation, Instrumentation Grant, January 97. (with: PI: José Fortes, co-PIs: Mark Lundstrom, Valerie Taylor (Northwestern University)), $119,937.

8. PI, "Guiding Computer Systems Research, Development, and Education with Real Applications and Advanced Tools." National Science Foundation/CAREER award, May 1997–Apr 2001, $205,000.

9. PI, Academic Equipment Grant from Sun Microsystems, June 1997, $18,495.

10. PI, "Interactive Compilers and Software Engineering Tools for High-Performance Computer Applications," Purdue Research Foundation, Sept 1997 – Aug. 1998, $11,666 (renewal grant of item 5).

11. PI, "CRCD: Integration of Computer Architecture and Parallel Programming Tools into Computer Science and Engineering Curricula through Network Computing Hubs," National Science Foundation, Sept 15, 1998 – Aug 31, 2001, (with: co-PIs: José Fortes (University of Florida), James Lehman, Valerie Taylor (Northwestern Univ), Alok Choudhary (Northwestern Univ.), Luis Vidal (Chicago State), Jan-Jo-Chen (Chigaco State), $400,000.

12. PI, "SIRG - Computational Science and Engineering Program," Purdue Research Foundation, Aug. 1998 – Aug. 1999, $12,635.

13. PI, "Gift Funds from the Standard Performance Evaluation Corporation," Sept. 1998–May 1999, $6,000.

14. PI, "Compiling for Speculative Architectures," National Science Foundation, Sept 1, 1999 – Aug 31, 2002, (with: co-PIs: T.N. Vijaykumar and Babak Falsafi (Carnegie Mellon)), $300,000.

15. PI, "Infrastructure for Cluster and Parallel Systems Research," March 15 2000 – Feb 28 2003, (with: co-PIs: T.N. Vijaykumar and Babak Falsafi (Carnegie Mellon)), $105,835.

16. Co-PI, "Network Computer for Computer Architecture Research and Education (NETCARE)," National Science Foundation, Sept 1, 1999 – Aug 31, 2003, (with: PI: J. Fortes, co-PIs: M. Livny (Univ. of Wisconsin), V. Taylor (Northwestern), $1,027,000.

17. PI, "Performance Evaluation and Benchmarking with Realistic Computer Applications," Purdue Research Foundation, $11,666/year (1999 and 2000).

18. Co-Director, "Interdisciplinary Fellowship Program For Computational Sciences and Engineering," Dept. of Education, GAANN (Graduate Assistance in Areas of National Needs) program, (Director: Thomas Downar, Co-Directors: A. Lyrintzis, S. King, J. Mathur), Aug 2001–2004, $327,600.

19. PI, "An OpenMP Environment for Wide-Area Network Computing," National Science Foundation, Sept. 15 2001 – Aug. 31 2004, $350,000, (Coordinated proposal with David Padua, Univ. of Illinois, of additional $350,000.)

20. PI, Gift funds from Intel Corporation $15,000. December 2001.

21. Co-PI, "Indiana-Purdue Grid (IP-grid)", National Science Foundation, $1,400,000, (with PI; Jim Buttom (PI), co-PIs: Catherine Rosenberg, Chris Hoffmann, Eugene Spafford, Douglas Comer,) September 2003.

22. PI, "Compiler and Runtime Support for Dynamically Adaptive Computation", (with co-PI: Samuel Midkiff,) $250,000, National Science Foundation, December 2004.

23. PI, "Internet Sharing of Machines, Data, and Applications in Nuclear Engineering," $25,880, Purdue Research Foundation, 2004.

24. PI, "Sharing Resouces on the Northwest Indiana Computational Grid (NWIC-GRID)", $20,129, U.S. Department of Energy, 2005.

25. PI, "SGER: Compiler-driven Adaptive Execution," $57,000, National Science Foundation, 2006.

26. PI, "CRI: CRD – Supporting the Cetus Compiler Infrastructure for the Community," (with co-PI: Samuel Midkiff,) $475,000, National Science Foundation, 2007.

27. PI, "CSR-AES: Adaptive Optimization for Dynamically Discovered Hardware and Software Sources," (with co-PI: Samuel Midkiff,) $300,000, National Science Foundation, 2007.

28. co-PI, "CRI: IAD: Accelerator-Based High Performance Computing," (with PI; Vijay Pai (PI), co-PIs: Mithuna Thottethodi, Sam Midkiff, Faisal Saied, Vijay Raghunathan, Charlie Hu), $492,268, , 4/1/2008 - 3/31/2009.

29. PI, "OMP-D: Shared-Address-Space Model and Programming System for High-End Computing," $608,666.00, National Science Foundation, 10/01/2008 to 09/30/2011.

30. co-PI, "High-level Programming Models and frameworks for GPGPU-based Computing," (with PI: Anand Raghunathan), $477,739, National Science Foundation, 08/15/2009 to 07/31/1012.

31. co-PI, "Network for Earthquake Engineering Simulation (NEES) Operations," (with PI: Juli Ramirez, co-PIs: Barbara Fossum, Ellen Rathje–U. Texas, Thalia Anagnos-San Jose State U.), $105,000,000, National Science Foundation, 10/01/2009 to 09/31/2014.

32. Co-Director, "An Interdisciplinary Fellowship Program For Computational Sciences and Engineering," Dept. of Education, GAANN (Graduate Assistance in Areas of National Needs) program, (Director: A. Lyrintzis, Co-Directors: Rudolf Eigenmann, Michael Grisbkov, Sabre Kais, Jyoti Mathur, Alex Pothen, and Robert Skeel), Aug 2009–2012, $653,280.

33. co-PI, "Parallel Programming Model and Compiler Optimization Technology for Heterogeneous Multi-Core Architecture LRB," (with PI: Zhiyuan Li), Intel Corporation, $75,000, 11/01/2009 10/31/2010.

34. PI, "NEES Operations," $16,795 each year, Purdue Research Foundation, 2009, 2010, and 2011.

35. PI, Gift funds from Intel Corporation, $30,000, May 2012.

36. IPA Agreement, National Science Foundation, June 2013–2017, full salary compensation.

37. PI, "The Xpert Network: Synergizing National Expert-Assistance and Tool-Support Teams for Computational and Data-Intensive Science," National Science Foundation, $300,000, 2018-2021.

38. co-PI, "EAGER: Measuring Real World Application Performance on Next-Generation Computing Systems," National Science Foundation, (with PI: Robert Henschel, Indiana University, co-PI: Sunita Chandrasekaran, University of Delaware), $300,000, 2018-2021.

39. PI,"MRI: Acquisition of a Big Data and High Performance Computing System to Catalyze Delaware Research and Education", Co-PIs: Benjamin Bagozzi, Arthi Jayaraman, William Totten, Cathy Wu, National Science Foundation, $1,399,992 plus $599,996 University of Delaware cost-share, 2019–2021.

40. co-PI, (PI: Marianna Safronova, University of Delaware, Dept. of Physics) "Community Portal for High-Precision Atomic Physics Data and Computation", National Science Foundation, $559,999, 10/01/2019–9/30/2022.

Key Activities at the National Science Foundation, 2013–2017

- Cognizant Program Officer with oversight responsibility of the award "eXtreme Science and Engineering Discovery Environment (XSEDE)," $121M+$105M Cooperative Agreements with the University of Illinois and partner institutions, (2013–2017).

- Cognizant Program Officer with oversight responsibility of the award "Technology Audit Service," $8M Cooperative Agreement with the University at Buffalo and partner institutions, (2014-2015).

- Cognizant Program Officer with oversight responsibility of the award "Technology Audit Insertion Service," $7M Cooperative Agreement with the University of Illinois and partner institutions, (2014–2016).

- Cognizant Program Officer with oversight responsibility of the award "XD Metrics Service Audit Service," $9M Cooperative Agreement with the University at Buffalo and partner institutions, (2015).

- Cognizant Program Officer for National Academy Study on "Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science and Engineering in 2017-2020.

- Program Director for NSF/CISE programs: SI2 (Software Sustainability, 2013–2014), XPS (eXtreme Parallelism and Scalability, 2014–2015), STCI (Strategic Technologies for Cyberinfrastructure, 2014-present), BRAP (Benchmarks of Real Application Performance, 2014–2017), PRAC (Petascale Resource Allocation, 2014–2015).

- Member of NITRD (Networking and Information Technology Research and Development) HEC (High-End Computing) group, 2013-2015.

- Co-lead of the NSF-internal working group for the National Strategic Computing Initiative (2015–2017).

Professional Society Activities:

- Fellow of the Institute for Electrical and Electronics Engineers (IEEE), IEEE Computer Society; Member since 1996.

- Member of the Association for Computing Machinery (ACM), since 1998.

- Member of the American Society for Engineering Education, since 1999.

Editorial Positions:

- Editorial Board, IEEE Computation in Science and Engineering. Editor for "Systems Software", 1999–present.

- Editorial Board, International Journal of Parallel Programming, 1997–present.

- Editorial Board, IEEE Transactions of Parallel and Distributed Systems, 2003–2010.

- HiPEAC 2012 Board of Distinguished Reviewers, ACM Transactions on Architecture and Code Optimization, 2012.

Conference and Workshop Organizing Committees:

- Host, SPEC Benchathon, University of Illinois, with attendance of the companies: Amdahl, AT&T, Compaq, DG, DEC, HP, IBM, Intel, Motorola, Siemens, Sun, Tricord, 1994.

- Co-chair, ICPP'96 Workshop on Challenges for Parallel Processing.

- Co-chair, 1997 Int'l Conference on Parallel Processing.

- Purdue High Performance Computing Workshop: Focus on Parallel Computing Software for Applications Researchers, 1998.

- Organizer and Host, Workshop for Performance Evaluation with Realistic Applications, San Jose, Calif., January 1999.

- Co-organizer of the Workshop on SPEC Benchmarking, Wuppertal/Paderborn, Germany, September 1999.

- Chair, Workshop on OpenMP Applications and Tools (WOMPAT2001), University, July 2001.

- Chair, International Workshop on High-Level Parallel Programming Models and Supportive Environments, HIPS'02, Ft. Lauderdale, April 2002.

- Vice-Chair for Languages and Compilers of the "International Conference on Parallel Processing," Vancouver, Canada, August 2002.

- General Chair of the 2003 ACM Symposium on Principles and Practice of Parallel Programming (PPoPP).

- Program Chair, International Conference on Parallel Processing (ICPP'04).

- Member of the board of directors, cOMPunity, (User Organization for OpenMP programming model), 2001–2010.

- Co-Chair Benchmarking Workshop 2006, Austin, Texas, January 2006.

- Program Vice-Chair for the International Conference on High Performance Computing and Communications, HPCC 2006.

- Chair of the Steering Committee, SPEC Benchmarking Workshops, 2006–2009.

- Chair, International Workshop on OpenMP (IWOMP) 2008.

- Vice-Chair for Languages and Compilers, International Conference on Parallel Processing (ICPP'08).

- Chair, SPEC Benchmark Workshop 2009.

- Co-chair, NSF Workshop on Cyberinfrastructures, Beijing, China, April 2009.

- Member of the Steering committee, Workshop on Languages and Compilers for Parallel Computing (LCPC), 2005–present.

- Member of the Steering committee, ACM Symposium on Principles and Practice of Parallel Programming (PPoPP), 2005–2009.

- Co-chair of international workshop on US-China collaboration in Civil Engineering. Tsinghua University, May 2010.

- Co-organizer, PEER/NEES Quake Summit 2010, October 2010, June 2011, July 2012.

- Co-organizer, Workshop on Data Sharing and Curation for Earthquake Engineering, Chicago, February 2011.

- Organizer, Breakout session on "Big Data" NSF Large-Facilities Workshop, Workshop on Data Sharing and Curation for Earthquake Engineering, Chicago, February 2011.

- Co-organizer, User Group and Compiler Infrastructure Workshop, October 2011.

- Co-organizer, NEES-CMMI Workshop on: High Performance Computing for Simulation-Based Earthquake Engineering, Boston, July 2012.

- Organizing committee, U.S. White House Workshop to launch the National Strategic Computing Initiative, Washington D.C., 2015.

- Steering committee member, IWOMP, International Workshop on OpenMP, since 2006-2013.

- Steering Committee Member, Workshop on High-Level Interfaces for Parallel Systems (HIPS), 2001–present.

- Steering Committee member, International Workshop on Parallel Processing, ICPP, 2016–present.

- Steering Committee member, Practice & Experience in Advanced Research Computing (PEARC Conference Series, 2018-present.

- ACM International Conference on Architectural Support for Programming Languages and Operating Systems, ASPLOS, Sponsor Committee, 2018, 2019.

- General Chair, International Conference on Supercomputing, ICS 2019.

- Organizer and Chair of ICS workshop "The Xpert Network", 2019.

- co-organizer, Workshop on Application Benchmarking, 2019.

- Technical Papers Program co-chair, International Conference for High Performance Computing, Networking, Storage, and Analysis, SC 2020.

- Area Chair for Programming Models and Compilers, IEEE International Parallel and Distributed Processing Symposium, 2020.

- Organizing committee, DARWIN Computing Symposium, University of Delaware, 2020, 2021.

- Chair of Celebration Committee, International Conference on Parallel Processing, 2021, 50th Anniversary.

Other Positions in National Organizations:

- Chairman of the High-Performance Group of the Standard Performance Evaluation Corporation (SPEC), 1997–1999. Vice-Chairman 1999–2001.

- Positions resulting from the NSF NEES cooperative agreement:
  - Member of the NEES Strategic Council (2009–2014)
  - Chair of the NEES Project Advisory Committee (2010–2014)

Masters and PhD Thesis being Supervised:

- Akshay Bhosale, PhD thesis, 2018–present.

- Parinaz Barakshan, PhD thesis, 2019–present.

PhD Thesis Supervisions Completed:

William Blume	1995	*Title:* "Symbolic Analysis Techniques for Effective Automatic Parallelization." (University of Illinois)
Insung Park	2000	*Title:* " Parallel Programming Methodology and Environment for the Shared Memory Programming Model." (Purdue University)
Michael Voss	2001	*Title:* "A Generic Framework for High-Level Adaptive Program Optimization" (Purdue University)
Seon-Wook Kim	2001	*Title:* "Compiler Techniques for Speculative Execution." (Purdue University)
Shoukat Ali	2003	*Title:* "Robust Resource Allocation in Dynamic Distributed Heterogeneous Computing Systems." (Purdue University)
Jong-Kook Kim	2004	(co-supervised with H.J. Siegel, Colorado State University.) *Title:* "Resource Management in Heterogeneous Computing Systems: Continuously Running Applications, Tasks with Priorities and Deadlines, and Power Constrained Mobile Devices." (Purdue University)
Wessam Hassanein	2004	(co-supervised with H.J. Siegel, Colorado State University.) *Title:* "Processing-in-Memory Techniques for Hiding Memory Access Latency" (Purdue University)
Zhelong Pan	2006	*Title:* "A Fast and Effective Performance Tuning System via Compiler Optimization Orchestration," (Purdue University)
Troy A. Johnson	2007	*Title:* "Context-Sensitive Domain-Independent Algorithm Composition and Selection," (Purdue University)
Xiaojuan (Joanne) Ren	2007	*Title:* "Proactive Resource Allocation in Fine-Grained Cycle Sharing Systems," (Purdue University)
Ayon Basumallik	2007	*Title:* "Compiling Shared-Memory Applications for Distributed-Memory Systems," (Purdue University)
Seung-Jai Min	2008	*Title:* "Optimizing Shared Memory Programs for Distributed Memory Architectures," (Purdue University)
Brian Armstrong	2010	*Title:* "Enabling Automatic Parallelization of Industrial-Grade Applications," (Purdue University)
Seyong Lee	2011	*Title:* "Toward Compiler-driven Adaptive Execution and its Application to GPU Architectures" (Purdue University)
Sang-Ik Lee	2011	*Title:* "Towards a Practical Shape Analysis for Recursive Data Structures" (Purdue University)
Hansang Bae	2012	*Title:* "Towards Advanced Symbolic Analysis for Optimizing Compilers" (Purdue University)

Tanzima Islam	2013	*Title:* "Reliable and Scalable Checkpointing Systems for Distributed Computing Environments" (Purdue University)
Dheya Mustafa	2013	*Title:* "A Journey Through Performance Evaluation, Tuning, and Analysis of Parallelized Applications and Parallel Architectures: Quantitative Approach" (Purdue University)
Okwan Kwon	2013	*Title:* "Automatic Scaling of Openmp Applications Beyond Shared Memory" (Purdue University)
Fahed Jubair	2013	*Title:* "Automatic translation of non-repetitive OpenMP to MPI" (Purdue University)
Amit Sabne	2016	*Title:* "Programming Models, Compilers, and Runtime Systems for Accelerator Computing" (Purdue University)
Aurangzeb	2017	*Title:* "AMPS: Approximating Procedures for Speed" (Purdue University)
Putt Sakdhnagool	2017	*Title:* "Improving Productivity of Accelerator Computing Through Programming Models and Compiler Optimizations" (Purdue University)

Master's Theses Supervision Completed:

Patrick McClaughry	1992	*Title:* "PTOPP - A Practical Toolset for the Optimization of Parallel Programs (University of Illinois)."
William Blume	1992	*Title:* "Success and Limitations in Automatic Parallelization of the Perfect Benchmarks Programs (University of Illinois)."
Gregg Skinner	1993	*Title:* "Finding and Exploiting Parallelism in a Production Combustion Simulation Program (University of Illinois)."
William Pottenger	1995	*Title:* "Induction Variable Substitution and Reduction Recognition in the Polaris Parallelizing Compiler (University of Illinois)."
Jee Ku	1995	*Title:* "The Design of an Efficient and Portable Interface Between a Parallelizing Compiler and its Target Machine (University of Illinois)."
Michael J. Voss	1997	*Title:* "Portable Loop-Level Parallelism for Shared-Memory Multiprocessor Architectures," (Purdue University).
Brian Armstrong	1998	*Title:* "Understanding the Performance of large Computer Applications from a Computer Systems Perspective," (Purdue University).
Troy Johnson	2003	*Title:* "Min-Cut-Based Program Decomposition for Thread-Level Speculation," (Purdue University).
Hansang Bae	2003	*Title:* "Towards Advanced Symbolic Analysis", (Purdue University).
Vishal Aslot	2003	*Title:* "Performance Characterization of the SPEC OMP Benchmarks," (Purdue University).
Johannes Cilliers	2009	*Title:* "Modeling the Auditory Pathway," (Purdue University, co-supervised with Aditya Mathur, Dept. of Computer Sciences)
Chirag Dave	2010	*Title* "Parallelization and Performance-Tuning: Automating Two Essential Techniques in the Multicore Era", (Purdue University).
Jan Sher Khan	2020	*Title* "Comparative Analysis of the Cetus Parallelizing Compiler Using Benchmarks", (University of Delaware).

Diploma Theses Supervised at ETH Zürich: (Diploma theses at ETH Zurich correspond to U.S. Master's theses)

1. Ch. Omlin, 1987, "Multiprocessor Configuration Environment"

2. D. Moser, 1987, "Man-Machine Dialog in a Multiprocessor Environment"

3. Felix/Bazzi, 1986, "Graphical Specification Tools for Parallel Algorithms"

4. Maumary/Brogly, 1986, "Window Handling for Concurrent Dialog Management"

Courses Taught:

University of Delaware:

CPEC/ELEG652	Principles of Parallel Computer Architectures, Spring 2018, Spring 2019, Spring 2020.
ELEG467	VIP (Vertically-Integrated Projects) HPC section, 2018–present (co-taught with Prof. Chandrasekaran, CIS)
CPEG 467/667	Computational & Data-Intensive Research Platforms and Applications, Fall 2019, Fall 2020.
ELEG 666	Special Problems, Fall 2020.

Purdue University (1995–2017):

ECE 608	Computational Models and Methods, Fall 95, Spring 96
ECE 462	Object-Oriented Programming in C++, Fall 96, Fall 97
ECE 469	Operating System Concepts, Spring 97 (lab instructor), Spring 98, Spring 99
ECE 573	Translator Writing Systems, Fall 97, Fall 98, Fall 99, Fall 2000, Fall 2001, Fall 2005
ECE 663	Compiler Code Generation, Optimization, and Parallelization, Spring 2000, Spring 2002, Spring 2004, Spring 2012
ECE 563	Programming Parallel Machines, Spring 2001, Spring 2003, Spring 2007, Spring 2009, Spring 2013
ECE 468	Introduction to Compilers and Translators, Fall 2001, Fall 2003, Fall 2004, Fall 2008
ECE 461	Software Engineering, Spring 2006,
EPICS	Engineering Projects in Community Service, Fall 2007, Spring 2008.

Seminars offered:

Parallel Processing / High-Performance Computing Seminar, 1995 – 2000
Computer Engineering Seminar co-organizer, 1996 – 2004
Advanced Computer Systems Laboratory Seminar, 2001 – 2008
Computing Research Institute Seminar, 2005 – 2009

Univ. of Illinois, prior to 1995:

CS 491	Seminar on Parallelizing Compilers
CS 426	Topics in Compilers
CS 397	Introduction to Parallel Programming for Scientist and Engineers (co-lectured)

National Committee Activities:

- NSF proposal review panels, 1997, 1999, 2000, 2001, 2002, 2003, 2006, 2018 (3), 2019, 2020.

- NSF site reviews, 2018.

- NSF Workshop on Dynamic Data-Driven Application Systems, March 2000.

- NSF Large Facilities Workshop, 2010, 2011, 2012, 2013.

- NSF Workshop on Large Center Recompetitions, 2011.

- Department of Energy, Panel 2011.

- NSF Workshop on Shared Cyberinfrastructure, Austin, May 2012.

- Panelist for reviews of Department of Energy, 2018, 2020.

International Committee Activities:

Conference Technical Program Committee Membership:

- IEEE International Conference on Parallel and Distributed Systems, ICPADS, 1998.
- IEEE International Conference on High Performance Computing, HiPC, 2004, 2005.
- IEEE International Conference of Distributed Computing Systems, ICDCS, 2006.
- IEEE International Conference on High Performance Computing and Communications, HPCC, 2006.
- IEEE/ACM International Symposium on Code Generation and Optimization, CGO, 2008.
- IEEE Cluster Conference, 2011.
- International Conference on Parallel Procesing (IEEE Published), ICPP, 1997, 2000, 2002, 2003, 2019.
- International Symposium on Parallel Architectures, Algorithms, and Networks (IEEE Published), IS-PAN, 1996.
- International Conference on Parallel and Vector Processing, CONPAR, 1990.
- International Conference on Parallel and Distributed Computing Systems, PDCS, 1998, 2005
- International Conference on Compiler Construction, 1999, 2000.
- International Symposium on High-Performance Computing, ISHPC, Tokyo, Japan, 2000, 2003.
- Conference on Commercial Applications in High-Performance Computing, CAHPC, 2001.
- Symposium on High-Performance Pervasive Computing, ITcom, 2002.
- Asia-Pacific Computer Systems Architecture Conference, ACSAC, 2004.
- International Conference on Grid and Pervasive Computing, GPC, 2006, 2007.
- International European Conference on Parallel and Distributed Computing, Euro-Par, 2003, 2018, 2019.
- International Conference on Advanced Computing and Communication, ADCOM, 2008.
- ACM Symposium on Programming Languages Design and Implementation PLDI, 2011.
- Advanced Parallel Processing Technology Symposium, APPT, 2011, 2019.
- ACM Symposium on Principles and Practices of Parallel Programming, PPoPP, 2001, 2010, 2011, 2019, 2020.
- XSEDE 2012 Conference.
- International Symposium on High-Level Parallel Programming and Applications, HLPP, 2019.
- International Conference on Parallel Architectures and Compilation Techniques (PACT), 2019.

Workshop Technical Program Committee Membership:

- European Workshop on OpenMP, 2001.
- Workshop on OpenMP Applications and Tools (WOMPAT), 2001, 2002, 2003.

- International Workshop on OpenMP, IWOMP 2005, 2006, 2007, 2008, 2009, 2011, 2012.

- Workshop on OpenMP: Experiences and Implementation, Japan, WOMPEI 2000, 2002, 2003.

- Heterogeneous Computing Workhshop, associated with the International Parallel and Distributed Processing Symposium, 2000, 2002.

- Workshop on Performance Evaluation and Benchmarking with Realistic Applications, San Jose, Calif, 1999.

- Workshop on SPEC Benchmarking, Wuppertal/Paderborn, Germany, 1999.

- CANPC'00: The Fourth Workshop on Communication, Architecture, and Applications for Network-based Parallel Computing, Toulouse, France, 2000.

- Workshop on Compilers and Operating Systems for Low Power, 2001.

- Workshop on Languages, Compilers, and Run-time Systems for Scalable Computers, LCR'02, 2002, 2004.

- Heterogeneous Computing Workshop, HCW'02, Ft. Lauderdale Fla., 2002.

- Workshop on High-Level Interfaces of Parallel Systems (HIPS) 2003–2009.

- Workshop on Languages and Compilers for High Performance Computing (LCPC), 2003,2004,2005,2006.

- CTHPC'05, Workshop on Compiler Techniques for High-Peformance Computing.

- PCGRID'08, 2009, Workshop on Desktop Grids and Volunteer Computing Systems,

- EPHAM 2008, Workshop on Exploiting Parallelism using Transactional Memory and other Hardware Assisted Methods.

- Workshop on Exploiting Parallelism using GPUs and other Hardware-Assisted Methods (EPHAM 2009).

- Workshop on Programming Models for Emerging Architectures (PMEA), 2010.

- Workshop on Statistical and Machine learning approaches to Architecture and compilation (SMART'10), Pisa, Italy, January 2010, 2011.

- SPEC International Performance Evaluation Workshop, SIPEW 2008, 2009, 2010, 2011.

- AsiaPacific Programming Languages and Compilers Workshop (APPLC 12), 2012.

- International Conference on Supercomputing 2017, Workshop Committee.

- Workshop on AutotuniNg and aDaptivity AppRoaches for Energy efficient HPC System, ANDARE, 2018.

International Ph.D. thesis and review committees:

- Ph.D. thesis committee, Univ. of Toronto, 1997.

- Ph.D. thesis committee, ETH Zurich, 2010.

- Ph.D. thesis committee, Univ. of Basel, 2011.

- Review Panel, Innovation Canada, 2014.

- SPEC Distinguished Dissertation Award committee, 2016.

- Member of the international review board of the APC compiler project, Japan (four-member committee from Stanford, Illinois, Purdue, Paris/France; APC was a $10M Japanese government compiler project for high-performance computing.)

Research Book Contributions and Books Published:

1. Rudolf Eigenmann, (in German) Programmieren – Konfigurieren – Mensch/Maschine-Dialog: Ein Beitrag zu einer integrierten Programmentwicklungsumgebung für Multiprozessoren, Informatics Dissertation Series, vdf-Verlag Zürich, 1988, (201 pages), ISBN 3 7281 1658 0.

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63. Rudolf Eigenmann, Jay Hoeflinger, Robert H. Kuhn, David Padua, Ayon Basumallik, Seung-Jai Min, and Jiajing Zhu, "Is OpenMP for Grids ?" Workshop on Next-Generation Software, International Parallel and Distributed Processing Symposium, Ft. Lauderdale, April 2002, 8 pages (on CDROM).

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94. Troy A. Johnson, Sang-Ik Lee, Seung-Jai Min and Rudolf Eigenmann, "Can Transactions Enhance Parallel Programs?," *Proceedings of the Workshop on Languages and Compilers for Parallel Computing*, November 2006.

95. Ayon Basumallik and Xiaojuan Ren and Rudolf Eigenman and Sebastien Goasguen, "iShare – Bringing the TeraGrid to the User's Desktop," *TeraGrid'06 Conference*, Indianapolis, Indiana, June 2006.

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98. Ayon Basumallik, Seung-Jai Min, Rudolf Eigenmann, "Programming Distributed Memory Systems Using OpenMP," *Proc. HIPS07 Workshop of the IPDPS'07: Proceedings of the 17th International Symposium on Parallel and Distributed Processing*, 2007, 8 pages.

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103. Seyong Lee and Rudolf Eigenmann, "Adaptive runtime tuning of parallel sparse matrix-vector multiplication on distributed memory systems," in *Proc. of the ACM International Conference on Supercomputing (ICS08)*, June 2008.

104. Seung-Jai Min and Rudolf Eigenmann, "Optimizing Irregular Shared-Memory Applications for Clusters," in *Proc. of the ACM International Conference on Supercomputing*, New York, NY, USA, 2008, pp. 256–265, ACM.

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106. Seyong Lee, Seung-Jai Min and Rudolf Eigenmann, "OpenMP to GPGPU: A Compiler Framework for Automatic Translation and Optimization," in *PPoPP '09: Proceedings of the 14th ACM SIGPLAN symposium on Principles and practice of parallel programming*, 2009, pages 101–110.

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108. Chirag Dave and Rudolf Eigenmann, "Automatically tuning parallel and parallelized programs," *Proc. of the Workshop on Languages and Compilers for Parallel Computing (LCPC'09)*, 14 pages, 2009.

109. Tanzima Zerin Islam, Saurabh Bagchi and Rudolf Eigenmann, "FALCON - A System for Reliable Checkpoint Recovery in Shared Grid Environments," in *Proc. of the ACM International Conference on Supercomputing, SC'09*, (nominated for best paper), 12 pages, November 2009.

110. R. Eigenmann, T. Hacker and E. Rathje, "NEES Cyberinfrastructure: A Foundation for Innovative Research and Education," 2010 US-CANADA joint conference on Earthquake Engineering, Toronto, Canada, July 2010.

111. Julio Ramirez, Thalia Anagnos, Rudolf Eigenmann, "The George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES): A Resource for Structural Engineers," Proc. of the 2010 Structural Engineers Association of California Convention (SEAOC), September 2010.

112. Seyong Lee and Rudolf Eigenmann, "OpenMPC: Extended OpenMP Programming and Tuning System for GPUs," in *Proc. of the ACM International Conference on High Performance Computing Networking, Storage and Analysis, SC'10*, (Best Student Paper), November 2010.

113. Okwan Kwon, Fahed Jubair, Rudolf Eigenmann and Samuel Midkiff, "A Hybrid Approach of OpenMP for Clusters", *Proceedings of the 17th ACM symposium on Principles and practice of parallel programming*, 2012.

114. Dheya Mustafa, Aurangzeb and Rudolf Eigenmann, "Performance Analysis and Tuning of Automatically Parallelized OpenMP Applications," *Proc. of the International Workshop on OpenMP, IWOMP*, Springer Verlag, 6665, 2011, pages 150–164.

115. Okwan Kwon, Fahed Jubair, Seung-Jai Min, Hansang Bae, Rudolf Eigenmann and Samuel Midkiff, "Automatic Scaling of OpenMP Beyond Shared Memory," *LCPC '11: Proceedings of the 24th International Workshop on Languages and Compilers for Parallel Computing*, 2011.

116. Amit Sabne, Putt Sakdhnagool, and Rudolf Eigenmann, "Effects of Compiler Optimizations in OpenMP to CUDA Translation," *Proc. of the International Workshop on OpenMP, IWOMP*, 2012.

117. Dheya Mustafa and Rudolf Eigenmann, "Portable Section-level Tuning of Compiler Parallelized Applications," *SC'12: Proceedings of the 2010 ACM/IEEE conference on Supercomputing*, IEEE press, 2012.

118. Tanzima Zerin Islam, Kathryn Mohrory, Saurabh Bagchi, Adam Moodyy, Bronis R. de Supinskiy and Rudolf Eigenmann, "mcrEngine: A Scalable Checkpointing System Using Data-Aware Aggregation and Compression", *SC'12: Proceedings of the 2010 ACM/IEEE conference on Supercomputing*, nominated for best student paper, IEEE press, 2012.

119. Ayguade, Eduard, Dionisios Pnevmatikatos, Rudolf Eigenmann, Mikel Lujn, and Sabri Pllana. "Topic 11: Multicore and Manycore Programming," In *Euro-Par 2012 Parallel Processing*, pages 587–588, Springer Berlin Heidelberg, 2012.

120. Amit Sabne, Putt Sakdhnagool and Rudolf Eigenmann, "Scaling large-data computations on multi-GPU accelerators," *Proceedings of the 27th international ACM conference on International conference on supercomputing*, ACM, 2013, pages 443–454.

121. Hao Lin, Hansang Bae, Samuel P. Midkiff, Rudolf Eigenmann, and Soohong P. Kim, "A Study of the Usefulness of Producer/Consumer Synchronization," In *Languages and Compilers for Parallel Computing*, pages 141–155, Springer Berlin Heidelberg, 2013.

122. Fahed Jubair, Okwan Kwon, Rudolf Eigenmann, and Samuel Midkiff, "PI Abstraction: Parallelism-Aware Array Data Flow Analysis for OpenMP," In *Languages and Compilers for Parallel Computing*, pages 253–267, Springer International Publishing, 2014.

123. Amit Sabne, Putt Sakdhnagool and Rudolf Eigenmann, "HeteroDoop : A MapReduce Programming System for Accelerator Clusters," *International ACM Symposium on High-Performance and Distributed Computing*, June 2015, pages 235–246.

124. Putt Sakdhnagool, Amit Sabne and Rudolf Eigenmann, "HYDRA : Extending Shared Address Programming For Accelerator Clusters," *LCPC '15: Proceedings of the International Workshop on Languages and Compilers for Parallel Computing*, 2015.

125. Aurangzeb and Rudolf Eigenmann, "History-based Piecewise Approximation Scheme for Procedures", *2nd Workshop on Approximate Computing,* Prague, Czech Republic, 2016.

126. Tsung Tai Yeh and Amit Sabne and Putt Sakdhnagool and Rudolf Eigenmann and Timothy G Rogers, "A Runtime System to Maximize GPU Utilization in Data Parallel Tasks with Limited Parallelism", *Proceedings of the 2016 International Conference on Parallel Architectures and Compilation*, Poster, pages 449–450, 2016.

127. Aurangzeb and Rudolf Eigenmann, "DOT APPROX: Making a Case for Dynamic Online Training for Function Approximation Techniques", *Workshop on Approximate Computing Across the Stack (WAX),* Atlanta, GA, USA, 2016.

128. Aurangzeb and Rudolf Eigenmann, "Harnessing Parallelism in Multicore Systems to Expedite and Improve Function Approximation," *29th International Workshop on Languages and Compilers for Parallel Computing (LCPC)*, Rochester, NY, USA, 2016.

129. Amit Sabne and Putt Sakdhnagool and Rudolf Eigenmann, "Formalizing Structured Control Flow Graphs," *29th International Workshop on Languages and Compilers for Parallel Computing (LCPC)*, Rochester, NY, USA, 2016.

130. Tsung Tai Yeh and Amit Sabne and Putt Sakdhnagool and Rudolf Eigenmann and Timothy G. Rogers, "Pagoda: Fine-Grained GPU Resource Virtualization for Narrow Tasks", *PPoPP '17: Proceedings of the ACM SIGPLAN symposium on Principles and practice of parallel programming*, nominated for best paper, 2017.

131. Aurangzeb and Rudolf Eigenmann, "PROCsimate: A Scheme for Approximating Procedures with Dynamic Quality Monitoring and Result Guarantees," 3rd Workshop On Approximate Computing (WAPCO 2017), Stockholm, Sweden, 2017.

132. Aurangzeb and Rudolf Eigenmann, "HiPA: History-based Piecewise Approximation for Functions," International Conference on Supercomputing (ICS'17), 2017.

133. Aurangzeb and Rudolf Eigenmann, "AutoHiPA: An Automated System for Function Approximation," *WAPCO: 4th Workshop on Approximate Computing*, January 2018.

134. Putt Sakdhnagool, Amit Sabne, and Rudolf Eigenmann, "Optimizing GPU programs by register demotion," *Poster, Proceedings of the 24th Symposium on Principles and Practice of Parallel Programming*, 2019.

135. Akshay Bhosale and Rudolf Eigenmann, "Compile-time Parallelization of Subscripted Subscript Patterns". *Workshop on High-level Interfaces for parallel systems (HIPS), in conjunction with IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, May 2020.

Newsletter articles, interviews, and press releases:

1. Interview by Alan Beck, managing editor, *HPCwire* on-line Magazine. "Polaris group focuses on Automatic Program Parallelization". July 1996.

2. News brief on "Petaflop computing". Edited by Amanda Siegfried, science writer, Purdue News Service. November 1996.

3. Radio interview by *Indianapolis Radio*, December 1996, topic "The next generation of computers".

4. Article in *Purdue Exponent*: July 97. Title "Increasing the Performance of PCs".

5. TV report in the Evening News, *Channel 18* on the "Polaris Parallelizing Compiler", September 1997.

6. Articles on the Polaris project and the Petaflop project appeared in the magazines *Discover, Design News*, and *Computer World* in 1997.

7. Greg Gaertner, Rudolf Eigenmann and Kaivalya Dixit, "Beyond the Cloak and Dagger: Credible, Repeatable Benchmarks," *Scientific Computing and Instrumentation*, page 6, October 2000.

8. Article on Top Application Performers (TAP) – Ranklist of High-performance computers based on realistic applications, in *HPCWire–online magazine for high-performance computing,* November, 2003.

9. Article in Journal&Courier on "$100M Award to Purdue for Network for Earthquake Engineering Simulation", September 2009.

10. Article in Indianapolis Star, "Award of Seismic Proportion", September 2009.

Keynote talks, invited lectures and tutorials:

1. University of Erlangen, Germany, 1988, "Multiprocessor Programming Environments".

2. Argonne National Laboratory, Chicago, June 1992, "HPCC Expectations and Compiler Research Realities."

3. Seminar on Massive Parallel Systems, University of Basel, Switzerland, May 91 "Automatic Parallelization Techniques for Speeding up Real Programs."

4. IBM Research Lab, Yorktown/Heights, April 92 "Successful Automatic Parallelization of the Perfect Benchmarks".

5. "Toward Real Performance Improvement of Parallel Computer Applications". University of Berne, Switzerland. December 1993.

6. "A New Generation Parallelizing Compiler", Waseda University, Tokyo, Japan, July 1993.

7. "Parallel Architectures and How to Program Them", Workshop on Parallel and Vector Computing, Basel, Switzerland, Sept 1994.

8. Tutorial "An Introduction to Parallel Computing", 2nd Int'l. Workshop on Massive Parallelism: Hardware, Software and Applications", Capri, Italy, October 1994.

9. Tutorial "Program Parallelization", III EPUSP/ IEEE Workshop on High Performance Computer Systems, Sao Paulo, Brasil, December 1994.

10. "Compilers for High-Performance Computing: Recent Progress and Future Trends". Electrotechnical Laboratory, Tsukuba, Japan. March 1996.

11. "Benchmarking with Real Industrial Applications: The SPEC High-Performance Group". Electrotechnical Laboratory, Tsukuba, Japan. March 1996.

12. "Benchmarking with Real Industrial Applications". Department of Electrical, Electronics and Computer Engineering, Waseda University, Japan, March 1996.

13. Tutorial on "Shared-Memory Parallel Programming", Supercomputing '97 conference, November 1997.

14. "Performance Evaluation and Benchmarking with Large-Scope Applications," National Center for Supercomputing Applications, Urbana, Illinois, February 1998.

15. "Performance Modeling of Computational Applications", Alliance'98, University of Illinois, 1998.

16. Tutorial on "OpenMP Parallel Programming," Supercomputing '98 Conference, November 1998.

17. Minisymposium on "OpenMP - A New Portable Paradigm of Parallel Computing: Features, Performance, and Applications", SIAM Conference, San Antonio, Texas, March 1999.

18. Tutorial on "OpenMP Parallel Programming," Supercomputing '99 Conference, November 1999.

19. Tutorial on "OpenMP Parallel Programming," SC 2000, International Conference on High-Performance Networking and Computing, November 2000.

20. Invited Presentation, "A Web-based Parallel Programming Laboratory," Tsukuba, Workshop on Global and Cluster Computing, Japan March 2000.

21. Invited seminars, "Overview of Parallelization Techniques in the Polaris Compiler" & "Performance Evaluation of Parallelizing Compilers", Waseda University, Tokyo, Japan, October 2000.

22. Invited seminar, "Compiling Without Conservative Assumptions," Waseda University, Tokyo, Japan, September 2001.

23. Tutorial on "OpenMP Parallel Programming," SC 2001, International Conference on High-Performance Networking and Computing, November 2001.

24. Invited Lecture on "High-Performance Computers", ETH Zurich, Switzerland, March 2002.

25. Invited talk on "SPEC2002: The Next High-Performance Computer Benchmark," Int'l Symposium on High-Performance Computing, Nara, Japan, May 2002.

26. Distinguished Lecture, "Parallel Programming Anytime, Anywhere", Ohio State University, October, 2002.

27. Invited talk on "Compilers, Tools and Benchmarks for High-Performance Computing - and How to Share Them Across the Internet," University of Illinois, Sept 25 2003.

28. IEEE Distinguished Visitor talk on "Tools and Benchmarks for Performance Evaluation of Applications in Science and Engineering," Wayne State University, September 26, 2003.

29. IEEE Distinguished Visitor talk on "Network Computing," New Orleans, 2004.

30. Compilers for High-Performance Computing, June 2005, Polytechnical University of Catalonia, Barcelona, Spain.

31. Compilers and Tools for High-Performance Computing, University of Malaga, Malaga, Spain, April 2005.

32. Compilers, Benchmarks, and how to Share them across the Internet, University of Santago, Santiago de Compastela, Spain, June 2005.

33. Towards OpenMP for Distributed Computer Systems, University of Rochester, May 2006.

34. Translating Shared- to Distributed Memory Programs with Automatic Performance Tuning, University of Illinois, Urbana-Champaign, May 2006.

35. Procedure-Level Performance Tuning of Whole Programs, Autotuning Workshop, Santa Fe, October 2006.

36. Keynote talk, "Implementing Tomorrow's Programming Languages," International Symposium on Parallel and Distributed Processing and Application, ISPA, Sorrento, Italy, 2006.

37. Keynote talk, "Programming Distributed Memory Sytems Using OpenMP," Workshop on High-Level Parallel Programming Models & Supportive Environments, Long Beach, Calif., 2007.

38. Invited talk, "Open Internet-based Sharing for Desktop Grids in iShare," 2007 Workshop on Large-Scale, Volatile Desktop Grids.

39. Invited talk, "Compilers and Runtime Systems for Dynamically Adaptive Applications," Autotuning Workshop, Snobird, Utah, July 2007.

40. Invited talk, "High-Performance Computing Going Mainstream," Indiana University, Bloomington, IN, October 2007.

41. Invited talk, "Automatic Performance Tuning for Multicore Architectures,", Indian Institute of Technology, Kanpur, India, December 2007.

42. Tutorial on OpenMP, Purdue Training Workshop, August 2007.

43. Invited talk, "Autotuning: Moving Compile-time Decisions Into Runtime," Waseda University, Tokyo, Japan, February, 2008.

44. Invited talk, "OpenMP for Distributed Parallel Systems," Waseda University, Tokyo, Japan, February, 2008.

45. Invited talk, "Automatic Performance Tuning for Multicore Architectures," National Institute of Advanced Industrial Science and Technology, Tokyo, Japan, February, 2008.

46. Invited talk, "High Performance Computing Going Mainstream", Louisiana State University, March 2008.

47. Invited talk, "Compiling for Heterogeneous Multicores", University of Illinois, November 2008. endenumerate

48. Invited talk, "Compiling for Multi, Many and Anycore", Lawrence Livermore Laboratory, August 2008.

49. Invited talk, "Compiling for Multi, Many and Anycore", Intel Corp, Santa Clara, August 2008.

50. Invited talk, "Compiling for Multi, Many and Anycore", IBM Zurich, October 2008.

51. Keynote talk, "Shared-memory Programming for Heterogeneous and Distributed Architectures," *Workshop on Programming Models for Emerging Architectures (PMEA), 2009.*

52. Invited talks, "Cyberinfrastructure for Earthquake Engineering," Waseda University, Sept 2009.

53. Tutorial on Parallel Programming with OpenMP, Int'l Symposium on Principles and Practice of Parallel Programming, 2009.

54. Tutorial on Parallel Programming with OpenMP, Int'l Conference on Supercomputing, 2009.

55. Tutorial on "Automatic Parallelization Techniques and the Cetus Source-to-Source Compiler Infrastructure," Conference on Parallel Architectures and Compilation Techniques, Vienna, 2010.

56. Short Tutorial on Cetus Compiler Infrastructure, (with Sam Midkiff), PACT Conference, Galveston TX, October 2011.

57. Keynote Talk, Workshop on Graphic Processing Units for Scientific Applications, Galveston, TX, October 2011.

58. Keynote Talk, Computational Science Student Fair, University of Basel, Switzerland, September 2011.

59. Invited Lecture on "Programming Models and Compilers for Accelerators", University of Basel, September 2011.

60. Invited Lecture on "Network for Earthquake Engineering Simulation", ETH Zurich, Switzerland, September 2011.

61. Invited talk on "Data Management", NSF Large-Facilities Workshop, East Lansing, Michigan, April 2012.

62. Invited talk on "Making Autoparallelizers Mainstream Tools", Workshop on Languages and Compilers for Parallel Computing, Japan, 2012.

63. I2PC Distinguished Seminar "Is OpenMP All You Need for Accelerators?", University, November, 2012.

64. Invited talk on "Producing the Next Generation of Data Scientists and Engineers," NSF Large Facilities Workshop, Socorro, 2013.

65. Invited talk on " NSF Cyberinfrastructure for Computational Science and Engineering", Smoky Mountain Computational Science Conference, 2014.

66. Invited talk on "A Vision for Computational&Data Science and Engineering Cyberinfrastructure," Coalition for Academic Scientific Computation (CASC) meeting, 2014.

67. Invited talk on "Parallel and High-Performance Computing Programs of NSF's Division of Advanced Cyberinfrastructure", Rutgers University, 2015.

68. Invited talk on "The Value of HPC for Scientific Research and the Roles of NSF and NIST," National Institute for Science and Technology, 2015.

69. Invited talk on "Optimizations for Accelerators", Speedup Workshop, Basel, Switzerland, September 2016.

70. Keynote talk on "Building a Cyber Ecosystem for Computational and Data-enabled Science," Computational Science Open Day, University of Basel, Switzerland, September 2016.

71. Invited talk on Pushing Science Frontiers through Computational and Data-enabled Research, Linkoping University, Sweden, July 2017.

72. Invited talk on Optimizations for Accelerators, Chalmers University, Sweden, July 2017.

73. Invited talk, Workshop on Languages and Compilers for Parallel Computing, "Is Parallelization Technology Ready for Prime Time ?", September 2017.

74. Invited talk on Thoughts from a Four-Year Rotation at the US National Science Foundation, ETH Zurich, October 2017.

75. Invited talk, On the Ever-Increasing Importance of Advanced Compilers and Programming Toolsfor High-Performance Computing, Technical University of Munich, November 2017.

76. Invited talk, Putting Parallelizing Compilers into the Toolbox of Computational Scientists, Workshop on Languages and Compilers for Parallel Computing, September 2018.

77. Invited talk, The Xpert Network: Exchanging Computational Best Practices and Tools, San Diego Supercomputing Center, December 2018.

78. Invited Presentation, "DARWIN and the Data Intensive & Computational Science (DICoS) Core", University of Delaware Virtual Symposium on Computational Social Science for an Inclusive Society, Oct 2020.

Technical Reports:

The list includes only reports that are not published elsewhere.

1. E. Ballarin, H. Burkhart, R. Eigenmann, and H. Kindlimann. "Modula-2 / 68k". Technical Report 84/6, Institut fuer Elektronik, ETH Zuerich, October 1984, 20 pages.

2. H. Burkhart, R. Eigenmann, R. Fischer, H. Kindlimann, R. Millen, M. Moser, and H. Scholian. "M^3 - Benutzerhandbuch. Teil 1 — Einführung und Bedienungsanleitung". Technical Report Nr. 86/8, Institut fuer Elektronik, ETH Zuerich, 1986, 60 pages.

3. E. Ballarin, H. Burkhart, R. Eigenmann, H. Kindlimann, and M. Moser. "Modula-2 / 68k — release 3.1". Technical Report 86/7, Institut fuer Elektronik, ETH Zuerich, July 1986, 10 pages.

4. R. Eigenmann, H. Kindlimann, and M. Moser. "M^3 - Benutzerhandbuch. Teil 2 — Programmentwicklung". Technical Report Nr. 88/1, Institut fuer Elektronik, ETH Zuerich, 1988, 40 pages.

5. Patrick McClaughry and Rudolf Eigenmann. "Tools That Led To Increased Program Performance". Technical Report 1184, Univ. of Illinois at Urbana-Champaign, Center for Supercomputing Res. & Dev., 1992, 10 pages.

6. Rudolf Eigenmann, Jay Hoeflinger, G. Jaxon, and David Padua. "The Cedar Fortran Project". Technical Report 1262, Univ. of Illinois at Urbana-Champaign, Cntr. for Supercomputing Res, & Dev., April 1992, 75 pages.

7. D. Padua, R. Eigenmann, J. Hoeflinger, P. Petersen, P. Tu, S. Weatherford, and K. Faigin. "Polaris: A New-Generation Parallelizing Compiler for MPP's". Technical Report 1306, Univ. of Illinois at Urbana-Champaign, Center for Supercomputing Res. & Dev., June 1993, 77 pages.

8. Bill Pottenger and Rudolf Eigenmann. "Parallelization in the Presence of Generalized Induction and Reduction Variables". Technical Report 1396, Univ. of Illinois at Urbana-Champaign, Cntr. for Supercomputing Res. & Dev., January 1995, 16 pages.

9. Bill Pottenger and Rudolf Eigenmann. "Performance Analysis of the Turb3D Candidate Benchmark". Technical report, Univ. of Illinois at Urbana-Champaign, Cntr. for Supercomputing Res. & Dev., 1995, 15 pages.

10. Bill Pottenger and Rudolf Eigenmann. "Targeting a Shared-Address-Space version of the SPEChpc96 Seismic Benchmark". Technical Report 1456, Univ. of Illinois at Urbana-Champaign, Cntr. for Supercomputing Res. & Dev., September 1995, 19 pages.

11. Brian Armstrong and Rudolf Eigenmann. "Performance Forecasting: Characterization of Applications on Current and Future Architectures", Purdue Univ. School of Electrical and Computer Engineering, High-Performance Computing Lab. ECE-HPCLab-97202, February 1997, 15 pages.

12. Seon-Wook Kim and Rudolf Eigenmann. "Max/P: detecting the maximum parallelism in a Fortran program". Purdue Univ., School of Electrical and Computer Engineering, High-Performance Computing Lab. ECE-HPCLab-97201, 1997, 37 pages.

13. Seon Wook Kim and Rudolf Eigenmann, "MOERAE: Portable Interface between a Parallelizing Compiler and Shared-Memory Multiprocessor Architectures," Purdue Univ., School of Electrical and Computer Engineering, High-Performance Computing Lab. ECE-HPCLab-98206, 1998, 15 pages.

14. Seon Wook Kim and Rudolf Eigenmann, "Compiling for Speculative Architectures," *Proc. of the 12th Int'l Workshop on Languages and Compilers for Parallel Computing*, San Diago, Calif., Purdue Univ., School of Electrical and Computer Engineering, High-Performance Computing Lab. ECE-HPCLab-99207, 1999, 10 pages.

15. Wessam Hassanein, José Fortes and Rudolf Eigenmann, "Data Forwarding Through In-Memory Precomputation Threads," School of Electrical and Computer Engineering, Purdue University, 2003, TR-ECE 03-16.

16. Wessam Hassanein, José Fortes and Rudolf Eigenmann, "An Algorithm for Register-Synchronized Precomputation In Intelligent Memory Systems," School of Electrical and Computer Engineering, Purdue University, 2003, TR-ECE 03-17.

17. Zhelong Pan and Rudolf Eigenmann, "Compiler Optimization Orchestration for Peak Performance," School of Electrical and Computer Engineering, Purdue University, 2004, 30 pages, TR-ECE-04-01.

18. X. Ren, S. Lee, R. Eigenmann and S. Bagchi, "Resource Failure Prediction for Fine-Grained Cycle Sharing," High-Performance Computing Lab, ECE, Purdue University", ECE-HPCLab-05201, 2005.

19. Dheya Mustafa and Rudolf Eigenmann, "Window-based Empirical Tuning of Parallelized Applications", High-Performance Computing Lab, ECE, Purdue University", ECE-HPCLab-11201, 2011.

20. Parinaz Barakhshan and Rudi Eigenmann, The Xpert Network - Workshop Report on Best Practices and Tools for Computational and Data-Intensive Research,In conjunction with the International Conference on Supercomputing (ICS 2019), Phoenix, Arizona, June 2019.

21. Putt Sakdhnagool, Amit Sabne, and Rudolf Eigenmann, "RegDem: Increasing GPU Performance via Shared Memory Register Spilling," arXiv 1907.02894. 2019.

22. Akshay Bhosale and Rudolf Eigenmann, "Compile-time Parallelization of Subscripted Subscript Patterns", arXiv :1911.05839, 2019.

23. Parinaz Barakhshan and Rudi Eigenmann, The Xpert Network - Workshop Report on Best Practices and Tools for Computational and Data-Intensive Research, In conjunction with the International Conference on Supercomputing (ICS 2019), Phoenix, Arizona, June 2019, https://sites.udel.edu/xpert-cdi/publications.

24. Rudolf Eigenmann and Parinaz Barakhshan, Exchanging Best Practices and Tools for Supporting Computational and Data-Intensive Research – The Xpert Network, Technical Report, University of Delaware, 2020, https://sites.udel.edu/xpert-cdi/publications/.

25. Ramirez, Julio; Anagnos, Thalia; Hacker, Thomas; Rathje, Ellen; Browning, JoAnn; Eberhard, Marc; Dyke, Shirley; Eigenman, Rudolf; Fossum, Barb (2020) NEES, The George E. Brown, Jr. Network for Earthquake Engineering Simulation, 2004-2014 A DECADE OF EARTHQUAKE ENGINEERING RESEARCH. 168 pages. DesignSafe-CI. https://doi.org/10.17603/ds2-gp23-b207.

26. Parinaz Barakhshan and Rudolf Eigenmann, "Exchanging Best Practices and Tools for Supporting Computational and Data-Intensive Research, The Xpert Network," arXiv, https://arxiv.org/abs/2102.09373v1, 2021.

Panel Organizer, Moderator and/or Panelist:

- Panelist, ICPP'1996 Workshop on Challenges for Parallel Processing, August 1996.

- Panelist, PetaFlops Systems Workshop, Annapolis, October 1996.

- Member of the "Task Force on Compiler-Architecture Interactions", HICSS'97 Conference, January 1997.

- Panelist, "Compiler Benchmarking," Workshop on Languages and Compilers for Parallel Computing, San Diego, Calif., August 1999.

- Invited Panelist at HUG2000: High-Performance Fortran User's Group, Tokyo, Japan, October 2000.

- NSF Workshop on International Collaboration, Argentina, and Chile, June 2000.

- Panelist, "The Future of Parallelizing Compilers," Workshop on Languages and Compilers for Parallel Computing, Cumberland Falls, August 2001.

- Panelist, "Is OpenMP a Mature Enough Technology," European Workshop on OpenMP (EWOMP'01), Barcelona, Spain, September 2001.

- Panelist, "Benchmarking for High-Performance Computing", International Workshop on OpenMP: Experiences and Implementations (WOMPEI'02), Nara, Japan, May 2001.

- Panelist, "Compiler Optimization for High-Performance: Past, Present, Future," International Conference on Parallel Processing, August 2006.

- Panelist, "Compiling for Multi, Many and Anycore," Barcelona Multicore Workshop June 2008.

- Panel moderator, "Parallel Processing is Back – Can We Deliver?", International Conference on Parallel Processing, November 2009.

- Panelist, "NEES: Network for Earthquake Engineering Simulation – Cyberinfrastructure Challenges," PI meeting of SDCI and STCI programs, National Science Foundation, Washington D.C., January, 2010.

- Panelist, "NEEShub: Cyberinfrastructure for Earthquake Engineering", HUBzero workshop, Indianapolis, April 2010.

- Panelist, "Cyberinfrastructure for NEES," TeraGrid Conference, August, 2010.

- Panelist, "Autotuning compilers," Autotuning Workshop, Snowbird, Utah, July 2010.

- Panelist, "US Cyberinfrastructure Panel", Open Science Grid All-hands Meeting, Boston, March 2011.

- Session organizer on "Big Data,", NSF Large Facilities Workshop, Tallahassee, FL, April 2011.

- Session organizer on "Data Management,", HUBzero Conference, September, 2012, Indianapolis.

- Panelist, "Return on Investment in High-Performance Computing," Supercomputing 2014.

- Panelist, NSF Cyberinfrastructure Leadership Academy, hosted by the University of Oklahoma, 2019.

- Organizer and Chair of the Birds-of-a-feather session on "Exchanging Best Practices in Supporting Computational and Data-Intensive Research", Supercomputing conference, 2019.

- Organizer and Chair of the Birds-of-a-feather session on "Best Practices in CDI Research Support", ACM Conference on Practice and Experience in Advanced Research Computing (PEARC), 2019.

- Panelist, Virtual Residency Program, University of Oklahoma, panel on "The CI Funding Landscape: Funding Agency Perspectives", June 2020.

- Panelist, Networking and Information Technology Research and Development program (NITRD), Workshop on Software in the Era of Extreme Heterogeneity, September 2020.

- Panelist, Workshop on Languages and Compilers for Parallel Computing (LCPC), panel on "Ask any LCPC-related questions", October 2020.

- Panelist, Department of Energy, Advanced Scientific Computing Research, ASCR Roundtable Discussion on Operating-Systems Research, January 2021.

University of Delaware Service Activities

- Faculty Council, Data Science Institute, 2018–present.

- Chair of infrastructure working group, Data Science Institutee, 2018–present.

- Chair of search committe for Director of Cybersecurity Initiative, 2018/19.

- Director of Data-intensive and Computational Science (DiCoS) Core Center, Data Science Institute, 2019–present.

- Member of search committees for

    - ECE position in cybersecurity, 2019.
    - UD Director of Research Cyberinfrastructure, 2019.
    - CIS senior-level position in HPC, 2019/20.

- ECE primary committee, 2017–present.

- ECE qualifying exam committee, 2018–present.

- IT Strategic planning committee, 2019.

- College of Engineering, Guiding Coalition, 2019.

- ECE Strategic planning committee, 2020–present.

- ECE faculty review committees, 2018, 2019, 2020.

- Member of College of Engineering Promotion and Tenure Committee, 2019–present.

- Created a faculty network in High-Performance Computing (Activities include: mailinglist, series of "HPC lunches", proposal activities)

- Presentations at faculty mentoring workshops.

- Participation in mentoring summer students, 2018, 2019.

- Participation in UD-wide faculty mentoring programs, 2019, 2020.

- Reviews for Research Office, 2018, 2019, 2020.

Selected Service Activities at Purdue University (1995-2017)

University-wide service:

- Interim/Technical Director, Computing Research Institute, 2006-2011.

- Associate Director, Cyber Center, 2006–2008.

School of Electrical and Computer Engineering:

- Chair of Computer Engineering, 1999–2002

- Chair of faculty search committee, 2002–2004, 2005–2006

- Heads Advisory Committee 2004–2010

- Primary Committee, 2003–2013

Other activities:

- Founded the "Advanced Computer Systems Laboratory" with faculty from Purdue's School of Electrical and Computer Engineering and the Department of Computer Science. ACSL's mission was to "support a strong group of researchers at Purdue University who take leadership in advancing computer systems knowledge and technology."

- Primary Representative for Purdue University on Standard Performance Evaluation Corporation's (SPEC) High-performance Group, 1995–2010. Primary Representative on SPEC's Research Group, 2011–2013.