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EDUCATION

Ph.D., Computer Science, University of Utah, 2002.

M.S., Computer Science, Arizona State University, 1992.

B.E., Electronics and Communication, University of Mysore, 1984.

RESEARCH

Areas of Interest: Computer architecture, parallel and multiprocessor architecture, operating systems, distributed systems, computer network.

Ph.D. Dissertation: Design and Evaluation of a Multiple-Protocol Controller for Hardware Distributed Shared Memory Systems

Advisor: Professor John Carter

My dissertation research improves the performance of shared memory applications by supporting multiple protocols in custom hardware with the constraints imposed by the use of commodity parts (e.g., processor, memory controller, and interconnect). This work is part of the Avalanche Multiprocessor project at Utah. Avalanche reduces communication penalty in commodity-based distributed memory multiprocessor by incorporating flexibility into both the message passing and shared memory systems. As a key research staff member, I lead the design of Avalanche's shared memory system from the project's inception through its completion.

Before Avalanche, I worked on the Mach Shared Object project, in which we built a persistent object manager as a server on top of the operating system. After Avalanche, I was a member of the Impulse memory system project to build an intelligent, efficient memory controller. I was involved with this project from its conception, including the writing of the proposal.

PUBLICATIONS

Conferences and Workshops

Ravindra Kuramkote, John Carter, and Chen-Chi Kuo, "Supporting Multiple Coherence Protocols in Programmable Shared Memory Controllers". In the Proceedings of the Eighth Workshop on Shared-memory Multiprocessors, Atlanta, April, 1999.

Chen-Chi Kuo, John Carter and Ravindra Kuramkote, "MP-LOCKs: Replacing Hardware Synchronization Primitives with Message Passing". In the Proceedings of the Fifth IEEE International Symposium on High Performance Computer Architecture, Orlando, January, 1999.

John Carter, Wilson Hsieh, Leigh Stoller, Mark Swanson, Lixin Zhang, Erik Brunvand, Al Davis, Chen-Chi Kuo, Ravindra Kuramkote, Michael Parker, Lambert Schaelicke and Terry Tateyama, "Impulse: Building a Smarter Memory Controller". In the Proceedings of the Fifth IEEE International Symposium on High Performance Computer Architecture, Orlando, January, 1999.

John Carter, Chen-Chi Kuo and Ravindra Kuramkote, "Design Alternatives for Shared Memory Multiprocessors". In the Proceedings of the 5th ACM/IEEE International Conference on High Performance Computing, Chennai, India, December, 1998.

Chen-Chi Kuo, John Carter and Ravindra Kuramkote, “AS-COMA: An Adaptive Hybrid Shared Memory Architecture”. In the Proceedings of the 1998 International Conference on Parallel Processing, Mineapolis, 1998.

John B. Carter and Ravindra Kuramkote, ”The Avalanche Multiprocessor”. In the Proceedings of the Fifth Workshop on Shared-memory Multiprocessors, Santa Marguerita, Italy, June 1995.

Douglas B. Orr, Robert W. Mecklenburg and Ravindra Kuramkote, “Strange Bedfellows: Issues in Object Naming Under Unix”. In the Proceedings of the Third International Workshop on Object Orientation in Operating Systems, Asheville, NC, December 9-10, 1993.

John B. Carter, Bryan Ford, Mike Hibler, Ravindra Kuramkote, Jeffrey Law, Jay Lepreau, Douglas B. Orr, Leigh Stoller and Mark Swanson, “FLEX: A Tool for Building Efficient and Flexible Systems”. In the Proceedings of the Fourth Workshop on Workstation Operating Systems, Napa CA, October 14-15, 1993.

Bruce Millard, Partha Dasgupta, Sanjay Rao and Ravindra Kuramkote, “Run-time Support and Storage Management for Memory-Mapped Persistent Objects”. In the Proceedings of the 13th International Conference on Distributed Computing Systems, Pittsburgh Pennsylvania, May 25-28, 1993.

Technical Reports

Ravindra Kuramkote and John Carter , “Exploring the Value of Supporting Multiple DSM Protocols in Hardware DSM Controllers”. University of Utah - Computer Science Department, UUCS-99-024, 1999.

Ravindra Kuramkote, John Carter, Alan Davis, Chen-Chi Kuo, Leigh Stoller and Mark Swanson, “Analysis of Avalanche’s Shared Memory Architecture”. University of Utah - Computer Science Department, UUCS-97-008, 1997.

John Carter, Chen-Chi Kuo and Ravindra Kuramkote, “A Comparison of Software and Hardware Synchronization Mechanisms for Distributed Shared Memory Multiprocessors”. University of Utah - Computer Science Department, UUCS-96-011, 1996.

Leigh Stoller, Ravindra Kuramkote and Mark Swanson, “PAINT- PA Instruction Set Interpreter”. University of Utah - Computer Science Department, UUCS-96-009, 1996.

Mark Swanson, Ravindra Kuramkote, Terry Tateyama and Leigh Stoller, “Message Passing Support in the Avalanche Widget”. University of Utah - Computer Science Department, UUCS-96-002, 1996.

John Carter, Ravindra Kuramkote and Chen-Chi Kuo, “Reducing Consistency Traffic and Cache Misses in the Avalanche Multiprocessor”. University of Utah - Computer Science Department, UUCS-95-023, 1995.

John Carter, Al Davis, Ravindra Kuramkote, Chen-Chi Kuo, Leigh B. Stoller, Mark Swanson, “Avalanche: A Communication and Memory Architecture for Scalable Parallel Computing”. University of Utah - Computer Science Department, UUCS-95-022, 1995.

John Carter, Mike Hibler, Ravindra Kuramkote, “Evaluating the Potential of Programmable Multiprocessor Cache Controllers”. University of Utah - Computer Science Department, UUCS-94-040, 1994.

Ganesh Gopalakrishnan, Dilip Khandekar, Ravindra Kuramkote and Ratan Nalumasu, “Case Studies in Symbolic Model Checking”. University of Utah - Computer Science Department, UUCS-94-009, 1994.

Ravindra Kuramkote, “Shared Object Management for a Persistent Object System”. Arizona State University, Master Thesis, June 1992.

PROFESSIONAL ACTIVITY

Invited Talk

"Distributed Shared Memory in Avalanche" at Hewlett-Packard Laboratories, Palo Alto, CA on July 8, 1996.

Awards

National Merit Scholarship from the Government of India for outstanding performance in secondary school.

Academic Scholarship from the Arizona State University for academic excellence during MS.

Certificate from Upsilon Pi Epsilon, Honor Society in the Computing Sciences, Arizona State University.

Reviewing and Membership

ICCD: International Conference on Computer Design - 1999.

JPDC: Journal for Parallel and Distributed Computing, 1999.

TPDS: IEEE Transactions on Parallel and Distributed Systems, 1998.

OSDI: Second Symposium on Operating Systems Design and Implementation, 1996.

ISCA: International Symposium on Computer Architecture, 1996.

EURO-PAR: First International EURO-PAR Conference, 1995.

Member of Association for Computing Machinery (ACM) and The Institute of Electrical and Electronics Engineers (IEEE).

EXPERIENCE

August 2000-Present, Design Engineer, Systems Integration and Solutions R & D Lab, Hewlett-Packard.

September 1998-July 2000, Research Associate/Assistant, Impulse Project, University of Utah. Evaluation of the architectural simulators and consulting on the design of the memory controller.

October 1994-August 1998, Research Associate, Avalanche Project, University of Utah. Designed, verified, and simulated a directory-based shared memory controller.

June 1994-September 1994, Research intern, VLIW Architecture Group, Hewlett-Packard Laboratories. Simulated and tested HP's VLIW processor architecture, which was the precursor to the Intel Merced.

January 1993-May 1994, Research Assistant, Mach Shared Object Project, University of Utah. Implemented mechanisms to add flexibility at run time to the Mach operating system. Developed a transaction manager server to handle distributed transactions, an object server to manage small persistent objects, and a name server using the NFS XDR protocol interface on the UNIX platform.

September 1992-December 1992, Teaching Assistant, Department of Computer Science, University of Utah. Assisted in projects and graded project assignments for a graduate course in Operating System.

January 1990-August 1992, Graduate Assistant, Graduate College, Arizona State University. Developed and maintained database software using FOCUS.

August 1989-December 1989, Computer Laboratory Assistant, Department of Computer Science, Arizona State University. Graded homework for an undergraduate course in Computer Literacy.

September 1985-June 1989, Field Engineer, DCM Data Products, India. Maintained hardware and developed diagnostic software for mini/micro computers.

August 1984-August 1985, Computer Engineer, Indian Express Pvt. Ltd., India. Developed and maintained hardware/software at the computer division.

REFERENCES

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