STEVEN M. CARR

Department of Computer Science
Western Michigan University
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EMPLOYMENT

Western Michigan University

Professor, Department of Computer Science: July 2012 - present
Chair, Department of Computer Science: July 2012 – August 2021, June 2022 – August 2026
Associate Dean for Research and Graduate Education, College of Engineering and Applied Sciences, July 2022 – June 2026
Interim Vice President of Research and Innovation: June 2021 – June 2022
Interim Chair, Department of Engineering Design, Manufacturing, and Management Systems: July 2020 - June 2021

Michigan Technological University, Department of Computer Science

Chair: July 2011 - June 2012
Interim Chair: July 2010 – June 2011
Professor: August 2004 – June 2012
Associate Professor: September 1999 – August 2004
Assistant Professor: August 1993 – August 1999

Courses Taught: introduction to programming II, discrete mathematics, data structures, numerical methods, introduction to computation theory, programming languages, computer and network security, secure software development, parallel programming, compiler construction, compiler optimization, and high-level program analysis and optimization.

Rice University, Department of Computer Science

Research Scientist: October 1992 – July 1993

EDUCATION

Ph.D., Rice University, 1993 (Computer Science)
Thesis Title: Memory-Hierarchy Management
Adviser: Dr. Kenneth W. Kennedy
M.S., Rice University, 1990 (Computer Science)
B.S., Michigan Technological University, 1987 (Computer Science)

PROFESSIONAL DEVELOPMENT

Management Development Program, Harvard Institute for Higher Education, June 2013

KEY ADMINISTRATIVE INITIATIVES

- Designed a simplified administrator incentive program for administrators with research funding.
- Reorganized the Technology and Commercialization Unit after major budget cuts and staff loss.
- Proposed method to account for internal research expenditures more accurately. This was implemented by the current VP for research and has allowed WMU to become an emerging R1 institution.
- Helped develop a proposal for a STEM workforce development program funded by the U.S. Department of Education.
- Helped to shepherd policies on intellectual property, conflict of interest, and research misconduct through the WMU Faculty Senate.
- Helped lead the development of a proposal to establish a funded undergraduate research program in the College of Engineering and Applied Sciences at WMU.
- Developed an internal graduate application processing app for the College of Engineering and Applied Sciences to streamline application processing.
- Helped develop a proposal for an M.S. in Intelligent Systems and Data Engineering with the Department of Industrial Engineering.
- Helping develop a proposal for a B.S. in Cyber AI between the Departments of Computer Science and Business Information Systems
- Helped incorporate digital manufacturing into the manufacturing engineering technology curriculum.
- Supervised the ABET accreditation process and the successful NGR for the B.S. in Computer Science in 2017 and 2023. Supervised the successful NGR initial ABET accreditation process for the B.S. in Cybersecurity in 2024.
- Helped initiate and guide the development of a B.S. and M.S. in Cybersecurity with the Department of Business Information Systems.
- Helped guide the development of a B.S. and M.S. in Data Science in cooperation with the Department of Statistics.
- Led the hiring of the first NSF CAREER award and NIH award recipient in the Department of Computer Science.
- In consultation with the Computer Science Industrial Advisory Board, helped implement the first major modification to the WMU ABET-accredited CS degree program that modernized the Department's offerings.
- Conducted the first personal visits from a chair to the Department of Computer Science alumni in Silicon Valley and Washington, D.C.

- Helping to develop a Silicon Valley Industrial Advisory Board for the Department of Computer Science.
- Helped work with Iraqi government representatives to bring 25 faculty from Iraqi universities to the Department of Computer Science to earn a Ph.D. in CS.
- Successfully mentored six faculty members in the Department of Computer Science at WMU to tenure.
- Helped develop a proposal for a multi-million dollar bequest to WMU that includes an endowed professorship in the Department of Computer Science.
- Created opportunity for faculty to increase research proposals and expenditures through reorganization of curriculum and a course buyout structure.

RESEARCH INTERESTS

Software security, file-system security, security education, dynamic program analysis, program locality analysis, high-performance computing, memory-hierarchy optimization, language run-time systems, virtualization, code generation for embedded systems, cooperation between architecture and compilers.

GRANTS

1. "Collaborative Research: CyberTraining: Pilot: Concurrent Computing Curricula for Cyber-Physical Systems", National Science Foundation, PI: Steve Carr, co-PIs: Zachary Asher and Radu Babiceanu, Michigan Tech PI: Jean Mayo, $299,403 (WMU: $120,941), 8/26 – 7/28.
2. "CyberTraining: Implementation: Small: Promoting AI Readiness for Machine-Assisted Secure Data Analysis (PAIR4MASDA)", National Science Foundation, PI: A. Fong, co-PIs: S. Bhattacharjee, A. Gupta, K.C. Chen and S. Carr, $499,876, 8/23 – 7/27.
3. "CyberTraining: Pilot: Modular experiential learning for secure, safe and reliable AI (MELSS-RAI)", National Science Foundation, PI: A. Fong, co-PIs: S. Bhattacharjee, A. Gupta and S. Carr, $298,257, 08/20– 07/22.
4. "VACCS: Visualization and Analysis for C Code Security", National Science Foundation, PI: S. Carr, co-PIs: J. Mayo, C.-K. Shene, Z. Yang, $300,000 (WMU: $170,000), 01/16 – 12/19.
5. 'Adaptive Memory Resource Management in a Data Center – A Transfer Learning Approach", National Science Foundation, PI: L. Brown, co-PIs: Z. Wang and S. Carr, 9/14 – 8/17, $400,000 (WMU: $100,000).
6. "Accessible Access Control", National Science Foundation, PI: J. Mayo, co-PIs: S. Carr, C.-K. Shene, C. Wang, 9/13 – 8/15, $199,164 (WMU:$40,000).
7. "Accelerated Processor Unit (APU) Software for Convex Optimization", Advanced Micro Devices, PI: S. Carr, co-PIs: S. Nooshabadi and Z. Wang, $2,000.
8. "Compiler Evaluation for the PowerPC 476 Processor", LSI Corporation, co-PIs: Steve Carr and Zhenlin Wang, 5/10 – 8/10, $18,215.

9. "Feedback-Directed Resource Management in Virtual Private Machines", National Science Foundation, co-PIs: Steve Carr and Zhenlin Wang, 9/08 – 12/10, $60,000.

10. "A Performance Model for Partitioned Global Address Space Languages", National Science Foundation, PI: Steven R. Seidel, co-PIs: Steve Carr and Zhenlin Wang, 9/08 – 8/10, $70,000.

11. "Compiler Development for the Agere Payload Plus network processor", Agere Systems, PI, 9/04 - 12/05, $85,267.

12. "ITR: Exposing the Compiler to the Hardware: Memory Subsystem Optimizations Through Compiler/Micro-architecture Cooperation using Set Membership Information and Color Sets", National Science Foundation, PI: Soner Önder, co-PI: Steve Carr, 9/03 - 8/06, $280,000.

13. "Compilation for the Agere APP5xx and APP7xx Family of Network Processors", Agere Systems, PI, 1/03 - 12/03, $62,068.

14. "High-Level Optimization for DSP Architectures" National Science Foundation, PI, 9/02 - 8/05, $249,964.

15. "Concurrent Computing in an Upper-Level Computer Science Curriculum", National Science Foundation, PI, co-PIs: Jean Mayo and C.-K. Shene, 6/00 - 5/03, $299,865.

16. "Code Generation for ILP Architectures with Partitioned Register Files", National Science Foundation, PI: Philip H. Sweany, co-PI: Steve Carr, 7/98 - 6/02, $325,434.

17. "Teaching Multithreaded Programming to Computer Science Undergraduates", National Science Foundation, PI: C.K. Shene, co-PI: Steve Carr, 3/98 - 5/99, $50,002.

18. "Register-Bank Assignment for Distributed-Register, Instruction-Level Parallel Architectures", Texas Instruments, PI: Philip H. Sweany, co-PI: Steve Carr, 9/97 - 8/98, $42,830.

19. "Generating Efficient Code for Horizontal Micro-Architectures with Partitioned Register Files", Texas Instruments, PI: Philip H. Sweany, co-PI: Steve Carr, 9/95-8/96, $23,715.

20. "Hiding the Latency Between Level-1 and Level-2 Cache on the DEC Alpha 21164", Digital Equipment Corporation, PI, co-PI: Philip H. Sweany, 7/95-8/97, $137,647.

21. "Improving Memory Performance on the Hewlett-Packard PA-RISC", Hewlett-Packard Company, PI, 9/94-8/95, $53,480.

22. "Improving the Cache Performance of Scientific Applications", National Science Foundation, PI, 7/94-6/97, $90,984.

23. "Cache-Conscious Loop Unrolling", Hewlett-Packard Company, PI, 7/93, $41,984.

PROPOSALS UNDER REVIEW

1. "CyberAI SFS: Scholarships for Service at Western Michigan University", National Science Foundation, PI: Steve Carr, co-PIs: Jason Johnson and Alan Rea.

2. "Collaborative Research: CyberAI Innovation: Que-TRAIL: Quantitative and Evaluative Curricula for Trustworthy, Resilient, Agentic AI Integrated LLM Ecosystems", National Science Foundation, PI: Shameek Bhattacharjee, co-PI: Steve Carr, Univ. of Houston PI: Rakesh Verma.

3. "CyberAI Innovation: Promoting Quantum Readiness through Cooperative Open-Source Development and Empowerment for STEM (Pro QR Codes)", National Science Foundation, PI: Guan Yue Hong, co-PIs: Alvis Fong and Steve Carr.

4. "Collaborative Research: SaTC 2.0: RES: QueryGuard - A Cognitive SQLIA Defense System for Deep Web Databases", National Science Foundation, PI: Steve Carr, Univ. of Idaho PI: Hasan Jamil.

JOURNAL PUBLICATIONS

1. Patil, S., Lalwani, V., Mahmud, B.U., Carr, S.M., Woodcock, J., Grellinger, K., and Hong, G.Y. "A Mixed-Reality Approach to Cardiovascular Anatomy Education." Future Internet 2026, 18, 314. `https://doi.org/10.3390/fi18060314`.

2. I. Kahvazadeh, E. Jose, ACM Fong, A. Gupta, S. Carr, Bhattacharjee S and Harnar M, "Development and evaluation of a modular experiential learning curriculum for promoting AI readiness, Education and Information Technologies", Springer Nature, June 2023. `https://doi.org/10.1007/s10639-023-11928-w`.

3. S. Saeedi, S. P. Mohanty, S. Carr, A. C. M. Fong, and A. K. Gupta. "Consumer Artificial Intelligence Mishaps and Mitigation Strategies", *IEEE Consumer Electronics Magazine*, IEEE Press, 2021.

4. A. Al-Hasnawi, A. Gupta, and S. Carr. " Fog-Based Local and Remote Policy Enforcement for Preserving Data Privacy in the Internet of Things", *Internet of Things: Engineering Cyber Physical Human Systems*, Elsevier, Volume 7, September 2019.

5. S. Carr. "A Programming Languages Course Emphasizing Interpreters and Object-Oriented Design", *The Journal of Computing Sciences in Colleges*, 30(1), October 2014. (Proceedings of the Midwest Conference on Computing Sciences in Colleges).

6. Y. Li, S. Carr, J. Mayo, C.-K. Shene, and C. Wang. "DTEVisual: A Visualization System for Teaching Access Control with Domain Type Enforcement", *The Journal of Computing Sciences in Colleges*, 29(1), October 2013. (Proceedings of the Midwest Conference on Computing Sciences in Colleges).

7. J. Mayo and S. Carr. "Teaching Access Control with Domain Type Enforcement", *The Journal of Computing Sciences in Colleges* 27(1), October 2011. (Proceedings of the Midwest Conference on Computing Sciences in Colleges).

8. S. Carr and P. Sweany. "An Experimental Evaluation of Scalar Replacement on Scientific Benchmarks", *Software - Practice & Experience* 33(15), December 2003.

9. S. Carr, J. Mayo, and C.K. Shene. "ThreadMentor: A Pedagogical Tool for Multithreaded Programming", *ACM Journal of Educational Resources in Computing* 3(1), March 2003.

10. S. Carr, J. Mayo and C.-K. Shene. "Race Conditions: A Case Study", *The Journal of Computing in Small Colleges* 17(1), September 2001. (Proceedings of the Midwest Conference on Computing Sciences in Colleges). Also, appears in an appendix in *Operating Systems: Internals and Design Principles* by William Stallings.

11. P. Sweany, S. Carr, and B.L. Huber, "Global Instruction Scheduling Without Copies", *Digital Technical Journal* 10(1), December 1998.

12. C.-K. Shene and S. Carr. "The Design of a Multithreaded Programming Course and Its Accompanying Software Tools", *The Journal of Computing in Small Colleges* 14(1), November 1998.

13. S. Carr and R.B. Lehoucq, "Compiler Blockability of Dense Matrix Factorizations", *ACM Transactions on Mathematical Software* 23(3), September 1997.

14. K. McKinley, S. Carr and C.-W. Tseng, "Improving Data Locality with Loop Transformations", *ACM Transactions on Programming Languages and Systems* 18(4), July 1996.

15. S. Carr and K. Kennedy, "Improving the Ratio of Memory Operations to Floating-Point Operations in Loops", *ACM Transactions on Programming Languages and Systems* 16(6), November 1994.

16. S. Carr and K. Kennedy, "Scalar Replacement in the Presence of Conditional Control Flow", *Software - Practice & Experience* 24(1), January 1994.

REFEREED CONFERENCE PUBLICATIONS

1. I. Kahvazadeh, I. Kholmatov, P. S Kolhe, P. Vaidya, A. C. Fong, M. Harnar. S. Carr and A. Gupta. "Gamified Immersive Learning Experiences for Promoting AI Readiness across STEM Disciplines", In *Proceedings of the 16th IEEE Integrated STEM Education Conference*, March 2026.

2. Kahvazadeh I, Fong ACM, Carr S, Gupta A, Bhattacharjee S, and Chen KC, "Enhancing AI competency in e-Science with immersive learning experiences", 21st IEEE International Conference on eScience (eScience 2025), September 2025, Chicago, IL.

3. S. Saeedi, A. Fong and S. Carr. "Reusable Toolkit for Natural Language Processing in an Ambient Intelligence Environment", In the *2022 IEEE Symposium Series on Computational Intelligence (SSCI).*

4. A. Fong, A. Gupta, S. Carr, S. Bhattacharjee, and M. Harnar. "Modular experiential learning for secure, safe, and reliable AI: Curricular Initiative to Promote Education in Trustworthy AI", In *SIGITE '22: Proceedings of the 23rd Annual Conference on Information Technology Education*, Chigago, IL, September 21 – 24, 2022.

5. A.C.M. Fong, A.K. Gupta, S. Carr, S. Bhattacharjee, and M. Harnar. "A Balanced Pedagogical Approach toward AI Readiness Education for STEM Learner", To appear in *Proceedings of 2022 6th International Conference on Education and E-Learning* (ICEEL 2022), Tsuru, Japan, November 21-23, 2022.

6. A.C.M. Fong, A. Gupta, S. Carr, and S. Bhattacharjee. "Case Study: Experiential Learning Activities that Build Trustworthiness in AI Across Multiple STEM Disciplines", In *Proceedings of the 4th Asia-Pacific Conference on Education, Teaching, and Technology*, Singapore, July 2022.

7. A.C.M. Fong, A. Gupta, S. Carr, and S. Bhattacharjee. "Promoting AI trustworthiness through experiential learning (work-in-progress)", In *Proceedings of the ASEE Annual Conference & Exposition (ASEE 2022)*, Computing & Information Technology Division, Minneapolis, MN, USA, June 2022.

8. S. Saeedi, A.C.M. Fong, A. Gupta, and S. Carr. Learning models for machine commonsense reasoning systems, In *Proceedings of the IEEE International Conference on Recent Advances in Systems Science and Engineering (RASSE 2022)*, Tainan, Taiwan, November 2022.

9. W. Fadheel, W. Al-Mawee, and S. Carr. "On Phishing: URL Lexical and Network Traffic Features Analysis and Knowledge Extraction using Machine Learning Algorithms (A Comparison Study)", In *2022 5th IEEE International Conference on Data Science and Information Technology (DSIT 2022)*, Shanghai, China, July 22-24 2022.

10. A. Fong, A. Gupta, S. Carr, and S. Bhattacharjee. "Experiential Learning Modules for Promoting AI Trustworthiness in STEM Disciplines", In *Proceedings of EDUNINE 2022: VI IEEE World Engineering Education Conference*, Ibero-America (Hybrid), March 13– 16, 2022.

11. S. Carr, Y.C. Cheng, Y.H. Hu, J. Mayo, A. Radwan, C.K. Shene, and J. Walker, "Design and Use of a Visualization for Teaching Integer Coercion", In *Proceedings of the 53rd ACM Technical Symposium on Computer Science Education* (SIGCSE 2022), February 2022, Pages 794–800.

12. W. Al-Mawee, S. Carr and J. Mayo. "Admonita: A Recommendation-Based Trust Model for Dynamic Data Integrity", In *Proceedings of the 7th International Conference on Information Systems Security and Privacy* (ICISSP 2021), Online, February 2021.

13. J. Walker, M. Wang, S. Carr, J. Mayo, and C.-K. Shene. "A System for Visualizing the Process Address Space in the Context of Teaching Secure Coding in C", In *The 51st ACM Technical Symposium on Computer Science Education*, Portland, OR, USA, March 11 – 14, 2020.

14. M. Wang, J. Walker, S. Carr, J. Mayo, and C.-K. Shene. "Teaching Integer Security Using Simple Visualizations", In *Proceedings of the 24th International Conference on Innovation and Technology in Computer Science Education* (ITiCSE 2019), Aberdeen, UK, July 2019.

15. W. Al-Mawee, P. J. Bonamy, S. Carr and J. Mayo. "Maia: A language for Mandatory Integrity Controls", In *Proceedings of the 5th International Conference on Information Systems Security and Privacy* (ICISSP 2019), Prague, Czech Republic, February 23 – 25, 2019.

16. N. Alsaedi, S. Carr, and A. Fong. "Applying Supervised Learning to the Static Prediction of Locality-Pattern Complexity in Scientific Code", In *Proceedings of the IEEE 17th International Conference on Machine Learning and Applications* (ICMLA 2018), Orlando, FL, December 17 – 20, 2018.

17. J. Walker, J. Mayo, C.-K. Shene, and S. Carr. "Visualization for Secure Coding in C", In *Proceedings of the ACM 22nd Annual Conference on Innovation and Technology in Computer Science Education*, Bologna, Italy, July 2017.

18. M. Wang, J. Mayo, C.-K. Shene, S. Carr, and C. Wang. "UNIXvisual: A Visualization Tool for Teaching UNIX Permissions", *In the 22nd Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE 2017)*, Bologna, Italy, 3-5 July 2017.

19. A. Y. Sarhan and S. Carr. "Protecting Sensitive Data in Clouds Using Active Data Bundles and Agent-Based Secure Multiparty Computation", *In the 4th IEEE International Conference on Cyber Security and Cloud Computing (IEEE CSCloud 2017)*, New York, NY, June 26-28, 2017.

20. P. Bonamy, S. Carr, and J. Mayo. "Toward a Mandatory Integrity Protection System", In *Proceedings of the Thirty-first International Conference on Computers and Their Applications*, Las Vegas, NV, April 4-6, 2016.

21. M. Wang, J. Mayo, C.-K. Shene, T. Lake, S. Carr, and C. Wang. "RBACVisual: A Visualization Tool for Teaching Access Control using Role-based Access Control", In *Proceedings of the Twentieth Annual ACM SIGCSE Conference on Innovation and Technology in Computer Science Education*, Vilnius, Lithuania, July 6-8, 2015.

22. M. Wang, S. Carr, J. Mayo, C.-K. Shene, and C. Wang. "MLSVisual: A Visualization Tool for Teaching Access Control using Multi-Level Security", In *Proceedings of the Nineteenth Annual ACM SIGCSE Conference on Innovation and Technology in Computer Science Education*, Uppsala, Sweden, June 23-25, 2014.

23. S. Vormwald, W. Wang, S. Carr, S. Seidel, and Z. Wang. "Predicting Remote Reuse Distance Patterns in UPC Applications", In *PGAS '10: Proceedings of the Fourth Conference on Partitioned Global Address Space Programming Models*, October 2010.

24. C. Fang, S. Carr, S. Onder, and Z. Wang. "Feedback-directed Memory Disambiguation Through Store Distance Analysis", In *Proceedings of the 20th ACM International Conference on Supercomputing*, Queensland, Australia, June 2006.

25. C. Fang, S. Carr, S. Onder, and Z. Wang. "Path-based Reuse Distance Analysis", In *Proceedings of the 15th International Conference on Compiler Construction*, Vienna, Austria, March 2006.

26. C. Fang, S. Carr, S. Onder, and Z. Wang. "Instruction Based Memory Distance Analysis and Its Application to Optimization", In *Proceedings of the Fourteenth ACM/IEEE International Conference on Parallel Architectures and Compilation Techniques*, St. Louis, MO, September 2005.

27. P. Zhou, S. Onder, and S. Carr. "Fast Branch Misprediction Recovery in Out-of-order Superscalar Processors", In *Proceedings of the 2005 ACM International Conference on Supercomputing*, Boston, MA, June 2005.

28. S. Carr and S. Onder. "A Case for a Working-set-based Memory Hierarchy", In *Proceedings of the 2005 ACM International Conference on Computing Frontiers*, Ischia, Italy, May 2005.

29. S. Carr and P. Sweany. "Automatic Data Partitioning for the Agere Payload Plus Network Processor", In *, Proceedings of the ACM/IEEE 2004 International Conference on Compilers, Architecture and Synthesis for Embedded Systems*, Washington, D.C., September 2004.

30. Y. Ma, S. Carr and R. Ge. "Low-cost Register-pressure Prediction for Scalar Replacement Using Pseudo-schedules", In *Proceedings of the 2004 International Conference on Parallel Processing*, Montreal, Quebec, August 2004.

31. C. Fang, S. Carr, S. Onder, and Z. Wang. "Reused-distance-based Miss-rate Prediction on a Per Instruction Basis", In *Proceedings of the 2004 ACM Workshop on Memory System Performance*, June 2004.

32. S. Carr, C. Fang, T. Jozwowski, J. Mayo and C.-K. Shene. "ConcurrentMentor: A Visualization System for Distributed Programming Education". In *Proceedings of the 2003 International Conference on Parallel an Distributed Processing Techniques and Applications*, Las Vegas, NV, June 2003.

33. Y. Qian, S. Carr and P. Sweany. "Optimizing Loop Performance for Clustered VLIW Architectures", In *Proceedings of the Eleventh IEEE International Conference on Parallel Architectures and Compiler Techniques* (PACT-2002), Charlottesville, Virginia, September 22-25, 2002.

34. Y. Qian, S. Carr and P. Sweany. "Loop Fusion for Clustered VLIW Architectures", In *Proceedings of the ACM 2002 Joint Conference on Languages, Compilers and Tools for Embedded Systems/Software and Compilers for Embedded Systems*, Berlin, Germany, June 2002.

35. S. Carr, P. Chen, T. Jozwowski, J. Mayo and C.-K. Shene. "Channels, Visualization and Topology Editor", In *Proceedings of the Seventh Annual ACM SIGCSE Conference on Innovation and Technology in Computer Science Education*, Aarhus, Denmark, June 2002.

36. D. Sule, S. Carr, and P. Sweany. "Evaluating Register Partitioning with Genetic Algorithms", In *Proceedings of the Fourth International Conference on Massively Parallel Computing Systems*, Ischia, Italy, April 2002.

37. S. Carr. C.Fang, T. Jozwowski, J. Mayo and C.-K. Shene. "A Communication Library to Support Concurrent Programming Courses", In *Proceedings of the 33rd ACM SIGCSE Technical Symposium on Computer Science Education*, Northern Kentucky, February 2002.

38. X. Huang, S. Carr and P. Sweany. "Loop Transformations for Architectures with Partitioned Register Banks", In *Proceedings of the 2001 Workshop on Languages, Compilers and Tools for Embedded Systems* (LCTES '2001), Snowbird, Utah, June 22-23, 2001.

39. M. Bedy, S. Carr, S. Onder and P. Sweany. "Improving Software Pipelining by Hiding Memory Latency with Combined Loads and Prefetches", In *Interaction between Compilers and Computer Architectures*, G. Lee and P.-C. Yew ed., Kluwer Academic Publishers, 2001.

40. J. Hiser, S. Carr and P. Sweany. "Global Register Partitioning", In *Proceedings of the 2000 International Conference on Parallel Architectures and Compiler Techniques*, Philadelphia, PA, October 15-19, 2000.

41. S. Carr and C.-K. Shene. "A Portable Class Library for Teaching Multithreaded Programming". In *Proceedings of the Fifth Annual Conference on Innovation and Technology in Computer Science Education*, Helsinki, Finland, July 11-13, 2000.

42. J. Hiser, S. Carr, P. Sweany, and S.J. Beaty. "Register Assignment for Software Pipelining with Partitioned Register Banks". In *Proceedings of the 2000 International Parallel and Distributed Processing Symposium*, Cancun, Mexico, May 1-4, 2000.

43. M.J. Bedy, S. Carr, X. Huang and C.-K. Shene. "A Visualization System for Multithreaded Programming", In *Proceedings of the 31st Annual SIGCSE Technical Symposium on Computer Science Education*, Austin, TX, March 8-12, 2000.

44. M.J. Bedy, S. Carr, X. Huang and C.-K. Shene. "The Design and Construction of a User-Level Kernel for Teaching Multithreaded Programming", In *Proceedings of the 1999 ASEE/IEEE Frontiers in Education, San Juan*, Puerto Rico, November 10-13, 1999.

45. S. Jang, S. Carr, P. Sweany, and D. Kuras, "A Code Generation Framework for VLIW Architectures with Partitioned Register Files". In *Proceedings of the Third International Conference on Massively Parallel Computing Systems*, Colorado Springs, Colorado, April 1998.

46. S. Carr and Y. Guan. "Unroll-and-Jam Using Uniformly Generated Sets", In *Proceedings of the 30th International Symposium on Microarchitecture (MICRO-30)*, Research Triangle Park NC, December 1997.

47. C. Ding, S. Carr, and P. Sweany. "Modulo Scheduling with Cache-Reuse Information", *Lecture Notes in Computer Science 1300*, Springer-Verlag, Proceedings of Europar 97, Passau, Germany, August 1997.

48. S. Carr. "Combining Optimization for Cache and Instruction-Level Parallelism", In *Proceedings of the 1996 International Conference on Parallel Architectures and Compiler Techniques (PACT 96)*, Boston MA, October 1996.

49. S. Carr, C. Ding and P. Sweany, "Improving Software Pipelining with Unroll-and-Jam", In *Proceedings of the Twenty-Ninth Annual Hawaii International Conference on System Sciences*, Maui HI, January 1996.

50. T. Brasier, P. Sweany, S. Beaty and S. Carr, "CRAIG: A Practical Framework for Combining Instruction Scheduling and Register Assignment", In *Proceedings of the 1995 International Conference on Parallel Architectures and Compilation Techniques (PACT 95)*, Cyprus, June 1995.

51. S. Carr and R.B. Lehoucq, "A Compiler Blockable Algorithm for QR Decomposition", In *Proceedings of the 7th SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco CA, February 1995.

52. S. Carr, K.S. McKinley and C-W. Tseng, "Compiler Optimizations for Improving Data Locality", In *Proceedings of the Sixth International Conference on Architectural Support for Programming Languages and Compilers (ASPLOS-VI)*, San Jose CA, October 1994.

53. S. Carr and K. Kennedy, "Compiler Blockability of Numerical Algorithms", In *Proceedings of Supercomputing '92'*, Minneapolis MN, November 1992.

54. S. Carr, D. Callahan and K. Kennedy, "Improving Register Allocation for Subscripted Variables", In *Proceedings of the ACM SIGPLAN 1990 Conference on Programming Language Design and Implementation (PLDI 90)*, White Plains NY, June 1990.

REFEREED WORKSHOP PUBLICATIONS

1. H. Li, J. Chang, Z. Yang and S. Carr."Memory Distance Measurement for Concurrent Programs", In the *Proceedings of the 30th International Workshop on Languages and Compilers for Parallel Computing*, College Station, TX, October 2017.

2. Y. Ma and S. Carr. "Register Pressure Guided Unroll-and-Jam", In The *2008 Open64 Workshop*, Boston, MA, April 6, 2008.

3. P. Sweany and S. Carr. "Building a C Compiler Retargetable for DSP Processors", In *Proceedings of the 1st Workshop on Optimizations for DSP and Embedded Systems*, San Francisco, CA, March 2003.

4. D. Kuras, S. Carr and P. Sweany. "Value Cloning for Architectures with Partitioned Register Banks", In *The 1998 Workshop on Compiler Support for Embedded Systems (CASES98)*, Washington D.C., December 1998.

5. S. Carr and P. Sweany. "Improving Software Pipelining with Hardware Support for Self-Spatial Loads", In *Proceedings of the Third Workshop on Interaction between Compilers and Computer Architecture (INTERACT-3)*, San Jose, CA, October 1998.

INVITED PUBLICATIONS

1. D. Callahan, S. Carr and K. Kennedy. "Retrospective: Improving Register Allocation for Subscripted Variables", In *20 Years of the ACM Conference on Programming Language Design and Implementation (1979 – 1999): A Selection.*

2. S. Carr and K. Kennedy, "Compiling Scientific Code for Complex Memory Hierarchies", In *Proceedings of the Twenty-Fourth Annual Hawaii International Conference on System Sciences*, Kauai HI, January 1991.

3. S. Carr and K. Kennedy, "Blocking Linear Algebra Codes for Memory Hierarchies", In *Proceedings of the Fourth SIAM Conference on Parallel Processing for Scientific Computing*, Chicago IL, December 1989.

PROFESSIONAL ACTIVITIES

External Program Review:
- Chicago State University
- East Carolina University
- University of Botswana

ABET PEV for CAC - Computer Science

Conference Program Committee Memberships:
- ACM SIGMICRO MICRO-29 (1996), ACM SIGPLAN PLDI (1997), Euromicro MPCS (1998, 2002), ACM PACT (2003, 2005, 2008), ACM MSP (2005), ACM Computing Frontiers (2005), ASEE North-Central Section Conference (2025)

Conference Organizing Committee Memberships:
- ACM PACT 2002
- ASEE North-Central Section Conference 2024

Judge for Kalamazoo Math and Science Center Research Competition 2023

OTHER UNIVERSITY SERVICE

Graduate Faculty Council 2000-02 (Secretary 2000-01)
MTU University Senate, 1998-2000, 2001-02
Undergraduate adviser, 2000 – 2009
Advised or co-Advised 8 Ph.D. Dissertations and 14 M.S. Theses
Advised 10 undergraduate research projects
Graduate Program Director, 1996-2003, 2006-2010
University Academic Integrity Committee, 2005-08
College of Sciences & Arts Promotion and Tenure Committee, 2006-09 (Chair 2007-09)
University Committee on Academic Tenure, Promotion and Reappointment, 2009 – 2010
Mediator for AAUP Grievances, 2012 - 2016
Bargaining team member for Teaching Assistants Union negotiations, 2014-15
WMU Faculty Senate, 2018 - 2021
WMU Senate Research Policy Committee, 2019 - 2021
Chaired the search committees for department chairs in Electrical and Computer Engineering, Engineering Design and Manufacturing, and Mechanical Engineering

REFERENCES

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