

SAJJAN G. SHIVA Ph.D.

PROFILE

EDUCATION

- Ph.D. Electrical/ Computer Engineering, Auburn University, 1975.
- M.E.E. Electrical/ Computer Engineering, Auburn University, 1971.
- B.E. Electrical Engineering, Bangalore University, 1969.

AWARDS / CERTIFICATIONS/MEMBERSHIPS

- Life FELLOW of IEEE (1993, for contributions to Computer Science and Engineering Education)
- Life Member of ACM
- American Society for Quality (ASQ) Certified Software Quality Engineer (CSQE)
- IEEE Computer Society Certified Software Development Professional (CSDP)

POSITIONS HELD

- 2002 to Present: Computer Science Department, University of Memphis
 - Sept 2015 - : Professor
 - 2005 – August 2015: Professor and Founding Chairman
 - 2002 – 2005: Professor and Director, CS Division, Mathematical Sciences.
- 1999 to 2002: ISTC program, Teledyne Brown Engineering.
 - Manager- Software Quality Assurance
 - Member of the Software Engineering Process Group (SEPG)
 - Training Coordinator.
- 1998 to 1999: Intergraph Corporation
 - Senior Software Scientist
 - Executive Manager Technical (DARPA MariSTEP Program)
- 1978 to 2002: Teksearch Inc.
 - President
- 1978 to 1998: Computer Science Dept., University of Alabama in Huntsville
 - 1998: Emeritus professor
 - 1985 - 1998: Professor;
 - 1982 - 1986: Dept. Chairman;
 - 1978 - 1985: Tenured Associate Professor.
- 1996 to 1997: U.S. Army Space and Strategic Defense Command.
 - Technical Advisor (IPA), Computer Technologies Division,

1975 to 1978: Computer Science Technology Dept., Alabama A and M University
1975 - 1977 Assistant Professor
1977 - 1978 Associate Professor
1971 to 1974 Electrical Engineering Department, Auburn University
Graduate Teaching/ Research Assistant
Summer 91 Control and Guidance Directorate - U.S. Army MICOM
Electronic Engineer

Professional Society Affiliations and Activities

Institute of Electrical and Electronic Engineers (IEEE):

FELLOW since 1993

Served as:

Chairman, Region 3, IEEE Computer Society

Associate Editor, VLSI Technical Committee Newsletter

Executive Committee Member of Huntsville Chapter of Computer Society

Editor, IEEE Computer Society (Region 3) Area Newsletter

ABET/ Computing Accreditation Commission

Commissioner (since 2014)

Program Evaluation Team Chairman (1993 - 1996)

Program Evaluation Team Member (1990 – 1993, 2006 - present)

Educational Testing Service (ETS)

Chair, Committee to revise CS Major Field Test, 2005-6.

DoD VHSIC Program

Member of the VHDL Formulation Committee

Member of the Proposal Review Board

U. S. Army Strategic Defense Command

Member of Architecture Description Language Committee

NSF/US Department of Education

Member of Proposal Review Board

American Society for Engineering Education

Campus Activity Coordinator

International Conference on Global Software Engineering, 2010

Member, Program Committee

Symposium on Microprocessors and Education

Member of the Founding Organizing Committee

Program Chairman

Symposium on Artificial Intelligence (From Space ...Down to Earth)

Member of the Founding Organizing Committee

Program Chairman

IEEE Rocket City Seminar
Program Chairman
ACM Computing Reviews
Regular contributor (More than 20 paper/ book reviews).
Technical Reviewer
IEEE Transactions on Computers
IEEE Transactions on ASSP
IEEE Computer
Communications of ACM
ACM Computing Reviews
Simulation
IEEE Design Automation Conference
International Conference on Computer Hardware Description Languages
International Conference on Parallel Processing
International Symposium on Computer Architecture
International Conference on Distributed Computing Systems
American Society of Engineers from India
Founding Member of Huntsville Chapter
Board of Directors
Program Chairman, 10th Annual National Convention

TEACHING

COURSES TAUGHT

COMP 3410 Computer Organization and Assembly Language
COMP 7087/8087 Advanced Topics in Software Engineering
CS714 Parallel Processing Architectures
CS713 Distributed Processing Systems
CS670 Computer Networks
CS613 Computer Architectures
CS586 Microprocessor Architecture
CS517 Data Organization and Algorithm Analysis
CS513 Introduction to Computer Architecture
CS413 Introduction to Digital Computer Design
CS309 Switching Theory

CS308	Computer Organization and Assembly Language Programming
CS214	Introduction to Discrete Structures
CS113	Problem Solving using FORTRAN
CS107	Computer Science I with C
CMP510	Operating Systems
CMP501	Computer Architecture
CMP610	Information Storage and Retrieval
CMP486	Computer Organization
CMP476	Data Structures
CMP412	Architecture of Assemblers
CMP401	System Design
CMP205	FORTRAN Programming
CMP202	Assembly Language Programming
CMP200	COBOL Programming
CMP101	Introduction to Data Processing
EE422	Computer Organization
EE412	Sequential Logic Design
EE312	Combinational Logic Design
EE103	BASIC and FORTRAN Programming

Continuing Education Courses:

Pascal Programming	Capability Maturity Model (CMM)
C Programming	ProcessMax for Software Process Improvement
FORTRAN Programming	Unified Modeling language (UML)
Computer Fundamentals	Requirements Management through Use cases
Minicomputers	Team Development
Microcomputer System Design	Software Security Testing
Computer Architectures	
Ada	
Cloud Computing Security	

Ph. D. Dissertation Guidance

1. "Security and Privacy Assessment Framework for Cloud Computing", Abdullah Abu Hussein, 2017.
2. "Game Models for Cyber Security" Vivek Shandilya, December 2015.
3. "Runtime Monitoring Technique to Detect and Prevent SQL Injection Attacks" Ramya Dharam, August 2014.
4. "AVOIDIT IRS: An Issue Resolution System to Resolve Cyber Attacks" Christopher Simmons, August 2014.
5. "Mitigating Congestion-based Denial of Service Attacks" Harkeerath Bedi, December 2013.
6. "Non-invasive knowledge capture in software engineering" Sara Lee, May 2011.
7. "Datamining algorithms for customer churn prediction", Mathew Anwanyu, August 2010.

8. "Distributed Programming and Resource Balancing in Networked Systems", P. Ledru, 2001.
9. "Interfacing Knowledge-based Systems to Simulation Systems", E. Gorman, 2001.
10. "Software Reuse Expert Environment (SREE)", P. Wang, 1994.
11. "Construction of Dynamic Stochastic Simulation Models Using Knowledge-Based
12. Techniques", M. Douglas Williams, 1990.
13. "Representation and Matching of Knowledge for the Design of Digital Systems", Judit
14. Jones, 1989.
15. "Cellular Automata and Their Behavior Under Micro-Dataflow Regimes", D. Ross
- Grable,
16. 1989.
17. "An A posteriori Computer Security System to Identify Computer Viruses", Robert
18. McKosky, 1989.
19. "On Interfacing HDL to Knowledge-bases," P. Klon, 1986.
20. "Development of An Expert Hardware Synthesis System," C. R. Green, 1984.

Master's Thesis Guidance

1. "Role definition for User Provisioning", Reluca Stoin, December 2008.
2. "Distributed Programming in Ada with Protected Objects", P. Ledru, 1995.
3. "Energy System - An Extension to A Visual Simulation System", R. Rampur, 1995.
4. "Analysis of the ATM Leaky Bucket Policing System", V. Rao, 1995.
5. "An Object Oriented Graphical User Interface to an Expert System for Testable Circuit
6. Design", Chaya Rao, 1994.
7. "An Expert System for Testable Circuit Design", R. Murthy, 1993.
8. "Implementation of Reliable and Efficient Remote Procedure Calls", R. Virmani, 1992.
9. "Synchronizing A Real-Time Clock Over A Heterogeneous Distributed Network", M.
10. Jones, 1988.
11. "An Expert System to Aid in Proposal Management," D. Lowther, 1987.
12. "An Investigation of the Issues Involved in Man-Computer Interfaces," G. Sinclair, 1985.
13. "Logic Minimization Interface for DDL System," C. Srinivas, 1983.
14. "Modular Hardware Synthesis," J. Covington, 1982.
15. "Automatic Hardware Synthesis from DDL Description," A. M. Shah, 1981.

RESEARCH

Current Areas: Cybersecurity, Software Engineering, Cloud Computing,

Director, Game Theory and Cyber Security Laboratory

Visit <http://gtcs.cs.memphis.edu> for details on recent activities and publications.

Publications

BOOKS

Computer Organization, Design and Architecture, Fifth Edition, CRC Taylor and Francis, December 2013 (Fourth Edition, Taylor and Francis CRC Press, 2008; Third Edition, Marcel-Dekker, 2000; Second Edition, HarperCollins, 1991; First Edition, Little, Brown Publishers, Boston, Mass., 1985.)

Advanced Computer Architectures, Taylor-Francis CRC Press, 2006.

Introduction to Logic Design, (Second Edition), Marcel Dekker, 1998 (First edition, Scott, Foresman/Little, Brown, 1988). Translated to Spanish in 2009.

Pipelined and Parallel Computer Architectures, HarperCollins/ Addison-Wesley, 1996.

CHAPTERS IN BOOKS

"Expert Systems for Automatic Hardware Synthesis," in *Expert Systems in Engineering Applications*, Springer-Verlag, 1993.

"Hardware Implementation," in *Systems Modeling and Computer Simulation*, Marcel-Dekker, 1995 (with M. Mohadjer) (Invited) (Second Edition) (First Edition, 1987).

"Multiple Processor Systems," in *Systems Modeling and Computer Simulation*, Marcel-Dekker, 1995 (Invited) (Second Edition) (First Edition, 1987).

DISSERTATION

"Implementation of Real-Time Digital Filters," Auburn University, 1975.

JOURNAL AND MAJOR CONFERENCE PAPERS (Prior 2017)

See <http://gtcs.cs.memphis.edu> for recent publications.

Abdullah Abuhussein and S. Shiva, *A Framework for Cloud Security Assessment: A Scenario-based, Stakeholder-Oriented Approach*, 1st Annual Research Workshop on Advances & Innovations in Cyber Security, The University of Memphis, Memphis, TN, USA, June 9, 2016.

Abdullah Abuhussein, S. Shiva, F. Sheldon, *CSSR: Cloud Services Security Recommender*, IEEE 11th World Congress on Services (SERVICES) - Emerging Technology Track: Dependable and Secure Services (DSS 2016), San Francisco, California, June 26- July 3, 2016.

Abdullah Abuhussein, F. Alsubaei, S. Shiva, F. Sheldon, *Evaluating Security and Privacy in Cloud Services* In the 2016 IEEE NATA-COMPSAC Symposium on Novel Applications and Technology Advances in Computing, the 40th Annual Computer Software and Applications Conference (COMPSAC), Atlanta, Georgia, June 10-14, 2016

E. Aldhahri, A. Abuhussein, S. Shiva, Leveraging Crowdsourcing in Cloud Application Development, IASTED International Symposium on Software Engineering and Applications (SEA), November 2015.

Z. Cao, C. Wu, S. Shiva, Y. Gu, On Modeling and Analysis of MIMO Wireless Mesh Networks with Triangular Overlay Topology, Mathematical Problems in Engineering, vol. 2015, Article ID 185262, 11 pages, 2015.

H. Bedi, S. Roy, S. Shiva, Mitigating congestion based DoS attacks with an enhanced AQM technique, in Journal of Computer Communications, Elsevier, Feb 2015, vol. 56, pp. 6073.

E. Aldhahri, V. Shandilya, S. Shiva, Towards an Effective Crowdsourcing Recommendation System, IEEE International Symposium on Software Crowdsourcing (ISSC), 2015.

V. Shandilya, S. Shiva, A Network Security Game Model, ACM CODASPY, March 2015.

Rodrigo Silva, Sajjan Shiva, Jasbir Dhaliwal, Formal Methods and Optimization of Software Test Cases, 9th International Research Workshop on Advances and Innovations in Software Testing, October 2015.

V. Shandilya, S. Shiva, A Network Security Game Model, ACM-CODASPY, March 2015.

V. Shandilya, C. Simmons, S. Shiva, Use of Attack Graphs in Security Systems, in Journal of Computer Networks and Communications, *in press*

H. Bedi, S. Roy, S. Shiva, Mitigating congestion based DoS attacks with an enhanced AQM technique, in Journal of Computer Communications, Elsevier, Feb 2015, *vol. 56, pp. 60-73.*

V. Shandilya, F. Polash, S. Shiva, A Multi-Layer Architecture for Spam Detection, International Journal of Computer Science and Information Technology, 2014, vol. 6, Issue 4, pp. 193-200.

F. Sheldon, S. Shiva and Q. Chen, Testing an Autonomic Energy Security Management Framework for Cyber-Physical Systems, ITEA Test Technology Workshop, November 2014, Memphis, TN.

A. Abuhussein, H. Bedi, S. Shiva, Exploring Security and Privacy Risks of SoA Solutions Deployed on the Cloud, GCA 2014, Las Vegas, Nevada, USA, July 2014.

C. Simmons, S. Shiva, L. Simmons, ADAPT: A Qualitative Analysis of An Ontology Based Issue Resolution System for Cyber Attack Management, In Cyber Technology in Automation, Control and Intelligent Systems (CYBER), IEEE 4rd Annual International Conference , Hong Kong, China, June 2014.

R. Dharam, S. Shiva, Runtime Monitoring Framework for SQL Injection Attacks, International Journal of Engineering and Technology, vol. 6, no. 5, pp. 392-401, 2014.

V. Shandilya, F. Polash, S. Shiva, A Multi-Layer Architecture for Spam Detection, International Journal of Computer Science & Information Technology, Vol. 6 Issue 4, p193-200, 2014

H. Bedi, S. Shiva, Mitigating Congestion-Based Denial of Service Attacks with Active Queue Management, GLOBECOM 2013, Atlanta, GA, USA- Dec 2013.

S. Shiva, S. Ramesh, R. Dharam, A Survey of Testing Methodologies for Cloud-based applications, International workshop on research in Software Testing, Memphis, TN, USA, Oct 2013.

R. Dharam, S. Shiva, Testing Web Applications for Tautology based SQL Injection Attacks Using Runtime Monitors, International workshop on research in Software Testing, Memphis, TN, USA, Oct 2013.

V. Shandilya, S. Shiva., Security in the Cloud Based Systems: Structure and Breaches. Internet Technology and Secured Transactions, 2013 International Conference For IEEE, ICITST 2013. - London, UK 2013.

C. Simmons, S. Shiva, H. Bedi , V. Shandilya, ADAPT: A Game Inspired Attack-Defense and Performance Metric Taxonomy, In Security and Privacy Protection in Information Processing Systems, 28th IFIP TC 11 International Conference, SEC 2013, Auckland, New Zealand, July 8-10, 2013.

R. Dharam, S. Shiva, Essential Cloud Security Features in Windows Azure, GCA 2013, Las Vegas, Nevada, USA - July 2013.

A. Abuhussein, H. Bedi, S. Shiva, Towards a Taxonomical Approach for Secure Cloud Computing, IEEE 6th International Conference on Cloud Computing, Santa Clara, CA, USA - July 2013

R. Dharam, S. Shiva, Runtime Monitors to Detect and Prevent Union Query based SQL Injection Attacks, ITNG 2013, and Las Vegas, Nevada, USA. April 2013

.

Abuhussein, H. Bedi, S. Shiva *Evaluating Security and Privacy in Cloud Computing Services: A Stakeholder's Perspective*, 7th International Conference for Internet Technology and Secured Transactions (ICITST), London, UK December 2012.

R. Dharam, S. Shiva *Runtime Monitoring Technique to handle Tautology based SQL Injection Attack*, International Journal of Cyber-Security and Digital Forensics, Vol. 1, No. 3, Nov 2012.

H. Bedi, S. Shiva *Securing Cloud Infrastructure Against Co-Resident DoS Attacks Using Game Theoretic Defense Mechanisms*, Intl. Workshop on Service-Oriented Architecture and Cloud Computing (SOAC), part of ICACCI 2012, Chennai, India. August 2012.

R. Dharam, S. Shiva *Runtime Monitoring - A Post-deployment Security Testing Technique*, International Research Workshop on Advances and Innovations in Software Testing, Memphis, TN, USA, July 2012.

S. Shiva *Security Testing : Status Report*, Sixth International Research Workshop on Advances and Innovations in Software Testing, July 2012, Memphis, TN.

V. Shandilya, S. Shiva *Security in the Cloud: A stake holder's perspective*, International Conference on Security and Management (SAM), Las Vegas. July 2012.

Simmons, S. Shiva, V. Phan, V. Shandilya, L. Simmons *IRS: An Issue Resolution system for Cyber Attack Classification and Management*, International Conference on Security and Management (SAM), Las Vegas. July 2012.

R. Dharam, S. Shiva *Analysis of Monitoring Tools for Java Applications*, International Conference on Software and Computer Applications, Singapore, June 2012.

R. Dharam, S. Shiva *A Framework for Development of Runtime Monitors*, International Conference on Computer and Information Sciences, Kaula Lumpur, Malaysia, June 2012.

R. Dharam, S. Shiva *Runtime Monitors for Tautology based SQL Injection Attacks*, International Conference on Cyber Security, Cyber Warfare and Digital Forensics, Kaula Lumpur, Malaysia, June 2012.

S. Shiva, R. Dharam and V. Shandilya, *Runtime Monitors as Sensors of Security Systems*, 23rd IASTED conference on Parallel and Distributed Computing and Systems, Dallas, December 2011.

S. Shiva *Security Testing : Are We There Yet?*, Fifth International Research Workshop on Advances and Innovations in Software Testing, May 2011, Memphis, TN.

H. Bedi, S. Roy, S. Shiva. *Game Theory-based Defense Mechanisms against DDoS Attacks on TCP/TCP-friendly Flows*, IEEE Symposium on Computational Intelligence in Cyber Security (CICS), part of (SSCI). Paris, France. April 2011.

S. Shiva, H. Bedi, C. Simmons, M. Fisher, R. Dharam. *Holistic Game Inspired Defense Architecture*, International Conference on Data Engineering and Internet Technology, March, 2011.

Anyanwu, N Matthew and Sajjan Shiva, "Implementation and Evaluation of Skip List Data Structure" SIAM Conference on Data Mining (SDM10) April 29 – May 1, 2010, Columbus, Ohio.

Sankardas Roy, Charles Ellis, Sajjan Shiva, Dipankar Dasgupta, Vivek Shandilya, Qishi Wu. "A Survey of Game Theory as Applied to Network Security." *43rd Hawaii International Conference on System Sciences (HICSS)*. Hawaii, USA, January, 2010.

Sajjan Shiva, Sankardas Roy, Harkeerat Bedi, Dipankar Dasgupta, Qishi Wu. A Stochastic Game Model with Imperfect Information in Cyber Security. *5th International Conference on Information Warfare and Security (ICIW)*. Ohio, USA, April, 2010.

Sajjan Shiva, Sankardas Roy, Charles Ellis, Vivek Datla, Dipankar Dasgupta, Qishi Wu. Static and Dynamic Games to Model DoS and DDoS Attacks and Potential Defense Mechanisms. *2010 Spring Simulation Multiconference(SpringSim)* . Florida, USA, April, 2010.

Simmons, Chris; Ellis, Charles; Shiva, Sajjan; Dasgupta, Dipankar; Wu, Qishi, "AVOIDIT: A Cyber Attack Taxonomy" *Technical Report: CS-09-003, University of Memphis*, August, 2009,

Anyanwu, N Matthew and Sajjan Shiva, "Comparative Analysis of Serial Decision Tree Classification Algorithms" *International Journal of Computer Science and Security (IJCSS)* vol.3 issue 3. July 2009, pp. 230-240.

Anyanwu, N Matthew, David Lin and Sajjan Shiva, "Comparison of Cluster Measures" *International Conference on Artificial Intelligence and Pattern Recognition(AIPR-09)* Orlando, FL 2009, July 13-16, 2009, pp. 348-355.

Anyanwu, N Matthew and Sajjan Shiva, "Application of Enhanced Decision Tree Algorithm to Churn Analysis" *International Conference on Artificial Intelligence and Pattern Recognition(AIPR-09)* Orlando, FL 2009, July 13-16, 2009, pp. 356-363.

Lee, S.B. Shiva, S.G. "A Novel Approach to Knowledge Sharing in Software Systems Engineering" *Fourth IEEE International Conference on Global Software Engineering, (ICGSE)* 13-16 July 2009, pp. 376-381, Limerick, Ireland.

Vasile Rus, Xiaofei Nan, Sajjan G. Shiva, Yixin Chen. (2009). Clustering of Defect Reports Using Graph Partitioning Algorithms. In *Proceedings of the 21st International Conference on Software Engineering & Knowledge Engineering (SEKE'2009)*, Boston, Massachusetts, USA, July 1-3, 2009, pages 442-445.

Shiva; Lee; Shala; Simmons, "Knowledge Management in Global Software Development" International Journal of Distributed Sensor Networks, June 2009.

Chris Simmons, Charles Ellis, Sajjan Shiva, Dipankar Dasgupta, Qishi Wu. "AVOIDIT: A Cyber Attack Taxonomy." (being submitted to IEEE Security and Privacy Magazine).

Vasile Rus, Sameer Mohammed and Sajjan Shiva, "Automatic Clustering of Defect Reports," International Conference on Software Engineering and Knowledge Engineering, July 2008.

Reluca Stoin, Vasile Rus and Sajjan Shiva, "Predicting Defects in Large Open Source Software," Proc. of the Second International Research Workshop on Advances and Innovations in System Testing, May 2008.

S.G.Shiva, S.B.Lee, L.A. Shala, C.B. Simmons, " Knowledge Management in Global Software Development", International Journal of Distributed Sensor Networks, 2008.

S. Shiva and L. Shala, "Using Semantic Wikis to Support Software Reuse," Journal of Software, Vol 3, Issue 4, April 2008, pp. 1-8.

S. G. Shiva, Sarah B. Lee, Lubna A. Shala, and Chris B. Simmons, "Knowledge Management in Global Software Development" (Invited), International Symposium on Advances in Computer and Sensor Networks and Systems, April 2008, Zhengzhou, China.

S. G. Shiva, Teodora R. Stoian, Rajitha R. Satharla, Elhadji A. Ba, Terence P. Hollahan, "An augmented secure software development lifecycle," Computer Security Conference, April 2008.

S. Shiva and L. Shala, "Using Semantic Wikis to Support Software Reuse," Journal of Software, Academy Publisher, December 2007.

Vasile Rus and Sajjan Shiva , "A General Framework for Information Processing with Application to Quantitative Software Testing ", Proc. of the Workshop on Advances & Innovations in System Testing, May 2007.

S. Shiva and L. Shala, "Software Reuse: Research and Practice", International Conference on Technology: New Generation, April 2007.

S. Shiva and L. Shala, "Adding Security to Rational Unified Process," Computer Security Conference, April 2007.

S. G. Shiva, J. R. Talburt, L. Sherrell and S. Lee, "Computer Science Education – Are we on the right track?," The Journal of Computing Sciences in Colleges, 21(5), p. 60-61, 2006.

S. G. Shiva, L. Sherrell, S. Lee, and A. Olney, "Engineering Agent-Based Software Systems," The Journal of Computing Sciences in Colleges, 20(6), p. 28, 2005.

- L. Sherrell and S. G. Shiva, "Will Earlier projects Plus a Disciplined Process Enforce Software Engineering Principles Throughout the CS Curriculum?," Proceedings of the 27th International Conf on Software Engineering, St. Louis, MO, May 2005, pp. 619-620.
- D. Blain and S. Shiva, "Software Processes in Academia", International conf on Software Engineering Research and Practice, June 2004.
- M. Shinde and S. Shiva, "CMMI framework for Small businesses – A case study", International conf on Software Engineering Research and Practice, June 2004.
- S. Lee and S. Shiva, "Comparing Agent Software Development Methodologies using the Waterfall Model," Proc of Americas Conf on Information Systems, Omaha, NE, August 2005.
- S. Lee and S. Shiva, "Comparing Agent Software Development Methodologies using the CMMI Engineering Process Model," Proc of Americas Conf on Information Systems, Omaha, NE, August 2005.
- S. Shiva, "Requirements Management," CMMI Workshop, Pittsburgh, December, 2002.
- "Anaconda: A Framework for Distributed Internet Computing," *Cluster Computing*, 2003 (with P. Ledru).
- "Modeling the Decision Making Behaviors within Human Conflict Negotiation", International Conf. on Computers in Multimedia applications, 1999 (with J. Graffagnini and D.C. Patel).
- "Expert Systems for Testable Hardware Synthesis", (Invited paper) *International Conference on Computational Intelligence and Multimedia Applications*, February 1998 (with D. Patel).
- "Interpartition Communication with Shared Active Packages", *TRI-Ada 96*, December 96 (with P. Ledru).
- "Design of a Knowledge-Based Simulation Environment", *Simulation*, August 1996 (with D. Williams and E. Gorman).
- "A VHDL Based Expert System for Hardware Synthesis," *VLSI Design Journal*, March 1994, (with J. Jones).
- "Expert Systems for Hardware Synthesis - An Overview", *Computing and Control Journal*, April 1993, (with J. Jones).
- "A File Integrity Checking System to Detect and Recover from Program Modification Attacks in Multiuser Computer Systems," *Computers and Security*, August 1990 (with R. A. McKoskey).
- "VHSIC - Hardware Description Language," *VLSI Design*, June 1985, (with P. Klön).

"Correlation of Adjacent Pixels for Multiple Image Registration," *IEEE Transactions on Computers*, (with H. Ranganath), July 1985.

"Simulation Attributes of HDLs," *Radio and Electronic Engineer, Journal of Inst. of Radio and Electronics Engineers*, UK, January 1984, (with D. C. Patel).

"On the Selection and Development of an HDL," (Invited Paper), *Hawaii International Conference on Systems Science*, January 1984.

"An Automatic Logic Synthesis System," *International Conference on Computers, Systems and Signal Processing*, December 1984.

"An Expert System for VLSI Synthesis," *National Conference on Integrated Circuits, Communications and Signal Processing*, December 1984.

"A New Method for Multiple Image Registration," *National Conference on Integrated Circuits, Communications, and Signal Processing*, December 1984, (with H. Ranganath).

"Automatic Hardware Synthesis," (Invited Paper) *Proceedings of IEEE*, Special Issue on VLSI, January 1983.

"Modular Description/Simulation/Synthesis Using DDL," *IEEE Design Automation Conference*, June 1982, pp. 321-329, (with J. Covington).

"On Describing Multiprocessor Architecture," *Real Time Systems Symposium*, Miami Beach, Florida, December 1981.

"Combinational Logic Synthesis from an HDL Description," *IEEE Design Automation Conference*, Minneapolis, Minn., June 1980.

"Hardware Description Languages - A Tutorial," *Proceedings of IEEE*, December 1979.

"Use of DDL in an Automatic LSI Design and Test System," *International Symposium on CHDLs and Their Applications*, Palo Alto, California, October 1979.

"Realization of Digital Filters Using Input-Scaled Floating-Point Arithmetic," *IEEE Transactions on Acoustics, Speech and Signal Processing*, October 1979, (with J. R. Heath and H. T. Nagle).

"A Numerical Procedure for Renumbering the Nodes of a Digital Network," *IEEE Transactions on Acoustics, Speech and Signal Processing*, February 1978.

"A Unified Approach to the Selection of Structures for Digital Filters," *IEEE International Symposium on Acoustics, Speech and Signal Processing*, Hartford, Conn., May 1977.

"Teaching With Multiple Quizzes _ A Controlled Study," *Alabama A&M University Research Journal*, September 1977.

"Flipflops for Multivalued Logic," *IEEE Transactions Computers*, March 1976, (with T. A. Irving and H. T. Nagle).

"Bypass Multivariable Karnaugh Maps," *Electronic Design*, October 11, 1974, (with H. T. Nagle).

"Reduce State Tables by Computer," *Electronic Design*, October 25, 1974, (with H.T. Nagle).

"Let a Computer Design Memory Circuits," *Electronic Design*, November 23, 1974, (with H. T. Nagle).

"On Multivalued Memory Elements," *International Symposium on Multivalued Logic*, Morgantown, West Virginia, May 1974, (with H. T. Nagle).

REGIONAL CONFERENCE PAPERS

S. Lee and S. Shiva, "CMMI and Agent-based Software Engineering (poster)," Midsouth College Computing Conference, April 2005.

A. Olney and S. Shiva, "Agent Communication languages (poster)," Midsouth College Computing Conference, April 2005.

P. Wang and S. Shiva "A Knowledge-Based Software Reuse Environment", *IEEE Southeastern Symposium on System Theory*, March 1994, .

D. Weldy and S. Shiva "A Study of Tasking Models in Concurrent C, SR and ADA", *IEEE Southeastern Symposium on System Theory*, March 1994, .

R. Virmani and S. Shiva "Implementation of Reliable and Efficient Remote Procedure Calls", *IEEE Southeastcon*, April 1993, .

J. Jones and S. Shiva "Representation and Matching of Knowledge to design Digital Systems," *Fourth Conference on AI for Space Applications*, November 1988 .

M. Campbell and S. Shiva "An Interface Between ADS and VHDL," *Software for Strategic Systems Conference*, October 1988 .

R. Grable and S. Shiva Two Simulations of Cellular Array Machines, *Southeastern Conference on Computer Simulation*, October 1987, .

P. Klon and S. Shiva "Hologram Representation of Design Data in an Expert System Knowledge Base," *Conference on Space Applications of AI*, November 1986,

M. Paulk and S. Shiva "Interprocess Communications in Ada," *IEEE Southeast Conference*, April 1984, .

C. Pucket and S. Shiva "On Input/Output Bus Architectures," *Southeastern Symposium on System Theory*, March 1983, .

C. Srinivas and S. Shiva "Automatic Hardware Synthesis and Minimization," *Southeastern Symposium on System Theory*, March 1983 .

A. M. Shah and S. Shiva "Hardware Synthesis Using DDL," *IEEE Southeast Conference*, Huntsville, Alabama, April 1981, .

J. Covington and S. Shiva "Modular Hardware Synthesis Using HDLs," *IEEE Southeast Conference*, Huntsville, Alabama, April 1981, (with).

S. Shiva "Design Automation of Digital Computers," *IEEE Rocket City Seminar*, Huntsville, Alabama, February 1980, (Invited).

S. Shiva and G. Weathers "Using the Microcomputer as an Instructional Tool in Technology Programs," *First Annual Symposium on Microprocessors and Education*, Tuscaloosa, Alabama, December 1977, (with).

S. Shiva and K. R. Chakravarthi "A Method for Finding the Boolean Difference of Switching Functions," *IEEE Southeast Conference*, Williamsburg, Virginia, April 1977, .

S. Shiva "Generation of Prime Implicants Using Minterm Sublist," *Eight Annual Symposium on System Theory*, Knoxville, Tennessee, April 1976.

S. Shiva and H. T. Nagle "Boolean Function Minimization by Digital Computer," *Fiftieth Annual Meeting of Alabama Academy of Sciences*, Huntsville, Alabama, April 1973, .

S. Shiva and H. T. Nagle "Computer-Aided Design of Sequential Machines," *Fifth Annual Symposium on System Theory*, Raleigh, North Carolina, March 1973, .

TECHNICAL REPORTS

"Embedding Diagnostics into Reengineered Applications," US Army TMDE Activity, September 1993.

"Modification of Nickel-Hydrogen Battery Expert System," NASA-MSFC, August 1991.

"Software Engineering Environment Specification," Final Report, US Army MICOM, October 1990.

"Nickel-Hydrogen Battery Expert System," NASA-MSFC, August 1990.

"Software Maintenance Methodologies and Performance Evaluation," US Army MICOM/SED, September 1989.

"Automated Data Processor and Network Architecture Design Tool Enhancement Analysis," Final Report, US Army Strategic Defense Command, June 1988.

"Development of an Expert Hardware Synthesis System," Final Report, ARO Contract DAAG29-84-K-0114, September 1984.

"Performance Evaluation of Real-Time Computer Systems," Colsa Inc., November 1983.

"DDL System Users Manual," NAS8-33096, January 1983.

"DDL System Programmer's Manual," NAS8-33096, January 1983.

"DDL Software System - Final Report," NAS8-33096, January 1983.

"Architectural Description Language," Final Report, Delivery Order 1611, BMD Systems Command, January 1981.

"Hardware Synthesis from DDL - Extensions and Logic Minimization," NASA, NAS8-33096, Technical Report, University of Alabama in Huntsville, Huntsville, Alabama, October 1981.

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