

BIOGRAPHICAL SKETCH AND PROFESSIONAL ACTIVITIES
RENSSELAER POLYTECHNIC INSTITUTE
September 24, 2009

I. Personal Data

Name: Christopher D. Carothers
Current Rank: Associate Professor
Department: Computer Science
School: Science

May, 2008 Associate Head of Computing for Computer Science
May, 2004 Associate Professor
August, 1998 Assistant Professor

Date of Birth: March, 19, 1968

Education Preparation

(1) Baccalaureate and graduate degree(s), institution, date

Ph.D. , Computer Science	Georgia Institute of Technology, September 1997
M.S. , Computer Science	Georgia Institute of Technology, December 1996.
B.S. , Information and Computer Science	Georgia Institute of Technology, December 1991

II. Professional Experience

October, 2005 – December, 2007	Consultant, Member of Research Staff General Electric, Research Center
January, 1997 – August, 1998	Research Scientist , Georgia Institute of Technology
June, 1996 – September, 1996	Member of Technical Staff , MITRE Corporation
June, 1993–October, 1993	Member of Technical Staff , Bellcore
June, 1994–September, 1994	Member of Technical Staff , Bellcore
January, 1992–March, 1997	Research Assistant , Georgia Tech Research Institute

III. Teaching

A. Courses

Date		Number	Title	Enrollment
2009	Fall	CSCI-2500	Computer Organization	93
2009	Spring	CSCI-4320/6340	Parallel Comp. & Prog.	50
2008	Fall	CSCI-2500	Computer Organization	80
2008	Spring	CSCI-6964	High-Perf. Par. Dist. Comp.	20
2008	Fall	CSCI-2500	Computer Organization	77
2007	Spring	Special Leave		
2006	Fall	CSCI-2500	Computer Organization	60
2006	Spring	Sabbatical Leave		
2005	Fall	Sabbatical Leave		
2005	Spring	CSCI-4972/6962	Parallel Distributed Simulation Systems	8
2004	Fall	CSCI-4250	Computer Architecture	32
2004	Spring	CSCI-4250	Computer Architecture	40
2003	Fall	No Course	On Parental Leave	
2003	Spring	CSCI-2500	Computer Organization	66
2002	Fall	CSC-4966/6965	Parallel Distributed Simulation Systems	19
2002	Spring	CSCI-2500	Computer Organization	70
2001	Fall	CSCI-4966/6965	Parallel Distributed Simulation Systems	31
2001	Spring	CSCI-2500	Computer Organization	92
2000	Fall	CSCI-4964/6964	Parallel Distributed Simulation Systems	43
2000	Spring	CSCI-2500	Computer Organization	85
1999	Fall	CSCI-2500	Computer Organization	170
1999	Spring	CSCI-2500	Computer Organization	56
1998	Fall	CSCI-2500	Computer Organization	92

B. Student Thesis Supervision

a. Bachelors

Undergraduate Research Program (URP)

1. **David Bauer**, *ROSS Parallel Simulation Project*. David developed the computing architecture and core scheduling algorithm for ROSS. This worked results in two publications, one conferences and one journal. David is a co-author on those publications and has since transitioned to the CS PhD program. *Completed Summer 1999*.
2. **Max Berman**, *Configurable Application View Storage*. Max was responsible for developing an initial simulation model of the view storage architecture. *Completed Spring 2000*.

3. **Justin Lapre**, *Linux / Segmented Virtual Memory Project*, Justin was developing a new virtual memory management scheme that will utilize segments on the Pentium-III architecture. *Completed Spring 2000.*
4. **Justin Lapre**, *Real-time Spatial Mapping and Referencing of Retinal Images*, Justin is developing a new technique for realizing an embedded real-time system from an existing code base as well as enabling a more efficient memory paging system. *Completed Spring 2003.*
5. **Vinny Paceri**, *Mapping the World Wide Web*. Vinny is developing efficient techniques to explore the Internet to ascertain a measure of its size. *Completed Fall 1999.*
6. **Shawn Pearce**, *ROSS Parallel Simulation Project*. Shawn developed the data structure and computing architecture for ROSS. This work resulted in two publications, one conference and one journal. Shawn is a co-author on those publications. *Completed Summer 1999.*
7. **Shawn Pearce**, *High-Performance, Real-Time File System*. Shawn is developing a new file system architecture will that enable the reading and writing of data with hard real-time deadlines at a sustained rate of 100 MB/sec and will scale to 1 GB/sec using commodity based hardware. *Completed Fall 2002.*
8. **Mike Peters**, *Perfectly Reversible Parallel Simulation*. Mike designed new algorithms that will enable models to be executed in a perfectly reversible mode of operation (i.e., no state saving). Mike transitioned to the CS M.S. program, completed his M.S. Thesis and is now working at Sandia National Labs. *Completed January 2004.*
9. **Fred Smith**, *Emulation of Network Protocols Using Existing Source Code Implementations*. Fred will be taking open source network protocols, such as TCP/IP and pulling them out of the OS and running them directly as part of a simulation/ emulation framework. *Completed Spring 2002.*
10. **Benjamin Roghani**, *Efficient Parallel Virtual Environments*. Ben is designing a new virtual environment system that leverages state-of-the-art graphics hardware. In particular, he is attempting to develop a new method for doing soft shadowing that will improve the state-of-the-art. *Completed Spring 2004.*
11. **Darling Garcia, and Ron Sze**, *Efficient, Parallel Simulation of the Border Gateway Protocol (BGP)*. Darling and Ron are implementing the BGP Internet routing protocol in our ROSS/ROSS.NET parallel simulation framework. This work is co-advised by Dr. S. Kalyanaraman. *Completed Spring 2004.*
12. **Richard Alimi**, *Real-time Detection and Termination of Buffer of Overflow Attacks*. Rich will be developing a new suit of algorithms to be inserted at the system call level of the operating system that will be able to efficiently detect and terminate “buffer overflow” security holes from being used to gain access or corrupt a computer system. *Completed Spring 2005.*

13. **Andrew Zonenberg**, *Massively Parallel Security Hash-Cracker Using GPUs*. Andrew is constructing what appears to be the one of the worlds fastest if not the fastest hash-cracker systems in the world. Using CUDA on a cluster of seven GPUs (GTX 280s), his system can do 2.1 billion MD5 hash-guesses per second. He is still attempting to improve the performance. *Expected completion is May 2009*

b. **Masters**

Masters Thesis – Completed

1. **Mike Peters**, “An Algorithm for Fully-Reversible Optimistic Parallel Simulation”, Completed January 2004 for Graduation in May 2004.

Masters Thesis – In Progress

1. **David Archibald**, “Distributed Applications Across Embedded Systems”, Expected Graduation in May 2009.

Masters Projects – Completed

1. **Alexei V. Zheglov**, “A Study of SNMP MIB Design and Implementation”, Completed Spring 1999.
2. **Ying “Vicky” Guo**, “Multicast Network Models Using Reverse Computation”, Completed May 2002.
3. **Larry Bush**, “Large-Scale Modeling and Simulation of Hot Potato Routing in Sensor Networks”, Completed May 2003.

c. **Doctoral**

Research Associates / Postdocs

1. **David Bauer**, May 2005 – December 2005.

Graduated Ph.D. Students

1. **Garrett Yaun, May 2005**, “Efficient Large-Scale Computer Systems and Network Modeling Using Optimistic Parallel Simulation”, Current Employer: Google, San Jose CA.
2. **David Bauer, December 2005**, “Meta-Simulation Design and Analysis for Large-Scale Networks”, Current Employer: MITRE, Herdon, VA.
3. **Bouchra Bouqata, September 2006**, “Using Data Mining to Improve HMM Estimation and Complexity”, Co-Advised by B. K. Szymanski and M. J. Zaki. Current Employer: General Electric, Corporate Research and Development Center, Niskayuna NY.
4. **Ryan LaFortune, May 2008**, “Techniques and Data Structures for Efficient Information Access in Distributed Networks”, Thesis Candidacy Exam completed April 2007. Co-Advised by C. Busch. Current Employer: MITRE, Bedford MA.

Current Ph.D. Students

1. **Mark Anderson**: Thesis under development. Working in the area of large-scale network models that leverage massively parallel discrete-event simulation techniques.

2. **Jing Fu:** Thesis under development. Working in the area of modeling and simulation of Petascale computations.
3. **Akintayo Holder:** Thesis under development. Working in the area of Parallel Electronic Design Automation tools.
4. **Justin LaPre:** Thesis under development. Working in the area of large-scale network models that leverage massively parallel discrete-event simulation techniques.
5. **Ning Liu,** Thesis under development. Working in the area of modeling and simulation of Petascale computations.
6. **Joshua Nasman,** Co-advised with Prof. Cutler. Working in the area of massively parallel graphics algorithms.

Ph.D. Thesis Committee Membership – Completed

1. **Hong Shin, December 1999,** “Progress Redundant Vision Algorithms for Real-time Spatial Referencing Application to Laser Retinal Surgery”, Rensselaer, ECSE, Advisers: B. Roysam, and C. Stewart.
2. **Erman Coskun, July, 2001,** “The Impact of Complexity in Embedded Intelligent Real-Time System”, Rensselaer, Engineering Science, Advisers: M. Grabowski and D. Berg.
3. **David Harrison, December 2001,** “Edge-to-Edge Traffic Control for the Internet”, Rensselaer, Computer Science, Adviser: S. Kalyanaraman.
4. **Gang Chen, January 2003,** “Component-Based Simulation”, Rensselaer, Computer Science, Adviser: B. K. Szymanski.
5. **Jason Liu, January 2003,** “Improvements in Conservative Parallel Simulation of Large-Scale Models”, Dartmouth College, Computer Science, Adviser: D. Nicol.
6. **Tao Ye, March 2003 ,** “Adaptive Optimization of Network Protocols Using On-line Simulation”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: S. Kalyanaraman.
7. **Li Jiang, July 2003,** “End-To-End Multicast Congestion Control and Avoidance”, Rensselaer, Computer Science, Adviser: S. Kalyanaraman.
8. **Stephen L. Fitzhugh, April 2004,** “Explicit Rate Congestion Management for Packet Switched Networks”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: S. Kalyanaraman.
9. **Kartikeya Chandrayana, May 2004,** ”Novel Placement of Congestion Control Functions in the Internet”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: S. Kalyanaraman.
10. **Yu Liu, July 2004,** “Loosely Coordinated, Distributed Network Simulation”, Rensselaer, Computer Science, Adviser: B. K. Szymanski.
11. **Jun Peng, August 2004,** “Multicast Congestion Control and Loss Recovery with Network Assistance”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: B. Sidkar.

12. **Xingzhe Fan, December 2005**, “Robust Nonlinear Control Designs for Communications Networks”, Rensselaer, Electrical and Computer Systems Engineering (ECSE), Adviser: M. Arcaç.
13. **Yu Juan (Annie) Zeng, January 2005**, “Wafer-Level Three-Dimensional Cache Architecture Design For Memory-Intensive Applications”, Rensselaer, Electrical and Computer Systems Engineering, Advisers: R. J. Gutmann and K. Rose.
14. **Huaming Wu, June 2005**, “Supporting Multimedia Applications in Resource Constrained Multihop Wireless Networks”, Rensselaer, Electrical and Computer Systems Engineering (ECSE), Adviser: A. Abouzeid.
15. **Chi-nan Chiang, July 2005**, “An Information-Theoretic Approach to Storage Management for Middleware Caching”, Rensselaer, Computer Science (CS), Adviser: S. Adali.
16. **Omesh Tickoo, May 2005**, “End-to-End Solutions for Real-Time Transmission Over Resource Deficient Networks”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: S. Kalyanaraman.
17. **David Levermore, August 2005**, “Global Database Query in Collaborative Environments”, Rensselaer, Decision Sciences (DSES), Adviser: Cheng Hsu.
18. **Hua Yang, August 2005**, “Architectures for Application-Oriented Information Dissemination in Ad-Hoc Sensor Networks”, Rensselaer, Electrical and Computer Systems Engineering (ECSE), Adviser: B. Sikdar.
19. **Yongqiang Zhang, August 2006**, “Structured Motifs in Biological Sequences: Localization and Extraction”, Rensselaer, Computer Science (CS), Adviser: M. J. Zaki.
20. **Okan Erdogan, December 2006**, “A Three-Port Pipelined Register File Implemented Using a SiGe HBT BiCMOS Technology”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: J. McDonald.
21. **Young Uk Yim, December 2006**, “High Speed Serial Data Transmission Integrated Circuits with Half-Rate Clock and Quarter-Rate Clock in SiGe BiCMOS Technology” Rensselaer, Electrical and Computer Systems Engineering, Adviser: J. McDonald.
22. **Juong-Sik Lee, May 2007**, “Recurrent Auctions in E-Commerce”, Rensselaer, Computer Science (CS), Adviser: B. K. Szymanski.
23. **Philip Jacob, August 2007**, “3D Processor Memory Stack Architecture”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: J. McDonald.
24. **Vijay Subramanian, May 2008**, “Transport and Link-Level Protocols for Wireless Networks and Extreme Environments”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: S. Kalyanaraman.
25. **Paul Belemjian, August 2008**, “High Speed Adder Design Using BiCMOS SiGe Technology”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: J. McDonald.

26. **Anil Kumar Karanam, August 2008**, “A P-Adaptive Stabilized Finite Element Method for Fluid Dynamics”, Rensselaer, Computer Science, Adviser: K. Jansen.
27. **Yang Liu, December 2008**, “Low-Power Circuit and System Design in Nanoelectronics Regime”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: Y. LeCoz.
28. **Jin-Woo Kim, August 2009**, “SiGe High Speed Crossbar Switch for Digital Signal Router and Phased Array Antenna Systems”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: J. McDonald.
29. **Aamir Zia, August 2009**, “High-Performance Memory Systems using 3-D IC Technology”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: J. McDonald.
30. **Min Zhou, August 2009**, “Petascale Adaptive Computational Fluid Dynamics”, Rensselaer, Mechanical, Aerospace and Nuclear Engineering, Adviser: K. Jansen.

Ph.D. Thesis Committee Membership – In Progress

1. **Tiffany Lam**, “A Stochastic, Arbitrary-Order Impulse-Response Moment-Extraction Algorithm for Uncoupled RC Interconnect Networks”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: Y. LeCoz, Thesis Candidacy Completed in April 2008.
2. **Dawei Ni**, “Efficient Moment-Extraction Algorithms for Coupled RC Interconnect Networks”, Rensselaer, Electrical and Computer Systems Engineering, Adviser: Y. LeCoz, Thesis Candidacy Completed in April 2008.
3. **Eyuphan Bulut**, “Opportunistic Routing Algorithms in Delay Tolerant Networks”, Rensselaer, Computer Science, Adviser: B. K. Szymanski, Thesis Candidacy Completed in July 2009.

C. Course and Curriculum Development

In 2000, introduced a senior undergraduate/graduate course in parallel and distributed simulation systems. Course has been offered during the Fall 2000, Fall 2001, Fall 2002 and Spring 2005. In Spring 2008, I offered a new introductory course in High-Performance Parallel and Distributed Computing. This course will re-use the existing course the Computer Science department offers called Parallel Computing at the undergraduate 4000 level and Parallel Programming at the graduate level.

IV. Publications

A. **Books, Monographs** None.

B. **Refereed Articles**

1. **In refereed JOURNAL (articles which are reviewed by peers in the field prior to publication).**

(a) **Major articles**

1. M. J. Zaki, **C. D. Carothers**, and B. K. Szymanski, "VOGUE: A Novel Variable Order-Gap State Machine for Modeling Sequences", To appear in *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 2009.
2. O. Sahni, **C. D. Carothers**, M. S. Shephard, K. E. Jansen, "Strong Scaling Analysis of an Unstructured, Implicit Solver on Massively Parallel Systems", To appear in *Scientific Programming* Fall 2009, IO Press.
3. T. J. Hacker, F. Romero and **C. D. Carothers**, "An Analysis of Clustered Failures on Large Supercomputing Systems", to appear in *Journal of Parallel and Distributed Computing (JPDC)*, 2009.
4. D. Bauer, and **C. D. Carothers**, "Seven-O'clock: A New Distributed GVT Algorithm Using Network Atomic Operations", to appear in *International Journal of Simulation and Process Modeling* as part of special issue on Parallel and Distributed Simulation 2009.
5. C. Hsu, David Levermore, **C. D. Carothers**, and G. Babin, "Enterprises Collaboration: On-Demand Information Exchange Using Enterprise Databases, Wireless Sensor Networks, and RFID Systems", to appear in *IEEE Transactions on Systems, Man, and Cybernetics*, 2006.
6. C. Hsu, **C. D. Carothers**, and David Levermore, "A Market Mechanism for Participatory Global Query: A First Step of Enterprise Resources Self-Allocation", *Journal of Information Technology and Management*, Volume 7, Number 2, May, 2006. <http://www.inderscience.com/browse/index.php?journalID=18>
7. A. Tyrrell, J. LaPre, **C. D. Carothers**, B. Roysam and C. V. Stewart, "Transparent Migration of Off-Line Frame Rate Vision Systems to Real-Time", *IEEE Transactions on Information Technology in Biomedicine*, Volume 8, Number 2, June, 2004.
8. G. Yaun, H. L. Bhutada, **C. D. Carothers**, M. Yuksel, and S. Kalyanaraman, "Large-Scale Network Simulation Techniques: Examples of TCP and OSPF Models", *ACM SIGCOMM Computer Communication Review Special Issue on Tools and Technologies for Networking Research and Education*, Volume 33, Number 5, July, 2004.
9. G. Yaun, **C. D. Carothers**, S. Adali and D. Spooner, "Optimistic Parallel Simulation of a Large-Scale View Storage System", *Future Generation on Computer Systems (FCGS)*, Volume 19, Number 4, pages 479–492, November, 2003.
10. **C. D. Carothers**, D Bauer and S. Pearce, "ROSS: A High-Performance, Low Memory, Modular Time Warp System," *Journal of Parallel and Distributed Computing (JPDC)*, #62, pages 1648–1669, 2002.
11. **C. D. Carothers** and B. K. Szymanski, "Checkpointing Multithreaded Programs", *Dr. Dobbs Journal*, # 339, pages 46-51, August, 2002,
12. **C. D. Carothers** and R. M. Fujimoto, "Efficient Execution Time Warp Programs on Heterogeneous, NOW Platforms," *IEEE Transactions on*

Parallel and Distributed Systems (TPDS), Volume 11, Number 3, pages 299–317, March 2000.

13. **C. D. Carothers**, K. S. Perumalla, and R. M. Fujimoto, “Efficient Optimistic Parallel Simulations using Reverse Computation,” (journal version). *ACM Transactions on Computer Modeling and Simulation (TOMACS)*, Volume 9, Number 3, pages 224–253, July 1999.
14. **C. D. Carothers**, B. Topol, R. M. Fujimoto, J. T. Stasko, and V. S. Sunderam, “Visualizing Parallel Simulations Executing in Network Computing Environments” (journal version), *Future Generations of Computer Systems (FGCS)*, volume 15, pages 513-529, 1999.

(b) **Journal Articles Under Review or In Preparation**

1. Min Zhou, Onkar Sahni, M. S. Shephard, **C. D. Carothers**, and K. E. Jansen, “Data Reordering Algorithms for Acceleration of Finite Element Computations”, submitted to *International Journal for Numerical Methods in Engineering*.
2. **In refereed CONFERENCES (articles which are reviewed by peers in the field prior to publication).**
 - (a) **Major articles**
 1. D. W. Bauer and **C. D. Carothers** “Scalable RF Propagation Modeling on the IBM Blue Gene/L and Cray XT5 Supercomputers”, *Invited & Reviewed Paper*, To appear *Proceedings of the 2009 Winter Simulation Conference (WSC '09)*, December 2009.
 2. A. Ovcharenko, O. Sahni, **C. D. Carothers**, K. E. Jansen and M. S. Shephard, ”Subdomain Communication to Increase Scalability in Large-Scale Scientific Applications”, To appear in *2009 International Conference on Supercomputing (ICS)* (short paper) .
 3. D. Bauer, **C. D. Carothers** and A. O. Holder, ”Scalable Time Warp on Blue Gene Supercomputers”, In *Proceedings of the ACM/IEEE/SCS 23rd Workshop on Principles of Advanced and Distributed Simulation (PADS '09)*, June 22-26, 2009. **BEST PAPER AWARD.**
 4. R. LaFortune, **C. D. Carothers**, W. D. Smith, J. Czechowski and X. Wang, ”Simulating Large-Scale P2P Assisted Video Streaming”, In *Proceedings of the Hawaii International Conference on System Sciences (HICSS-42)*, Waikoloa, Big Island, Hawaii, January 2009.
 5. A. O. Holder, **C. D. Carothers**, “Analysis of Time Warp on a 32,768 Processor IBM Blue Gene/L Supercomputer”, In *Proceedings of the 2008 European Modeling and Simulation Symposium (EMSS '08)*, Campora San Giovanni, Amantea (CS), Italy, September 2008.
 6. R. LaFortune, **C. D. Carothers**, W. D. Smith and M. Hartman, “An Abstract Internet Topology Model for Simulating Peer-to-Peer Content Distribution”, In *Proceedings of the ACM/IEEE/SCS 21th Workshop on Principles of Advanced and Distributed Simulation (PADS '07)*, June 2007.

7. D. Bauer, **C. D. Carothers**, “Eliminating Remote Message Passing in Optimistic Simulation”, In *Proceedings of the 2006 Winter Simulation Conference (WSC '06)*, December 2006.
8. **C. D. Carothers**, R. LaFortune, W. D. Smith and M. Gilder. “A Case Study in Modeling Large-Scale Peer-to-Peer File-Sharing Networks Using Discrete-Event Simulation”, *Invited and Reviewed Paper*, In *Proceedings of the 2nd European Modeling AND Simulation Symposium*, Barcelona, Spain, October 2006.
9. B. Bouqata, **C. D. Carothers**, B. K. Szymanski, and M. J. Zaki, “VOGUE: A New HMM based on Mining Periodic Patterns with Variable Gaps”, In *Proceedings of 10th European Conference on Principles and Practice of Knowledge Discovery in Databases, Berlin, Germany*, September 2006.
10. D. Bauer, M. Yuksel, **C. D. Carothers**, and S. Kalyanaraman, “A Case Study in Understanding OSPF and BGP Interactions Using Efficient Experiment Design”, In *Proceedings of the 20th ACM/IEEE/SCS Workshop on Principles of Advanced and Distributed Simulation (PADS '06)*, Singapore, May 2006,
11. G. Yaun, D. Bauer, **C. D. Carothers**, “Sharing Event Data in Optimistically Scheduled Multicast Applications”, In *Proceedings of the 2005 Winter Simulation Conference (WSC '05)*, December 2005.
12. D. Bauer, G. Yaun, **C. D. Carothers**, S. Kalyanaraman, and M. Yuksel, “Seven-O’Clock: A New Distributed GVT Algorithm Using Network Atomic Operations”, In *Proceedings of the 19th Workshop on Principles of Advanced and Distributed Simulation (PADS '05)*, June 2005.
13. L. Bush, **C. D. Carothers**, and B. K. Szymanski, “Algorithm for Optimizing Energy Use and Path Resilience in Sensor Networks”, In *Proceedings of the 2nd European Workshop on Wireless Sensor Networks*, Istanbul, Turkey, Jan/Feb, 2005.
14. D. Bauer, G. Yaun, **C. D. Carothers**, M. Yuksel and S. Kalyanaraman, “Large-Scale Network Protocol Meta-Simulation Design and Performance Analysis”, In *Proceedings of the 2004 Winter Simulation Conference (WSC '04)*, December 2004.
15. M. Peters and **C. D. Carothers**, “An Algorithm for Fully Reversible Optimistic Parallel Simulation”, In *Proceedings of the 2003 Winter Simulation Conference (WSC '03)*, December 2003.
16. K. Sequeira, M. J. Zaki, B. K. Szymanski, and **C. D. Carothers**, “Improving Spatial Locality using Data Mining”, In *Proceedings of the 9th Conference on Knowledge Discovery and Data Mining (KDD)*, August 2003.
17. C. Hsu and **C. D. Carothers**, “A Self-Scheduling Model Using Agent-Base, Peer-to-Peer Negotiation and Open Common Schema”, In *Proceedings of the 17th International Conference on Production Research (ICPR '03)*, Blacksburg VA, August 2003.

18. G. Yaun, **C. D. Carothers**, and S. Kalyanaraman, “Large-Scale TCP Models Using Optimistic Parallel Simulation”, In *Proceedings of the 17th ACM/IEEE/SCS Workshop on Parallel and Distributed Simulation (PADS ’03)*, June 2003. **BEST PAPER AWARD.**
19. B. Bouqata, **C D. Carothers**, B. K. Szymanski and M. J. Zaki, “Understanding Filesystem Performance for Data Mining Applications”, In *Proceedings of the 6th Workshop on High-Performance Data Mining*, May 2003.
20. **C. D. Carothers**, “*XSim*: Real-Time Analytic Parallel Simulations”, In *Proceedings of the 16th ACM/IEEE/SCS Workshop on Parallel and Distributed Simulation (PADS 2002)*, pages 27–34, June 2002.
21. G. Yaun, **C. D Carothers**, S. Adali and D. Spooner, “Optimistic Parallel Simulation of a Large-Scale View Storage System”, In *Proceedings of 2001 Winter Simulation Conference (WSC’01)*, pages 1363–1371, December 2001.
22. **C. D. Carothers**, D. Bauer and S. Pearce, “ROSS: A High-Performance, Low Memory, Modular Time Warp System,” In *Proceedings of the 14th ACM/IEEE/SCS Workshop of Parallel on Distributed Simulation (PADS 2000)*, pages 53–60, May 2000.
23. **C. D. Carothers**, K. S. Perumalla, R. M. Fujimoto, “The Effect of State-Saving in Optimistic Simulation on A Cache-Coherent Non-Uniform Memory Access Architecture,” In *Proceedings of the 1999 Winter Simulation Conference*, December 1999.
24. **C. D. Carothers**, K. S. Perumalla, R. M. Fujimoto, “Efficient Optimistic Parallel Simulations using Reverse Computation,” *Proceedings of the 13th ACM/IEEE/SCS Workshop on Parallel and Distributed Simulation (PADS 99)*, pages 126–135, May 1999. **BEST PAPER AWARD.**
25. **C. D. Carothers**, M. I. Hybinette, and R. M. Fujimoto, “Toward Parallelization of Large-Scale Ada Simulations Using Time Warp,” *Proceedings of the 1998 Summer Computer Simulation Conference*, pages 600–606, July 1998.
26. **C. D. Carothers**, B. Topol, R. M. Fujimoto, J. T. Stasko, and V. S. Sunderam, “Visualizing Parallel Simulations in Network Computing Environments,” (conference version), *Proceedings of the 1997 Winter Simulation Conference*, pages 110–117, December 1997.
27. **C. D. Carothers**, R. M. Fujimoto, R. M. Weatherly, and A. L. Wilson. “Design and Implementation of HLA Time Management in the RTI version F.0,” *Proceedings of the 1997 Winter Simulation Conference*, pages 373–380, December 1997.
28. **C. D. Carothers**, and R. M. Fujimoto, “Background Execution of Time Warp Programs,” *Proceedings of the 10th ACM/IEEE/SCS Workshop on Parallel and Distributed Simulation (PADS ’96)*, pages 12–19, May 1996.
29. **C. D. Carothers**, R. M. Fujimoto and Y-B. Lin, “A Re-dial Model for

Personal Communications Services Networks,” *Proceedings of the IEEE 45th Vehicular Technology Conference* (VTC '95), pages 135–139, July 1995.

30. **C. D. Carothers**, R. M. Fujimoto and Y-B. Lin, “A Case Study in Simulating PCS Networks Using Time Warp,” *Proceedings of the 9th ACM/IEEE/SCS Workshop on Parallel and Distributed Simulation (PADS '95)*, pages 87–94, June 1995.

31. **C. D. Carothers**, R. M. Fujimoto and P. England, “The Effect of Communication Overheads on Time Warp Performance: An Experimental Study,” *Proceedings of the 8th Workshop on Parallel and Distributed Simulation (PADS '94)*, pages 118–125, July, 1994.

(b) **Conference Articles Under Review or In Preparation**

1. None at this time.

3. **Patents**

(a) **Patents Pending**

1. Accelerating Peer-to-Peer Content Distribution, General Electric Corporation. C. D. Carothers, J. Czechowski and W. D. Smith.

4. **In non-refereed articles**

(a) **Major articles**

1. D. Bauer, G. Yaun, **C. D. Carothers**, M. Yuksel, and S. Kalyanaraman, “ROSS.Net: An Optimistic Simulation Framework of Large-Scale Internet Models”, *Invited Paper, In Proceedings of the 2003 Winter Simulation Conference (WSC '03)*, December 2003.
2. **C. D. Carothers**, R. M. Fujimoto and Y-B. Lin, “Simulating Population Dependent PCS Network Models Using Time Warp,” *Invited Paper, Proceedings of the 1995 Winter Simulation Conference (WSC '95)*, pages 555–562, December 1995.
3. **C. D. Carothers**, R. M. Fujimoto, Y-B. Lin and P. England, “Distributed Simulation of Large-Scale PCS Networks,” *Invited Paper, Proceedings of the Second International Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems*, pages 2–6, February 1994.

(b) **Abstracts, letters of correspondence, book reviews, etc.**

1. **C. D. Carothers**, B. K. Szymanski and M. Zaki, “Performance Mining of Large-Scale Data-Intensive Applications”, Extended Abstract, to appear in *Proceedings of the International Parallel and Distribution Processing Symposium (IPDPS 2002)*, April 2002.
2. **C. D. Carothers**, M. J. Zaki, and B. K. Szymanski, “ISSAC: An Intelligent System for Exploiting Speculative Execution and Active Code in Large-Scale Distributed Simulations,” (extended abstract), In *Proceedings of the 1999 Dagstuhl Workshop on Agent-Based Simulation*, Dagstuhl, Germany, May, 1999.

3. **C. D. Carothers**, B. Topol, R. M. Fujimoto, J. T. Stasko, and V. Sunderam, “Middleware-Specific Visualization Support for Parallel Simulations in Cluster Environments,” (extended abstract). *Proceedings of the 1997 Cluster Computing Conference (CCC'97)*, May 1997.

(c) **Technical Reports**

1. **C. D. Carothers**, D. Bauer, S. Pearce. “ROSS: Rensselaer’s Optimistic Simulation System, User’s Guide”, Rensselaer Polytechnic Institute Technical Report, TR-02-12, <http://www.cs.rpi.edu/tr/02-12.pdf>, 2002.
2. S. Adali, D. Spooner, and **C. D. Carothers**. “CAVES: A Configurable Application View Storage System,” Rensselaer Polytechnic Institute Technical Report, TR-02-2000.

V. Research Grants and Contracts

(Give title of project, other senior investigators, starting and completion dates, amount of funding, sponsoring agency.)

A. Proposals Approved and Funded

1. “CAVES: A Configurable Application View Storage”, S. Adali (PI), C. D. Carothers (Co-PI), and D. Spooner (Co-PI). NSF-IIS Information and Data Management Program, IIS-9876932, *Award Period: September, 1999 – August, 2004, Award Value : \$266,000.*
2. “CAVES: Creating Test Applications”, S. Adali (PI), C. D. Carothers (Co-PI), and D. Spooner (Co-PI), NSF-IIS Information and Data Management Program, IIS-9876932, *Award Period: September, 2000 – August, 2004, Award Value: \$6,000.*
3. “Scalable Online Network Modeling and Simulation”, B. K. Szymanski (PI), C. D. Carothers (Co-PI), S. Kalyanaraman , and K. S. Vastola (Co-PI). DARPA Network Modeling and Simulation Program, F30602-00-2-0537, *Award Period: June 2000 – September, 2003, Award Amount: \$950,000.*
4. “Real-Time Computer Vision Spatial Mapping and Referencing for Minimally Invasive Surgery”, B. Roysam (PI), C. V. Stewart (Co-PI) and C. D. Carothers (Co-PI). NSF-EIA Experimental Systems Program. EIA-0000417 *Award Period: October, 2000 – October, 2004, Award Value: \$1,300,000.*
5. “Experimental Partnership – Real Time Computer Vision Spatial Mapping and Referencing for Minimally Invasive Surgery”, B. Roysam (Co-PI), C. V. Stewart (Co-PI) and C. D. Carothers (Co-PI). NSF-EIA Experimental Systems Program. EIA-0000417, *Award Period: October, 2001 – October, 2003, Award Value: \$15,000.*
6. “Performance Mining of Large-Scale Data-Intensive Distributed Object Applications”, M. J. Zaki (PI), C. D. Carothers (Co-PI), B. K. Szymanski (Co-PI), NSF-NGS Next Generation Software Program, EIA-0110708, *Award Period: September, 2001 – August, 2004, Award Value: \$409,000.*
7. “CAREER: Scalable, High-Performance Network Simulations Using Reverse Computation”, C. D. Carothers (sole PI), NSF-CCR, Operating Systems and

Compiler Program, CCR-0133488, *Award Period: June, 2002 – June, 2007, Award Value: \$375,000. note: proposal ONE of THREE out of 31 to be given the Highly-Competitive ranking.*

8. “Processing and Display of Volume Images and High Resolution Image Sequences”, R. J. Radke (Co-PI), W. A. Perlman (Co-PI), J. W. Woods, (Co-PI), C. D. Carothers (Co-I), Q. Ji (Co-I), K. Rajan (Co-I), X. C. Zhang (Co-I), NSF-EIA, Experimental and Investigative Activities Program, EIA-0224433, *Award Period: August, 2002 – July, 2004, Award Value: \$109,067.*
9. “High Performance Robust Network Management: Theoretical Foundation and Practical Design Tools”, M. Arcak (Co-PI), B. Azimi-Sadjadi (Co-PI), C. D. Carothers (Co-PI), S. Kalyanaraman (Co-PI), B. Sikdar (Co-PI), J. Wen (PI), Rensselaer Exploratory Seed Program, *Award Period, January 2002 – May, 2003, Award Value: \$50,000.*
10. “Tools and Techniques for Internet Protocol Management”, AT&T Research Lab, S. Kalyanaraman (PI), B. Sikdar (Co-PI) and C. D. Carothers (Co-PI), *Award Period: January 2003 – May 2005, Award Value: \$70,000 year 1 with option to renew for 2 years at \$250,000 per year. Total potential funding: \$570,000.*
11. “Improving Spatial Locality Using Data Mining”, M. Zaki (PI), C. D. Carothers (Co-PI) and B. K. Szymanski (Co-PI), NSF-NGS, *Award Period: May, 2004 – December, 2005, Award Amount: \$14,500.*
12. “MRI: Acquisition of Infrastructure for Research in Grid Computing and Multiscale Systems Computation”, M. Shephard (PI), C. D. Carothers (Co-PI), S. Garde (Co-PI), J. Trinkle (Co-PI), and C. Varela (Co-PI), NSF/MRI-0420703, *Award Period: September 2004 – May, 2007, Award Value: \$500,000.* RPI cost-sharing of \$214,000 for a total equipment budget of \$714,000.
13. “NeTS-NR ROSS.Net: A Platform for Integrated Large-Scale Network Design of Experiments and Simulation”, S. Kalyanaraman (Co-PI), and C. D. Carothers (Co-PI), NSF/NeTS-NR Program, CCR-0435259, *Award Period: September 2005 – December 2009, Award Value: \$500,000.*
14. “Digital Download Acceleration”, C. D. Carothers. NBC/Universal Studios sponsored sabbatical research at General Electric Global Research Center, *Contract Period: September 2005 – August 2006. Contract Value: \$100,000.* Used to support Sabbatical leave.
15. “Digital Download Acceleration”, C. D. Carothers. NBC/Universal Studios sponsored leave research at General Electric Global Research Center, *Contract Period: January 2007 – August 2007. Contract Value: \$100,000.* Used to support Sabbatical leave.
16. “Multithreaded / Parallel Electronic Design Automation (EDA) Applications”, C. D. Carothers (PI), International Business Machine (IBM), *Contract Period: October 2007 – May 2010. Contract Value: \$1,500,000 of which \$148,000 is dedicated solely for this project.*
17. “Petascale Adaptive Computational Fluid Dynamics”, K. Jansen (PI) , C.D.

Carothers (Co-PI), A. Oberai (Co-PI), M. Shephard (Co-PI), NSF/PetaAPPS Program. *Contract Period: September 2008 – August 2011. Contract Value: \$1,000,000.*

18. “Petascale Adaptive CFD for Anisotropic Flows”, K. Jansen (PI), C. D. Carothers (Co-PI), O. Sahni (Co-PI), M. Shephard (Co-PI). 2009 Innovative and Novel Computational Impact on Theory and Experiment (INCITE) Award, Department of Energy for computer time on the 163,840 processor IBM Blue Gene/P. *Award Period: January 2009 – January, 2010, Award Value: 5,000,000 CPU-hours.*
19. “Advancing the Frontiers of Visualization at Rensselaer”, M. S. Shephard (PD), K. E. Jansen (Co-PD), B. M. Cutler (Co-PI), C. D. Carothers (Co-PI), B. Roysam (Co-PI), M. Embrechts (Co-PI), A. Todorski (Co-PI). IBM SUR Equipment Award. *Award Value: \$250,000.*
20. “Large-Scale, High-Fidelity 802.11 Network Models Using the ROSS/ROSS.Net Parallel Simulation Framework”, C. D. Carothers (Sole PI/PD). Army Research Lab (ARL), *Contract Period: September 2009 – August 2011, Award Value: \$410,361.*
21. “CRI: CI-P: SPADE: A High-Performance Computing Platform for Support of Robotics Research and Education”, J. Trinkle (PI), and **C. D. Carothers (Co-PI)**, NSF Computing Research Infrastructure Program, *Contract Period: Oct, 2009 – Sept 2010, Award Value: \$ 40,000.* Note, award is still in the recommendation stage.

B. Proposals Pending

1. “Petascale Computational Fluid Dynamics on Blue Waters”, K. Jansen (PI), **C. D. Carothers (Co-PI)**, M. Shephard (Co-PI), NSF Petascale - Track 1 Program for Travel to Blue Waters at UIUC. *Contract Period: June, 2009 – May 2012, Total Amount Requested: \$22,783.*
2. “MRI-R2: Acquisition of a Data Intensive Computing Infrastructure for Research and Education (DICIRE)”, P. Fox (PI), **C. D. Carothers (Co-PI)**, M. Shephard (Co-PI), B. Yener (Co-PI). *Contract Period: Sept, 2010 – August, 2012, Total Amount Requested: \$5,000,000.*

C. Briefly describe your current research interests

Massively parallel and distributed systems, massively parallel simulation of discrete systems, data modeling (i.e., data mining and HMMs) and real-time systems. Most recent focus has been the modeling of the large-scale networks – wired, wireless, peer-2-peer, etc.

VI. Editorship of Journals and Reviews of Manuscripts, Books and Research Proposals (Give organization of journals, significant items reviewed, date.)

(a) Editorships

- 2006–Present **Associate Editor**, SIMULATION: Transactions of the Society for Modeling and Simulation International.
- 2006–Present **Associate Editor**, ACM Transactions on Modeling and Computer Simulation.
- 2006 **Guest Editor**, “Best of PADS” Special Issue for SIMULATION: Transactions of the Society for Modeling and Simulation International, Volume 82, Number 1, January 2006.
- 1999 **Guest Editor** of First SCS SIMULATION/Transactions Joint Special-Issue on Parallel and Distributed Simulation. SIMULATION, Transactions of the Society for Modeling and Simulation International, Volume 16, Number 1, March 1999.

(b) **Refereeing**

1. **Program Committee**, 2006 IEEE International Symposium on Distributed Simulation and Real Time Applications (DS-RT).
2. **Program Co-Chair**, 2005 Workshop on Parallel and Distributed Simulation (PADS), single-term only.
3. **Program Committee**, The Twelfth International Conference on Parallel and Distributed Systems (ICPADS). 2006
4. **Program Committee**, Workshop on Parallel and Distributed Simulation (PADS). 2000–Present.
5. **Program Committee**, *International Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*. 2001–2004.
6. **Referee/Reviewer:**
ACM Computing Reviews,
IEEE INFOCOMM – The Conference on Computer Communication,
ACM Transactions on Modeling and Simulation (TOMACS),
IEEE Transactions on Parallel and Distributed Systems (TPDS),
Journal on Parallel and Distributed Computing (JPDC)
Parallel Computing Journal (Elsevier)
Workshop on Parallel and Distributed Simulation (PADS),
International Workshop on Modeling, Analysis, and
Simulation of Computer and Telecommunication Systems (MASCOTS),
Winter Simulation Conference (WSC),
Mobile Computing Conference (MCC),
The Hawaii International Conference on System Sciences (HICSS)
7. **Panel Reviewer**, NSF CAREER Program, 2003.
8. **Panel Reviewer**, NSF-ITR Program, 2000 and 2002.

VII. **Service**

A. **Service to University**

1. *University, school, and departmental committees and dates for each.*

(a) **University**

Ad Hoc on Campus Research Computing, July, 2001 – Present.

(b) **School**

Ad Hoc Committee on Infrastructure, November, 2000 – December, 2000.

Chair, Facilities and Infrastructure Committee, September, 2001 – Present

(c) **Department**

Chair, Lab Committee, 2004 – Present.

Member, Planning Committee, 2004 – Present.

Member, Space Utilization Committee, 2003 – Present.

Chair, Lab Committee, 2000 – 2003.

Member, Lab Committee, 2003 – present.

Member, Graduate Program Committee, 1999–2000.

2. **Other service and administrative activities.**

Participated in Rensselaer Day Recruitment, Fall 1999, Fall 2000 and Fall 2001.

3. **Undergraduate student advising and counseling (year and number).**

1999 – 35 students

2000 – 40 students

2001 – 43 students

2002 – 41 students

2003 – 23 students

2003 – 25 students

2004 – 25 students

2005 – 25 students

2006 – Away on Sabbatical

2007 – Away on Leave

2008 – 28 students

2009 – 40 students

4. **Graduate student advising and counseling (year and number).**

1999 – 4 students

2000 – 8 students

2001 – 9 students

2002 – 7 students

2003 – 6 students

2004 – 7 students

2005 – 4 students

2006 – 3 students

2007 – 3 students

2008 – 4 students

2009 – 6 students

B. Professional Societies

(Give memberships, positions held, dates.)

ACM Association for Computing Machinery, Member
IEEE Computer Society, Member

C. Community and Public Service

Pledge Drive Volunteer, WAMC, Northeast Public Radio, 2000.

VIII. Professional and Public Lectures

(a) Conference Presentations

1. “Scalable Time Warp on Blue Gene Supercomputers”, presented at the *23rd Workshop on Principles of Advanced and Distributed Simulation (PADS '09)*, June 22-26, 2009. **C. D. Carothers**, sole presenter.
2. “Analysis of Cluster Failures on Blue Gene Supercomputing Systems”, Presented at the 2009 NSF Blue Waters/TeraGrid Workshop on Fault Tolerance, March 19-20. **C. D. Carothers (RPI)** and T. J. Hacker (Purdue), presenters.
3. “Petascale Adaptive Computational Fluid Dynamics”, presented at the *2008 NSF Blue Waters Workshop*, October 2008, K. Jansen and **C. D. Carothers**, presenters.
4. **C. D. Carothers (presenter)**, R. LaFortune, W. D. Smith and M. Gilder. “A Case Study in Modeling Large-Scale Peer-to-Peer File-Sharing Networks Using Discrete-Event Simulation”, *Proceedings of the 2nd European Modeling AND Simulation Symposium*, Barcelona, Spain, October 2006.
5. “Sharing Event Data in Optimistically Scheduled Multicast Applications”, In *Proceedings of the 2005 Winter Simulation Conference (WSC '05)*, December 2005, Poster Session, Orlando, Florida, December 5, 2005, G. Yaun (Presenter), D. Bauer (Presenter), and **C. D. Carothers (presenter)**.
6. “Seven-O’Clock: A New Distributed GVT Algorithm Using Network Atomic Operations”, In *Proceedings of the 19th Workshop on Principles of Advanced and Distributed Simulation (PADS '05)*, June 2005, Monterey, California, D. Bauer, G. Yaun, **C. D. Carothers (Presenter)**, S. Kalyanaraman, and M. Yuksel.
7. “Algorithm for Optimizing Energy Use and Path Resilience in Sensor Networks”, to appear in *Proceedings of the 2nd European Workshop on Wireless Sensor Networks*, Poster Session, Istanbul, Turkey, Feb, 1 2005. L. Bush (Presenter), **C. D. Carothers** and B. K. Szymanski.
8. “Large-Scale Network Protocol Meta-Simulation Design and Performance Analysis”, In *Proceedings of the 2004 Winter Simulation Conference (WSC '04)*, December 2004, D. Bauer (Presenter), G. Yaun, **C. D. Carothers**, M. Yuksel and S. Kalyanaraman,
9. “An Algorithm for Fully Reversible Optimistic Parallel Simulation,” presented at the *2003 Winter Simulation Conference (WSC '03)*, December 10th, 2003. M. Peters (presenter) and **C. D. Carothers**.

10. "ROSS.Net: An Optimistic Simulation Framework of Large-Scale Internet Models", presented at the *2003 Winter Simulation Conference (WSC '03)*, December 7th, 2003. D. Bauer (presenter), G. Yaun, **C. D. Carothers**, M. Yuksel, and S. Kalyanaraman.
11. "Improving Spatial Locality using Data Mining," presented at the *9th Conference on Knowledge Discovery and Data Mining (KDD '03), poster session*, August 25th, 2003. K. Sequeira (presenter), M. J. Zaki, B. K. Szymanski, and **C. D. Carothers**.
12. "Large-Scale TCP Models Using Optimistic Parallel Simulation," presented at the *17th Workshop on Parallel and Distributed Simulation (PADS 2003)*, June 13th, 2003. G. Yaun (presenter), **C. D. Carothers**, and S. Kalyanaraman.
13. "Understanding Filesystem Performance for Data Mining Applications," presented at the *6th Workshop on High-Performance Data Mining (HPDM '03)*, May 3rd, 2003. B. Bouqata (presenter), **C. D. Carothers**, B. K. Szymanski and M. J. Zaki.
14. "*XSim*: Real-Time Analytic Parallel Simulations," presented at the *16th Workshop on Parallel and Distributed Simulation (PADS 2002)*, May 12th, 2002. **C. D. Carothers (presenter)**.
15. "Optimistic Parallel Simulation of a Large-Scale View Storage System," presented at the *2001 Winter Simulation Conference (WSC'01)*, December 10th, 2001. G. Yaun (presenter), **C. D. Carothers**, S. Adali and D. Spooner.
16. "ROSS: A High-Performance, Low Memory, Modular Time Warp System," presented at the *14th Workshop of Parallel on Distributed Simulation (PADS 2000)*, May 29th, 2000. **C. D. Carothers (presenter)**, D. Bauer and S. Pearce.
17. "The Effect of State-Saving in Optimistic Simulation on A Cache-Coherent Non-Uniform Memory Access Architecture," presented at the *1999 Winter Simulation Conference*, December 13th, 1999. **C. D. Carothers (presenter)**, K. S. Perumalla, R. M. Fujimoto.
18. "Efficient Optimistic Parallel Simulations Using Reverse Computation," presented at the *13th Workshop on Parallel and Distributed Simulation (PADS 99)*, May 2nd, 1999. **C. D. Carothers**, K. S. Perumalla (presenter), R. M. Fujimoto.
19. "Toward Parallelization of Large-Scale Ada Simulations Using Time Warp," presented at the *1998 Summer Computer Simulation Conference*, July 26th, 1998. **C. D. Carothers (presenter)**, M. I. Hybinette, and R. M. Fujimoto.
20. "Visualizing Parallel Simulations in Network Computing Environments," presented at the *1997 Winter Simulation Conference*, December 8th, 1997. **C. D. Carothers (co-presenter)**, B. Topol (co-presenter), R. M. Fujimoto, J. T. Stasko, and V. S. Sunderam.
21. "Design and Implementation of HLA Time Management in the RTI version

- F.0,” presented at the *1997 Winter Simulation Conference*, December 8th, 1997. **C. D. Carothers (presenter)**, R. M. Fujimoto, R. M. Weatherly, and A. L. Wilson.
22. “Background Execution of Time Warp Programs,” presented at the *10th Workshop on Parallel and Distributed Simulation (PADS '96)*, May 23rd, 1996. **C. D. Carothers (presenter)**, and R. M. Fujimoto.
 23. “A Re-dial Model for Personal Communications Services Networks,” presented at the *45th IEEE Vehicular Technology Conference (VTC '95)*, July 27th, 1995. **C. D. Carothers (presenter)**, R. M. Fujimoto and Y-B. Lin.
 24. “A Case Study in Simulating PCS Networks Using Time Warp,” presented at the *9th Workshop on Parallel and Distributed Simulation (PADS '95)*, June 15th, 1995. **C. D. Carothers (presenter)**, R. M. Fujimoto and Y-B. Lin.
 25. “The Effect of Communication Overheads on Time Warp Performance: An Experimental Study,” presented at the *8th Workshop on Parallel and Distributed Simulation (PADS '94)*, July 7th, 1994. **C. D. Carothers**, R. M. Fujimoto (presenter) and P. England.

(b) **Invited Lectures or Presentations**

1. “Life at the Near Petascale Edge: A Tale to Two Applications”, Presented at the IBM T. J. Watson, Yorktown Heights Facility. Hosted by the Exascale Computing Team, August 20th, 2009.
2. “Life at the Near Petascale Edge: A Tale to Two Applications”, Presented at the General Electric Research Center’s (GRC) Advanced Computing Group Seminar Series, April 9th, 2009.
3. “ROSS: Parallel Discrete-Event Simulation on Near Petasacle Supercomputers”, Presented at the Airforce Research Labs, Rome, NY, April 1st, 2009.
4. “Research In Parallel and Distributed Simulation Systems,” presented at the *GE Corporate Research and Development Center*, February, 22, 2002. **C. D. Carothers (presenter)**.
5. “ROSS: A High-Performance, Low Memory, Modular Time Warp System,” presented at the *Rensselaer Department of Computer Science Colloquium Series*, November 2, 2000. **C. D. Carothers (presenter)**.
6. “ISSAC: An Intelligent System for Exploiting Speculative Execution and Active Code in Large-Scale Distributed Simulations,” presented at the *1999 Dagstuhl Workshop on Agent-Based Simulation*, Dagstuhl, Germany, May 7, 1999. **C. D. Carothers (presenter)**, B. K. Szymanski and M. J. Zaki.
7. “Efficient Optimistic Parallel Simulation Using Reverse Computation,” presented at the *Rensselaer, Hartford CSI Seminar Series*, November 20, 1998. **C. D. Carothers (presenter)**.
8. “Simulating Population Dependent PCS Network Models Using Time Warp,” presented at the *1995 Winter Simulation Conference (WSC '95)*, December 4th, 1995. **C. D. Carothers (presenter)**, R. M. Fujimoto and Y-B. Lin.

9. “Distributed Simulation of Large-Scale PCS Networks,” presented at the *Second International Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems*, February 1st, 1994. **C. D. Carothers**, R. M Fujimoto (presenter), Y-B Lin and P. England.

IX. Honors and Awards

1. **BEST PAPER** at the 2009 Workshop on Principals of Advanced and Distributed Simulation (PADS '09).
2. **BEST PAPER** at the 2003 Workshop on Parallel and Distributed Simulation (PADS '03).
3. **NSF CAREER Award** 2002.
4. **BEST PAPER** at the 1999 Workshop on Parallel and Distributed Simulation (PADS '99).
5. **MITRE Program Recognition Award** for contributions on the DoD High Level Architecture (HLA) project.

X. Sabbatical Leaves, Off-campus Study Programs and Foreign Professional Travel

1. **Singapore:** *20th ACM/IEEE/SCS Workshop on Principles of Advanced and Distributed Simulation (PADS 2006)*, to attend in May, 2006.
2. **Sabbatical Leave:** GE Corporate Research and Development Center, Niskiyuna, New York, October 2005 thru May, 2007.
3. **Bologna, Italy:** *14th Workshop of Parallel on Distributed Simulation (PADS 2000)*, May 2000.
4. **Dagsthul, Germany:** *Workshop on Agent-Based Simulation*, May 1999.

Date: _____ Signature: _____