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Education:

Ph.D. Computer Science (1970), University of Texas at Austin
M.Sc. Applied Mathematics (1964), Calcutta University, India
B.Sc. Mathematics (1961), Calcutta University, India
Certificate A.D.P. and Computer Programming (1966), Indian Stat. Institute, India
Advanced Graduate Work in Comp. Science, Penn State Univ. (1967-69)

Personal Information: A Naturalized U. S. Citizen

Academic and Industrial Positions:

1995-present Professor, School of Electrical Engineering and Computer Science, University of Central Florida.
2006 (Jan.) Visiting Professor, Advanced Computing and Micro Electronics Unit, Indian Statistical Institute, Kolkata, India (On sabbatical leave from UCF).
2005 (Dec.) Visiting Professor, School of Computing and Information Technology, University of Wolverhampton, Wolverhampton, UK, (On sabbatical leave from UCF).
2005 (Oct.) Visiting Professor, Electrical and Computer Engineering Department, University of Puerto Rico Mayaguez, (On sabbatical leave from UCF).
2005 (Sept) Visiting Professor, University of Genoa, Savona and Genoa Campus, Italy, (On sabbatical leave from UCF).
1999 Visiting Professor, Department of Computer Science, Thammasat University, Thailand.
1997 Visiting Professor, California Path Project, University of California at Berkeley (On sabbatical leave from UCF).
1996 Visiting Professor, Department of Computer Science, Purdue University (On sabbatical leave from UCF).
1987 Tokten Consultant, United Nation Development Programme.
1985 Visiting Professor, Computer Science Department, Beijing University, China and Consultant to WISE, Inc. (On leave from UCF).
1980-95 Associate Professor, Department of Computer Science, University of Central Florida.
1979-80 Member of Technical Staff, Department of Computing and Networking Technology, Bell Lab (On sabbatical leave).

- 1979 Acting Chairman & Associate Professor, Department of Computer Science, Southern Illinois University.
- 1976-80 Associate Professor, Department of Computer Science, Southern Illinois University.
- 1973 Research Scientist Associate, Department of Computer Science, Univ. of Texas at Austin.
- 1970-76 Assistant Professor, Department of Computer Science, Southern Illinois University.
- 1966-67 Computer Technician, Indian Statistical Institute, India.
- 1965-66 Scholar, Indian Statistical Institute, India.
- 1961, 1965 Assistant Teacher, Narendra Nath Vidyamandir, Calcutta, India.

Research Guidance: Dr. Guha guided 14 Ph. D. and over 50 M.S. students. At present he is guiding 5 Ph.D. students.

Ph. D. Research Supervision (Completed)

1. Jiangyong Dai, *Detecting Malicious Software by Dynamic Execution*, Summer 2009
2. Erin Hastings, *Automatic Graphics and Game Content Generation Through Evolutionary Computation*, Summer 2009, (Co-advisor: Ken Stanley)
3. Hua Zhang, *Vcluster: A Portable Virtual Computing Library for Cluster Computing*, August 2008.
4. Darshan Purandhare, *A Framework For Efficient Data Distribution In Peer-To-Peer Networks*, August 2008.
5. Pankaj Gupta, *Resource-Constraint and Scalable Data Distribution Management for High Level Architecture*, December 2007.
6. Zeeshan Furqan, *Developing Strand Space Based Models And Proving The Correctness Of The IEEE 802.11i Authentication Protocol With Restricted Security Objectives*, August 2007.
7. Shahabuddin Muhammad, *Extending Distributed Temporal Protocol Logic to a Proof Based Framework for Authentication Protocols*, August 2007.
8. Lisa Spencer, *Real-Time Monocular Vision-Based Tracking For Interactive Augmented Reality*, May 2006.
9. Oleg Kachirski, *An Interactive Distributed Simulation Framework with Application to Wireless Networks and Intrusion Detection*, June 2005.
10. Sudipta Rakshit, *Access Games: A Game Theoretic Framework for Fair Bandwidth Sharing in Distributed Systems*, June 2005

11. Zi-Jun Wang, *Data Caching and Data Allocation for Multimedia Servers*, April, 2001.
12. Jenn-Luen Chu, *Level Coterics for Distributed Systems*, May 1999.
13. Debasish Roy, *Fault-tolerant Design and Evaluation of High Performance Multiprocessor Architectures*, August, 1994.
14. Arthur Dickinson, *Application of Extreme Order Statistics to the Analysis of Parallel Algorithms*, December 1991.

Research Grants: Over \$3,500,000 external funding (A selected few grants are listed below).

- National Science Foundation (May 15, '09 – April 30 '11), “Undergraduate Computer Security Course Enhancement” (PI: Ratan Guha, CoPI: Mostafa Bassiouni, Senior Personnel: Arup Guha, Bonnie Swan), [NSF: \$150,000, UCF Match: \$11,000]
- NASA (December 31 '06 – May 31, '08), “Composite cathodes for Intermediate Temperature SOFCs: A comprehensive approach to designing materials for superior functionality” [Funded through MMAE –UCF]; \$130,000 PI - PI: Nina Orlovskaya (MMAE), Co-PIs: Ratan Guha (CS), Jayanta Kapat (MMAE), Artem E. Masunov (NSTC), Ahmad Sleiti (MMAE).
- US Army Research Office (May '04 - Jan '06) " High Performance Cluster Computing for Collaborative Large Scale Simulation", [A multi-university DURIP project: University members: Florida State University (FSU), George Washington University (GWU), and University of Central Florida (UCF); \$270,000 PI – R. Guha, CoPIs: M. Bassiouni, E. Gelenbe
- US Army Research Office (May '01 - Apr '06) "Modeling and Simulation Environment for Critical Infrastructure Protection", [A multi-university research project: University members: University of Wisconsin (UW), Florida State University (FSU), George Washington University (GWU), and University of Central Florida (UCF); UCF funding: \$,456,675 + Option \$326,452 = \$783,127; UCF: PI – R. Guha, Co- PI: M. Bassiouni..
- National Science Foundation, (Sep '00 – Aug '05) "Introducing Fundamental Concepts and Evaluation Methods for Distributed Systems and Applications in the Computer Science Undergraduate Curriculum", (PI: Ratan Guha, CoPIs: M. Bassiouni, E. Gelenbe) [NSF: \$546,000, and UCF \$579,013, Total amount: \$1,125,013]
- US Army Research Office (Sept '95 - Jan '02) "Parallel and Distributed Evaluation, Visualization, and AI Reasoning to Advanced Distributed Interactive Simulation Technology", [A multi-university research project: Advanced Distributed Simulation Research Consortium with University members: Grambling State University (GSU), Florida A & M University (FAMU), University of Houston DownTown (UHD), and University of Central Florida; Total funding for all universities: \$9,361,752; PI: M. Balaram (GSU), Subcontract PIs: P. Bobbie(FAMU), R. Alo (UHD), R. Guha (UCF Funding: \$1,656,415)].

- National Science Foundation, (Jan '92 - June '96) "Parallel Computation in the Undergraduate Computer Science Curriculum", (PI and Project Director: Ratan Guha, CoPIs: N. Deo, T. Frederick, C.E. Hughes, A. Mukherjee; Senior Personnel: N. Chandrasekharan, K. A. Hua, N. R. Vempaty, U. B. Vemulapati) [NSF: \$589,960, and UCF \$789,654, Total amount: \$1,379,614]
- DOD/NAVY/STRICOM (Dec '92 - Dec '94) "Modeling and Evaluating Different Topologies for the Virtual Network of Distributed Interactive Architecture", (PI and Project Director: Ratan Guha, CoPI: M. Bassiouni) [\$159,720].

Refereed Publications:

Year 2009

- E. Hastings, R. Guha, K. Stanley, "Automatic Content Generation in the Galactic Arms Race Video Game", *IEEE Transaction on Computational Intelligence and AI in Games*, Vol. 1, No. 4, pp 245 – 263, 2009.
- E. Hastings, R. Guha, K. Stanley "Interactive Evolution of Particle Systems for Computer Graphics and Animation", *IEEE Transaction on Evolutionary Computation*, Vol. 13, No. 2, pp 418 – 432, 2009.
- J. Dai, R. Guha, and J. Lee, "Efficient Virus Detection Using Dynamic Instruction Sequences", *Journal of Computers*, Vol. 4, No. 5, 2009, pp 405 - 414.
- L. Spalazzi and R. Guha, "Guest Editorial on Special Issue on Security and High Performance Computing", *Journal of Computers*, Vol. 4, No. 5, 2009, pp 355 - 356.
- M. Burst, C. Ribeiro, J. Filho, J. Mesit, R. Guha, "Effective Coverage Area And Network Density In SimulationsI Of Ad Hoc And Sensor Networks", *International Journal of Simulations, Systems, Science and Technology*, Vol. 10, No. 2-A, 2009
- E. Hastings, R. Guha, K. Stanley, "Evolving Content in the Galactic Arms Race Video Game", *Proceedings of the IEEE 2009 Symposium on Computational Intelligence and Games (CIG09)*, [Received best paper award]
- E. Hastings, R. Guha, K. Stanley, "Demonstrating Automatic Content Generation in the Galactic Arms Race Video Game", *The Fifth Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE-09)*
- N. Guildbault, R. Guha, "Experiment Setup for Temporal Distributed Intrusion Detection System on Amazon's Elastic Compute Cloud", *Proceedings of 2009 Workshop on Cybercrime and Computer Forensics (WCCF 2009)*, Dallas, Tx, June 8, 2009
- J. Dai, R. Guha, and J. Lee, "Feature Set Selection in Data Mining Techniques for Unknown Virus Detection – A Comparison Study", *Proceedings of the Fifth Annual Cyber Security and Information Intelligence Research Workshop (CSIIRW-09)*, Oak Ridge National Laboratory, Oak Ridge, TN, April 13-15, 2009.

- J. Mesit, R. Guha, and M. Brust “Simulation of 3D-deformable Objects Using Stable and Accurate Euler Method”, *Proceedings of the Eleventh International Conference on Modeling and Simulation*, pp 425 – 430, Cambridge, England, March 25 - 27, 2009.

Year 2008

- H. Zhang, J. Lee and R. Guha, “VCluster: A Thread-Based Java Middleware for SMP and Heterogeneous Clusters with Thread Migration Support”, *Software: Practice and Experience*, prepublication on internet in 2007, Vol. 38, No. 10, August, 2008, pp 1049 – 1071.
- R. Guha and S. Rakshit, A chapter on “Selfish Users and Distributed Mac Protocols in Wireless Local Area Networks, In: A. Gunasekaran, Editor, *Techniques and Tools for the Design and Implementation of Enterprise Information Systems*, published by IGI Global, 2008(Invited).
- J. Dai, R. Guha, and J. Lee, “Dynamic Instruction Sequences Monitor for Virus Detection”, *Proceedings of the Fourth Annual Cyber Security and Information Intelligence Research Workshop (CSIIRW-08)*, Oak Ridge National Laboratory, Oak Ridge, TN, May 12-14, 2008
- J. Mesit and R. Guha, “Soft Bodies Simulation with Leaking Effect”, *Proceedings of the Second Asia International Conference on Modeling and Simulation*, Kuala Lumpur, Malaysia, May 13 – 15, 2008.
- J. Dai, R. Guha, and J. Lee, “Efficient Virus Detection Using Dynamic Instruction Sequences” *Proceedings of the 2008 High Performance Computing & Simulation Conference for Workshop on Security and High Performance Computing Systems (SHPCS 08)*, Nicosia, Cypress, June 3-6, 2008.
- Gangopadhyay, S., Inerbaev, T., Masunov, *A. E., Mesit, J., Guha, R., Sleiti, A., Kapat, J. "Density Functional Theory and Multiscale Simulations Combined With Spectroscopic Study of Barium/Strontium Ferrate/Cobaltate (BSCF) as a Promising Material For Solid Oxide Fuel Cell (SOFC) ", *17th Conference on Current Trends in Computational Chemistry (CCTCC)*, 2008, pp 150 - 154.
- Gangopadhyay, S., Inerbaev, T., Masunov, *A. E., Mesit, J., Guha, R., Sleiti, A., Kapat, J. "Multiscale Simulations Combined With Experimental Study of Barium/Strontium Ferrate/Cobaltate (BSCF) as a Promising Material For Solid Oxide Fuel Cell (SOFC) " *MMM, International Conference on MutiScale Material Modeling*, 2008, pp 120 – 124.

Year 2007

- D. Purandare, R. Guha, “An Alliance Based Peering Scheme for P2P Live Media Streaming”, *IEEE Transactions on Multimedia*, Special Issue on Peer-to-Peer Content Storage and Retrieval, Vol. 9, No. 8, pp 1633 – 1644, December 2007.
- P. Gupta and R. Guha, “A Comparative Study of Data Distribution Management Algorithms”, *Journal of Defense Modeling and Simulation*, Vol. 4, No 2, April 2007.
- Z. Furqan, S. Muhammad, and R. Guha, “Authentication Analysis of the 802.11i Protocol”, *International Journal of Information Technology*, Vol. 4, No. 1, pp 61 – 67, 2007.
- S. Muhammad, Z. Furqan, and R. Guha, “Analyzing Authentication in Kerberos-5 using Distributed Temporal Protocol Logic”, *Journal of Information and Computing Science*, Vol. 2, No. 3, pp 163 – 171, 2007.
- S. Muhammad, Z. Furqan, and R. Guha, “A Logic-based Verification Framework for Authentication Protocols”, *International Journal of Internet Technology and Secured Transactions*, Vol. 1 No 1and 2, pp 49 – 80, 2007
- J. Mesit, R. Guha, and S. Chaudhry, “3D Soft Body Simulation Using Mass-spring System with Internal Pressure Force and Simplified Implicit Integration”, *Journal of Computers*, Vol. 3, No. 8, pp 34 – 43, October 2007.
- Y. Qian, S. Chaudhry and R. Guha, A chapter on “Resource Management in WiMAX Networks”, for the book "WiMax/MobileFi: Advanced Research and Technology", Edited by Prof. Yang Xiao, to be published by Auerbach Publications, CRC Press 2007.
- M. Bassiouni, V.M. Bier, P. Carayon, J. Chandra, R.K. Guha, S.B. Kraemer, S.M. Robinson, D.G. Schwartz, and S. Stoecklin, Analysis, modeling, and simulation for networked systems. In: C. Wang, et al., eds., *Department of Defense Sponsored Information Security Research: New Methods for Protecting Against Cyber Threats*, pp. 440–465. Wiley, Indianapolis, IN 2007
- S. Chaudhry, R. Guha, “Adaptive Call Admission Control and Packet Scheduling for QoS Provisioning in Mobile WIMAX”, *Proceedings of IEEE International Conference on Signal Processing and Communication*, Dubai, UAE, November 24-27, 2007.
- R. Guha, Z. Furqan, and S. Muhammad, “Discovering Man-In-The-Middle Attacks in Authentication Protocols”, *MILCOM 2007*, Orlando, FL, Oct 29 -31, 2007.
- D. Purandhare and R. Guha, “An Alliance Based Peering Scheme for P2P Live Media Streaming” *Proceedings of P2P-TV Workshop, SIGCOMM*, August 2007
- E. Hastings, J. Mesit and R. Guha, “A Scalable Technique for Large Scale, Real-Time Range Monitoring of Heterogeneous Clients”, *Proceedings of the 3rd International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities*,(TRIDENT 07), Orlando, May 2007.
- E. Hastings, R. Guha and K. Stanley, “NEAT Particles: Design, Representation, and Animation of Particle System Effects” *Proceedings of IEEE Symposium on Computational Intelligence and Games*, Honolulu, Hawaii, April 2007

- J. Mesit and R. Guha, “Simulation of Soft Bodies with Pressure Force and the Implicit Method”, *Proceedings of the First Asia International Conference on Modeling and Simulation*, pp – 302 -307, Phuket, Thailand, 27 – 30 March, 2007.
- A. Karnik, S. Goswami and R. Guha, “Detecting Obfuscated Viruses Using Cosine Similarity Analysis” *Proceedings of the First Asia International Conference on Modeling and Simulation*, pp 165 – 170, Phuket, Thailand, 27 – 30, March 2007.
- R. Guha, Z. Furqan and S. Muhammad, “A Multi-agent Approach Toward the Security Analysis of the 802.11i Handshake Protocol”, *Proceedings of the International Symposium on Wireless Pervasive Computing*, San Juan, Puerto Rico, February 2007.
- R. Misra, C. Mandal, and R.Guha, “Coordinator Rotation via Domatic Partition in Self-Organizing Sensor Networks”, *Proceedings of the International Symposium on Wireless Pervasive Computing*, San Juan, Puerto Rico, February 2007.

Year 2006

- L. Spencer, M. Shah and R. Guha, "Determining Scale and Sea State from Water Video", *IEEE Transactions on Image Processing*, Vol. 15, No. 6, pp 1525 – 1535, June 2006.
- R. Guha and S. Rakshit, “Selfish Users and Distributed MAC protocols in Wireless Local Area Networks (WLANs)”, *International Journal of Enterprise Information Systems (IJEIS)*, Vol. 2, No. 2, pp 28 – 44, April – June, 2006
- J. Mesit and R. Guha, “Line-Triangle Test for Collision Detection and Response in Soft Bodies”, *Proceedings of the Ninth International Conference on Computer Games: AI, Animation, Mobile, Educational & Serious Games*, Dublin, Ireland, November 2006.
- D. Purandare, R. Guha, “BEAM: An Efficient Framework for Media Streaming”, *Proceedings of the 31st IEEE Conference on Local Computer Networks (LCN)*, Tampa, Florida, November 2006.
- S. Chaudhry V. Hung, R. Guha, “Optimal Placement of Wireless Sensor Nodes with Fault Tolerance and Minimal Energy Consumption”, *Proceeding of the 2006 IEEE International Conference on Mobile Adhoc and Sensor Sysetems (MASS)*, Vancouver, Canada, October 2006.
- S. Muhammad, Z. Furqan and R. Guha, “A Parameterized Analysis of Public-Key Protocols: Needham-Schroeder and Kerberos-5”, *Proceedings of the 14th IEEE International Conference on Networks (ICON 2006)*, Singapore, September 2006.
- S. Muhammad, Z. Furqan and R. Guha, “Logic-Based Formal Analysis of Cryptographic Protocols”, *Proceedings of the 14th IEEE International Conference on Networks (ICON 2006)*, Singapore, September 2006.
- P. Gupta and R. Guha, “A Multi-Dimensional Dynamic Data Distribution Management Technique for Distributed Simulation”, *Proceeding of 2006 Fall SIW*, Orlando, Florida, September 2006.

- P. Gupta and R. Guha, "Integration of the P-Pruning Data Distribution Management Technique with FDK", Proceedings of the 2006 Summer Computer Simulation Conference, Calgary, Canada, August 2006.
- R. Guha and D. Purandare, "Security Issues in BitTorrent like P2P Streaming Systems", Summer Simulation Conference, Calgary, Canada, August 2006.
- D. Purandare, R. Guha, "Preferential Strata based P2P Systems: Selfishness to Altruism and Fairness", Proceedings of the Twelfth International Conference on Parallel and Distributed Systems (ICPADS), pp 561 – 568, IEEE, Minneapolis, Minnesota, July 2006.
- J. Mesit, R. Guha and E. Hastings, "Multi-Level SB Collide: Multi-Level Subdivided Bounding Box for Collisions and Self-Collision in Soft Bodies", Proceedings of the Eighth International Conference on Computer Games: AI and Mobile Systems, Louisville, Kentucky, July 2006.
- R. Guha, D. Workman, H. Foroosh, A. Guha, M. Llewellyn, S. Pattanaik, "Experiences in Developing Objectives and Assessment Strategy for a Set of Core Courses in Computer Science Curriculum", Proceedings of International Conference on Engineering Education (ICEE), San Juan, Puerto Rico, July 2006.
- P. Gupta and R. Guha, "Data Distribution Management for High Performance Distributed Simulation in Resource-Constraint Environment", Proceedings of the 20th European Conference on Modeling and Simulation, Bonn, Germany, May, 2006.
- S. Muhammad, R. Guha and Z. Furqan, "Designing Authentication Protocols: Trends and Issues", Proceedings of the 5th International Conference on Networking (ICN), IEEE Computer Society Press, Mauritius, April 2006.
- Z. Furqan, R. Guha and S. Muhammad, "Formal Verification of 802.11i using Strand Space Formalism", Proceedings of the 5th International Conference on Networking (ICN), IEEE Computer Society Press, Mauritius, April 2006.
- P. Gupta and R. Guha, "Design and Implementation of an Efficient Algorithm for Data Distribution Management in High Level Architecture", 4th Symposium on Design, Analysis, and Simulation of Distributed Systems, 2006 Spring Simulation Multiconference, Huntsville, Alabama, April 2-6, 2006.
- S. Muhammad, Z. Furqan and R. Guha, "Understanding the Intruder through Attacks on Cryptographic Protocols", Proceedings of 44th ACM Southeast Conference (ACMSE2006), pp. 667 - 672, Melbourne, Florida, USA, March 2006.

Year 2005

- S. Rakshit and R. Guha, "Fair Bandwidth Sharing in Distributed Systems: A Game-Theoretic Approach", *IEEE Transactions on Computers*, Vol. 54, No. 11, pp 1384 – 1393, (November 2005).
- J. Chu and R. Guha, "Non-Dominated Level Coterics and Corresponding Vote Assignments", *Chung Hua Journal of Science and Engineering*, 2005.

- C. Huang, M. Chatterjee, W. Cui, R. Guha, “Multipath Source Routing in Sensor Networks Based on Route Ranking,” Proceedings of 7th International Workshop on Distributed Computing”, Lecture Notes in Computer Science Vol 3741, Eds: A. Pal, A. Kshemkalyani, R. Kumar, A. Gupta, pp 99-104, 2005, Springer.
- L. Spencer and R. Guha, "Augmented Reality in Video Games," Proceedings of the 6th International Conference on Computer Games: AI and Mobile Systems ([CGAIMS](#)), Louisville, KY, July 27-29, 2005
- E. Hastings, J. Mesit, R. Guha, “Optimization of Large Scale, Real-Time Simulations by Spatial Hashing”, Proceedings of the 2005 Summer Computer Simulation Conference, pp 9-17, Volume 37, Number 4, July 24 – 28, 2005
- R. Guha and M. Bassiouni, “Modular Design for Distributed Systems and Network Security Courses in Computer Science Curriculum”, Proceedings of the 6th International Conference on Information Technology Based Higher Education and Training, IEEE Publication, July 7 – 9, 2005.
- J. Lee, H. Zhang, R. Guha, “Virtual Cluster Computing Architecture” Proceedings of the 2005 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA, 05) June 27 – 30, 2005
- D. Purandare, R. Guha, and J. Lee, An IV Collision Avoidance Algorithm - Strengthening the WEP”, Proceedings of the 2005 International Conference on Wireless Networks (ICWN, 05) June 27 – 30, 2005
- R. Guha, J. Lee and O. Kachirski, “Evaluating Performance Of Distributed Computing Technologies – HLA And Tspaces”, Proceedings of the 19th European Simulation Multiconference, June 1- 4, 2005
- J. Lee, H. Zhang, and R. Guha, “Portable and Scalable Parallel Applications with VCluster”, to appear in the Proceedings of the 19th European Simulation Multiconference, June 1- 4, 2005
- R. Guha, M. Chatterjee and J. Sarkar, “A Distributed Security Architecture for Ad hoc Networks”, to appear in the Proceedings of the Fourth International Workshop on Wireless Information Systems, pp 81-91, May , 2005
- D. Purandare and R. Guha, “Enhancing Message Privacy in WEP”, Proceedings of the Fourth International Workshop on Wireless Information Systems, pp 23-32, May , 2005
- S. Muhammad, Z. Furqan and R. Guha, “Wireless Sensor Network Security: A Secure Sink Node Architecture”, Proceedings of the 24th IEEE International Performance, Computing, and Communications Conference (IPCCC - IWSEEASN 2005), pp 371 – 376, April 7 – 9, 2005.
- P. Gupta and R. Guha, “A Heuristic for Efficient Data Distribution Management in Distributed Simulation”, Proceedings of the SPIE Defense and Security Symposium 2005, March 28 – April 1, 2005.

Year 2004

- Z. Furqan, S. Muhammad, and R. Guha, “ Priority Based Channel Assignment with Pair-wise Listen and Sleep Scheduling for Wireless Sensor Networks”, Proceedings of 8th International Multitopic Conference, pp 522 – 527, December 24 – 26, 2004.
- J. Wang and R. Guha, “Proxy Ecology - Cooperative Proxies with Artificial Life”, Web Intelligence and Agent Systems An International Journal, Vol. 2, No. 3, pp 201 -216, 2004.
- R. Guha and S. Rakshit, “Selfish Users and Distributed MAC protocols in Wireless Local Area Networks (WLANs)”, Proceedings of the Asia Pacific Industrial Engineering and Management Systems Conference 2004, December 12 – 15, 2004.
- R. Guha and S. Rakshit, “Medium Access and Fair Bandwidth Sharing in WLAN”, Proceedings of the IASTED International Conference on Advances In Computer Science And Technology, November 22 – 24, 2004.
- M. El-Houmaidi, O. Kachirski and R. Guha, “FANS Simulation of Optical Burst Switching for NSFNET”, WSEAS Transaction on Computers, Volume 3, Issue 5, pp 1232 – 1237, Nov. 2004.
- S. Muhammad, R. Guha, and Z. Furqan, “A Dynamic Simulation Model and Testing Techniques for Security Protocol Verification”, WSEAS Transaction on Computers, Volume 3, Issue 5, pp 1226 – 1231, Nov. 2004.
- J. Wang and R. Guha, “Proxy Ecology - Cooperative Proxies with Artificial Life”, Web Intelligence and Agent Systems An International Journal, Vol. 2, No. 3, pp 201 -216, 2004.
- J. Mesit, R. Guha, and E. Hastings, “Optimized Collision Detection For Flexible Object In A Large Environment”, Proceedings of the 5th International Conference on Computer Games: Artificial Intelligence, Design and Education, pp 42 - 48, November 8-10, 2004
- E. Hastings, J. Mesit, and R. Guha, “T-Collide: A temporal, real-time collision detection technique for bounded objects”, Proceedings of the 5th International Conference on Computer Games: Artificial Intelligence, Design and Education, pp 35 -41, November 8-10, 2004
- J. Chu and R. Guha, “Level Coteries and Corresponding Vote Assignments”, Chung Hua Journal of Science and Engineering, Volume 2, Number 1, pp 1-8 (2004).
- Z. Furqan, R. Guha, and S. Muhammad, “A Heuristic State Space Search Model for Security Protocol Verification”, Proceedings of the First International Conference on E-business and Telecommunication Networks, (ICETE-2004), pp 113 – 118, August 24 – 28, 2004.

- K. Anna, A. Karnik, R. Guha, and M. Chatterjee, “Enhancing QoS in 802.11e with Beacon Management”, Proceedings of the 7th IEEE International Conference on High Speed Networks and Multimedia Communications, (HSNMC'04), June 30 – July 2, 2004.
- S. Rakshit and R. Guha, “Optimal Strategies in MAC Protocols”, Proceedings of the IEEE International Conference on Communications (ICC-2004), June 21 – 24, 2004.
- R. Guha and O. Kachirski, “An Architecture For Distributed Simulation Of Wireless Networks”, Proceedings of European Simulation Multiconference, June 12 -16, 2004.
- A. Kejriwal, R. Guha and M. Chatterjee, “User Class based QoS Differentiation in 802.11e WLAN”, Proceedings of European Simulation Multiconference, June 12 -16, 2004.
- R. Guha and O. Kachirski, “Load Balancing Approach for the Ad Hoc Wireless Intrusion Detection Simulation Framework”, Proceedings of World Wireless Congress, May 25 - 28, 2004.
- Y. Reddy and R. Guha, “Intrusion Detection Using Data Mining Techniques”, Proceedings of the 4th IASTED International Conference on Artificial Intelligence and Applications, February 16 -18, pp 26 – 30, 2004.

Year 2003

- J. Wang and R. Guha, “Proxy Ecology - Cooperative Proxies with Artificial Life”, Proceedings of the IEEE/WIC International Conference on Intelligent Agent Technology, October 13 -16, 2003.
- A. Karnik, K. Anna, R. Guha, and M. Chatterjee, “A Smart Polling Scheme For The 802.11e Wireless Lans”, CD-ROM Proceedings of Huntsville Simulation Conference, October 29 -31, 2003

Year 2002

- R. Guha and M. Bassiouni, “Guest Editorial – Simulation Methods and Applications”, *The International Journal of the Federation of EUROSIM: Simulation Practice and Theory*, Vol. 9, Nos. 3-5, 2002, pp 91 - 93.
- J. Wang and R. Guha, “A novel data caching scheme for multimedia servers”, *The International Journal of the Federation of EUROSIM: Simulation Practice and Theory*, Vol. 9, Nos. 3-5, 2002, pp 193-213.
- R. Guha and J. Wang, “Improving Web Access Efficiency Using P2P Proxies”, Proceedings of 4th International Workshop on Distributed Computing”, Lecture Notes in Computer Science Vol 2571, Eds: S. Das, S. Bhattacharya, pp 24-34, 2002, Springer Verlag.

- R. Guha, O. Kachirski, D. Schwartz, S. Stoecklin, and Y. Yilmaz, “Case-Based Agents for Packet-Level Intrusion Detection in Ad Hoc Networks”, Proceedings of the 17th International Symposium on Computer and Information Sciences, pp 315 – 320, October 2002, CRC Press.
- M. Bassiouni and R. Guha, “Modeling and Analysis of Temporal Failure and Degradation Behavior of Critical Infrastructure Systems”, Proceeding of 35th Hawaii International Conference on System Science, January 2002, (in CD-ROM).

Year 2001

- J. Wang and R. Guha, “Efficiently Allocating Video Data in Distributed Multimedia Applications”, *Journal of Applied System Studies: Methodologies and Applications for System Approaches*, Special issue on Distributed Multimedia Systems with Applications, November 2001.
- S. Rakshit, and R. Guha, “Managing QoS for Wireless Cells Supporting Critical Load” Proceedings of Globecom, November 2001, (in CD-ROM).
- S. Rakshit, and R. Guha, “Analysis and Simulation of Wireless QoS with Critical Load”, Proceedings of Summer Simulation Conference, July 2001, (in CD-ROM).
- S. Rakshit and R. Guha “Modeling Multi-Class Service by a Single-server Vacation Queue with N-Policy” Proceedings of the International Conference on Information Technology for the New Millenium, Bangkok, Thailand, pp. 163-172, May 2001.
- O. Kachirski, K. Hussain, R. Guha “Registration of 2D and 3D Objects Automatic Integration of Multiple Views” Proceedings of the International Conference on Information Technology for the New Millenium, Bangkok, Thailand, pp. 32-41, May 2001.
- F. Hai, K. Hussain, E. Gelenbe and R. Guha, “Video compression with wavelets and random neural network approximations”, Proceeding of SPIE-Applications of Artificial Neural Networks in Image Processing VI, Vol 4305, pp 57 – 64, 2001.
- P. Sompagdee and R. Guha “Metamorphosis Of Graphical Objects Using Cartesian and Spherical Transformations”, Proceedings of the 2001 International Conference on Information Technology for the New Millennium, pp 52- 61, May 2001.

Year 1991 - 2000

- J. Chu and R. Guha, “Triangular Level Quorums for Distributed Mutual Exclusion,” *International Journal of Computer Systems Science and Engineering*, Vol. 15, No. 6, pp 373 –384, 2000.

- J. Wang, and R. Guha, “Data Allocation Algorithms for Distributed Video Servers”, Proceedings of the 8th ACM International Conference on Multimedia”, pp 456 – 458, Marina del Rey, CA, 2000.
- J. Wang, and R. Guha, “An Efficient Memory Buffer Management for Multimedia Servers”, Proceedings of Conference on Simulation Methods and Applications 2000, pp 46 – 55, Orlando, FL, 2000.
- V. Amico, A. Bruzzone, and R. Guha, “Critical Issues in Simulation”, Proceedings of the 2000 Summer Computer Simulation Conference, Vancouver, Canada, pp 893 – 898, July 2000.
- M. Bassiouni, R. Guha, M. Balaram and Y. Reddy, “Finite State Automaton and Petri-net Models for Real-time Compliance Testing” Proc. of the 5th ISAS Conference: Communication Systems, Internet and Mobile/Wireless Computing, Vol. 4, pp. 126-133, August, 1999.
- R. Guha, M. Bassiouni, P. Fishwick, George F. Stone III, Duane Sellers, Steffen Straßburger, J. Miro “Design and Modeling of Distributed Interactive Simulation and the High Level Architecture” Invited panel paper, Proceedings of the 13th European Simulation Multiconference, June 1999.
- L. Zhang, and R. Guha, " Dynamic Push Set for Improving Web Access", Proceedings of Southeastern Simulation Conference, Huntsville, AL, pp 34 -39, October, 1999.
- M. Bassiouni, R. Guha, and Chiu, M. "ATM Backbones for Legacy LAN's Supporting Real-Time Applications", Proceedings of Southeastern Simulation Conference, Huntsville, AL, pp 83 – 87, October, 1999.
- R. Guha, Madhuran, R., and Mohapatra, R. " Applying Wavelets for Terrain Data Compression", Proceedings of the Fourteenth International Symposium on Computer and Information Sciences, Turkey, pp 421 - 428, 1999.
- Sompagdee, P. and R. Guha, "Reference Based Metamorphosis for Polyhedral Objects", Proceedings of the Fourteenth International Symposium on Computer and Information Sciences, Turkey, pp 441 - 450, 1999.
- R. Madhuran, R. Guha, and R. Mohapatra, “Wavelet based Scale Filtering and Triangular Irregular Network for Terrain Data”, Proceedings of Southeastern Simulation Conference, Huntsville, AL, pp 136 – 142,1999.
- P. Sharma, O. Bignall, H. Williams, O. Sirisaengtaksin, and **R. Guha**, “Physics-Based Models of Fire Simulation: A Survey”, Proceedings of 1998 Conference on Simulation Methods and Applications, Orlando, FL, pp 272 - 279, November, 1998.
- C. Wallace and R. Guha, "An Extended Percolation Model For Fire Propagation Simulation", Proceedings of 1998 Conference on Simulation Methods and Applications, Orlando, FL, pp 151 - 154, November, 1998.

- M. Bassiouni, R. Guha and Y. Reddy, "Comformance Testing of Distributed Interactions in Simulation Networks", *Proceedings of IEEE International Conference on Applied Modeling and Simulation*, 1997.
- M. Bassiouni, M Georgiopoulos, R. Guha and M. Chiu "Performance of Standard and Modified Network Protocols in Real-time Simulation", *Proceedings of IEEE International Performance, Computing and Communications Conference*, pp 26-32, February, 1997.
- M. Rajkumar, S. Kim, R. Guha, G. Schiavone, and R. Mohapatra "Multiresolution Representation of Non-uniformly Sampled Terrain Databases Using Wavelets" *Proceedings of the 30th Asilomar Conference on Signals, Systems and Computers*, pp 988 - 992, 1996.
- J. Parsons and R. Guha, "A Technique for Modeling Flame Using Physically-Based Methods", *Proceedings of 18th Interservice/Industry Training Systems Conference*, 1996, (in CD-ROM).
- R. Guha, M. Bassiouni and G. Schow "A Framework for Modeling High Level Architecture (HLA) Using Petri Nets", 14th DIS Workshop on Standards for the Interoperability of Distributed Simulations, Position Papers, pp 515-521, 1996.
- S. Datta and R. Guha, "Massively Parallel Surface Rendering", *Proceedings of IS&T/SPIE's Symposium on Electronic Imaging: Science & Technology*, 1995.
- R. Pollack and R. Guha, "Parallel Image Compression Using Vector Quantization", *Proceedings of Second Annual DCC Industry Applications Workshop*, 1995.
- R. Guha, M. Bassiouni, C. Wallace and G. Schow "Performance Evaluation of Hypercube and Completely Connected Wide-Area Networks for Distributed Simulation", *Proceedings of the Southeastern Simulation Conference '95*, pp 271-280, 1995.
- R. Guha, M. Bassiouni, D. Roy and G. Schow, "Scalable Modeling for Networked Simulators Using Petri Nets", *Proceedings of the Southeastern Simulation Conference '95*, pp 281-290, 1995.
- D. Roy, R. Guha and B. Pati, "Stochastic Modeling of Highway Tandem Toll-Booths for Intelligent Transportation Systems", *Proceedings of the Southeastern Simulation Conference '95*, pp 325-329, 1995.
- R. Guha, J. Lindholm, M. Purnhagen, U. Vemulapati, D. Allen and R. Helmbold "WPG System: A Secured Distributed System for Integrated Engineering Prototyping and Manufacturing", *Proceedings of the Third International Conference on System Integration*, IEEE Computer Society, 1994.
- R. Guha and D. Roy "Modular Fault-tolerant Design and Reliability Allocation Algorithms for Mission-critical Multiprocessor Architectures", *Proceedings of International Symposium on Parallel Architectures, Algorithms, and Networks*, 1994.

- D. Roy and R. Guha “Reliability Allocation Schemes for Mission Oriented Modular Design of Fault-tolerant Multiprocessor Architectures, Proceedings of the Sixth IASTED/ISMM International Conference on Parallel and Distributed Computing and Systems, pp 327-330, 1994.
- A. Dickinson and R. Guha, “A Petri Net-Based Program Model for Data Flow Representation of Concurrent Programs”, Proceedings of the Third Software Engineering Research Forum, pp 315-319, 1993.
- R. Guha, M. Bassiouni, M. Purnhagen and D. Roy “Modeling and Evaluating the Virtual Network of Distributed Interactive Simulation with Token Ring Topology”, Proceedings of International Simulation Technology Conference, pp 103-107, 1993.
- D. Roy and R. Guha, “Cobweb: An Architecture for Increased Fault-tolerant/Reduced Diameter System,” Proceedings of Ninth International Conference on Systems Engineering, pp 385 - 389, 1993.
- S. Datta, R. Guha, P. Srimani and B. Gupta "Revolving Hierarchy in a Hypercube Distributed System", Proceedings of 1993 IEEE International Symposium on Circuits and Systems, 1993.
- R. Guha and T. Haynes "Some Remarks on K - γ Insensitive Graphs in Network Design", Sankhya: The Indian Journal of Statistics, Special Vol 54, Combinatorial Mathematics and Applications, dedicated to the memory of Professor Raj Chandra Bose, pp 177-187, 1992.
- R. Guha, M. Bassiouni, A. Dickinson, D. Roy, M. C. Fischer “Stochastic Petri Net Models of Distributed Simulation Systems”, Dynamic Modelling of Information Systems II, edited by H. G. Sol and R. L. Crosslin, North Holland Publishing Co., 1992.
- R. Guha and J. Hartman, “Teaching Parallel Processing: Where Architecture and Language Meet”, Proceedings of Twenty-second Annual Conference on Frontiers in Education, pp 475-479, 1992.
- C. Hughes, R. Guha, N. Deo and T. Frederick, “Parallel Processing in the Undergraduate Curriculum”, Proceedings of Twenty-second Annual Conference on Frontiers in Education, pp 475-479, (1992).
- R. Guha, M. Bassiouni and D. Roy “Modeling and Evaluation of Distributed Simulation with a Wide Area Network Architecture”, Proceedings of International Simulation Technology Conference 1992 and Workshop on Neural Networks 1992, pp 108 - 112 (1992).
- R. Guha, A. Jorgensen and P. Banerjee, “Debugging Parallel C Language Programs for the BBN GP1000 Butterfly Using Turbo C”, Proceedings of the Second Software Engineering Research Forum, November 1992, pp 123-132, 1992.
- A. Dickinson and R. Guha, “Measuring Performance of Data Dependent Parallel Algorithms”, Proceedings of the Second Software Engineering Research Forum, November 1992, pp 237-242 (1992).

- R. Guha and D. Roy, “Performance Study of a Fault-Tolerant Tree Architecture”, Proceedings of the Southeastern Simulation Conference 1992, pp 241-246 (1992).
- D. Roy and R. Guha, “Stochastic Performability Model of a Fault-Tolerant Distributed System”, Proceedings of the Southeastern Simulation Conference 1992, pp 235-240 (1992).
- R. Guha and A. Roy “Cascading Modified DPCM with LZW for Lossless Image Compression”, Proceedings of Data Compression Conference, pp 358 (1992).
- R. Sen and R. Guha, “Pyramid Embeddings on Hypercubes”, pp 77-83 in Frontiers in Parallel Computing, V. P. Bhatkar, A. Basu, S. C. Purohit, and K. M. Rege (Eds), Narosa Publishing House, (1991) (with R. Sen).
- A. Dickinson and R Guha, “Analysis of Space-Efficient List Merging on a Multicomputer Ring”, pp 108-123 in Parallel Architectures, N. Rishe, S. Navathe and D. Tal (Eds.), IEEE Computer Society Press, 1991.
- R. Guha, A Dickinson and D. Roy, “Software Requirement Verification Using P-Invariants of Petri Nets” Proceedings of the First Software Engineering Research Forum, pp 243-252, November 1991.
- R. Guha, M. Bassiouni, A. Dickinson and D. Roy “Approximate Modeling of Distributed Simulation Using Generalized Stochastic Petri Nets”, Proceedings of International Simulation Technology Conference 1991, pp 432 – 437, 1991.
- R. Guha and D. Roy, “Performance Evaluation Alternatives for Pipeline Architectures Using Generalized Stochastic Petri Nets”, Proceedings of International Simulation Technology Conference 1991, pp 438 – 443, 1991.
- R. Guha, M. Bassiouni, A. Dickinson, D. Roy and M. C. Fischer, “Stochastic Petri Net Models of Distributed Simulation Systems” Proceedings of the Second International Working Conference on Dynamic Modeling of Information Systems, pp 1991.

Year up to 1990

- D. Sarkar and R. Guha, “Mapping a Class of Algorithms from Binary Tree Machines to Linear Arrays”, *International Journal of Computer Systems Science and Engineering*, Vol 5, No 3, pp 203- 206, 1990.
- T. Haynes, R. Guha, R. Dutton and R. Brigham, “The G-Network and Its Inherent Fault Tolerant Properties”, *International Journal of Computer Mathematics* , Vol 31 , pp 127-135, 1990.
- A. Dickinson and R. Guha, “Analysis of Space-Efficient List Merging on a Multicomputer Ring”, Proceedings of International Conference on Databases, Parallel Architectures, and Their Applications, (PARBASE-90), pp 188-194, 1990.

- D. Sarkar and R. Guha, "A Fast distributed Deadlock-detection Algorithm for hypercube," *International Journal of Computer Mathematics*, Vol 25, No. 2. pp 69-82, 1988.
- R. Guha, A. Dickinson and Allan Kikawa "An Analysis of CMH Deadlock Detection Algorithm Using Transmission Delays", *International Journal of Computer Systems Science and Engineering* , Vol 3, NO. 4, pp 181-188, 1988.
- R. Guha and P. Hsia, "Data Structures and Databases", chapter 7 (with P. Hsia) in Systems Modeling and Computer Simulation, Ed. N. Kheir, Marcel Dekker Inc., 1988.
- R. Guha, A. Dickinson and G. Ray, "Non-Transform Methods of Picture Compression Applied to Medical Images", Proceedings of the 12th Annual Symposium on Computer Applications in Medical Care, pp 483-487, 1988.
- R. Guha, "Abstract Petri nets with an Application to Software Design", Proceedings of the Seminar on Parallel Processing Systems and their Applications, pp 81-85, 1988.
- T. Rice and R. Guha, "A Multi-layered G-Network for Massively Parallel Computation", *Frontiers 88: Proceedings of the second symposium on Massively Parallel Computation*, pp 519-520, 1988.
- R. Guha, S. Lang and M. Bassiouni, "Software Specification and Design Using Petri Nets," Proceedings of 4th International Workshop on Software Specification and Design. pp 225-230, 1987.
- R. Guha, "A Proposal and Some Issues Concerning the Use of Videomedia in the University Classroom," Proceedings EDCOMPCON '84, pp. 53-55 (1984).
- R. Guha, Tim Church "An Experience with the SX1 System for Software Development," International Workshop on Models and Languages for Software Specification and Design, Edited by Robert G. Babb II and Ali Mili, pp. 212-214 (1984).
- R. Guha, "Teaching Microprocessor Architectures," Proceedings of the Fourteenth SIGCSE, Technical Symposium on Computer Science Education, pp. 120-123 (1983).
- A. Mukhopadhyay and R. Guha, "Embedding a Tree in the Nearest Neighbor Array", Proceedings of the Tenth International Conference on Parallel Processing , pp. 261-263 (1981).
- T.G. McDanel and R. Guha, "The Two's Complement Quasi-Serial Multiplier", pp. 152-154, in Computer Arithmetic, Benchmark Papers in Electrical Engineering and Computer Science Vol. 21, Edited by E. E. Swartlander , Dowden, Hutchinson (1980).
- R. Guha and F. L. Ross, "Dynamic Microprogramming Testing Support in a Multiuser Environment", Proceedings of International Computer Symposium (1978) pp. 1215-1224.
- R. Guha and C. Ebeling, "Design of a User Microprogramming Support System", Fifteenth IEEE Computer Society International Conference (COMPCON 77), pp. 446-450 (1977).

- R. Guha, "Dynamic Microprogramming in a Time Sharing Environment", Proceedings of the Micro 10 Conference, pp. 55-60 (1977).
- R. Guha, P. Carr and C. L. Smith "Standard Considered Helpful", Proceedings Eighth Technical Symposium on Computer Science Education, Vol. 9, no, 3, pp.74-78 (1977).
- R. Guha and R.T. Yeh "A Formalization and Analysis of Simple List Structures", chapter 5, pp. 150-182, in Applied Computation Theory: Analysis Design, Modelling. Edited by R. T. Yeh, Prentice Hall Inc. (1976).
- T.G. McDanel and R. Guha, "The Two's Complement Quasi-Serial Multiplier", IEEE Transactions on Computers, Vol. C-24, pp 1233- 1235 (1975).
- R. Guha, and T.S. Kobin, "Structural Equivalence of Lists", Proceedings of the Eighth Hawaii International Conference on System Sciences, pp. 258-260 (1975).
- R. Guha and R.T. Yeh "On Periodicity of Sequential Machines", Journal of Computer and System Sciences, Vol. 8 , pp. 41-70 (1974).
- R. Guha and R.T. Yeh "Periodic Representation of Equal Matrix Grammar", Information and control, Vol. 22, pp. 435-446 (1973).
- R. Guha, "A Formalization of Data Structures", Proceedings of the Second Texas Conference on Computing Systems, pp. 39-1 - 39-7 (1973).
- R. Guha and R.T. Yeh, "Some Remarks on Periodic Decomposition of Automata and Phrase Structure Grammars", Proceedings of the Third Annual Houston Conference on Computer and System Science, pp. 256-265 (1971).
- R. Guha and R.T. Yeh "On Periodicity of Sequential Machines", Proceedings of the Eighth Annual Allerton Conference on Circuit and System Theory, pp. 486-495 (1970).
- R. Guha and R.T. Yeh, "Further Results on Periodic Decomposition of Sequential Machines", Proceedings of the Third Annual Princeton Conference on Information Sciences and Systems, pp. 364 (1969).

Service (A selected few):

- Associate Editor (2006 – Present) - Modelling and Simulation in Engineering, Hindawi Publishing Corporation.
- Editorial Board Member (2005 – Present) – International Journal of Internet Technology and Secured Transaction, Inderscience Publishers.
- SouthEast Regional Director in the Board of Directors (2004- 2006), Society for Computer Simulation (SCS).
- Member of several review panels and reviewer of research proposals for National Science Foundation for several years (1976 – 2004).

- Program Committee Member and Paper Reviewer, European Simulation Multiconference, (2005- 2007)
- Team Chair for Computer Science Program (1995-2004), Program Evaluator for Computer Science Program (1989-1994), Computer Science Accreditation Board (CSAB), Now merged with ABET Inc. as Computing Accreditation Commission (CAC). Reviewed one program per year (almost all years indicated).
- Guest Co-Editor: Special Issue on Security and High Performance Computing, *Journal of Computers*, Vol. 4, No. 5, 2009
- Guest Co-Editor, Special Issue on Simulation Methods and Applications, *The International Journal of the Federation of EUROSIM: Simulation Practice and Theory*, Vol. 9, Nos. 3-5, 2002.
- General Chair for Conference on Simulation Methods and Applications, SCS, 2000.
- General Chair for Conference on Simulation Methods and Applications, SCS, 1998.
- Executive committee member and the Director of Operations for IEEE World Congress on Computational Intelligence (1994).
- Program chair for Southeastern Simulation Conference 1995.
- Organizer of Summer Workshop on Parallel and Distributed Computing (93-95).
- Special Judge for IEEE-CS to evaluate Computer Science and Engineering projects of the 42nd International Science and Engineering Fair an activity of Science Service (May 1991).