

Hari Subramoni

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Objective

To obtain a position as a research associate in the fields of computer networks, systems software or high performance computing.

Research Interests

High performance networking, network-based computing, network topology aware supercomputing providing quality of service in high performance computing, cluster computing, efficient LAN-WAN interfacing and communication.

Education

The Ohio State University, Columbus, OH.

PhD, Computer Science and Engineering

(Expected - Aug'12)

CGPA - 3.74

University College of Engineering, Trivandrum, India.

Bachelor of Technology, Computer Science and Engineering

(June'04)

Percentage - 78/100

Experience

Graduate Research Associate, The Ohio State University.

Design and develop network topology aware high performance communication MPI libraries.

Working on emerging networking protocols like AMQP, QoS over InfiniBand, InfiniBand over WAN, Collective communication over InfiniBand etc.

Involved in design and development of MVAPICH/MVAPICH2 - an open source, high performance and scalable MPI (Message Passing Interface standard) for clusters with the emerging InfiniBand networking technology.

Software Design Experience

- Design of QoS aware High Performance MPI.

- Design of High Performance MPI over modern multi-rail systems.

- Design of Scalable Middleware for Financial Applications.

- Design and Evaluation of Communication Protocols over InfiniBand WAN.

- Design of High Performance MPI over iWARP.

- Design of Scalable Data-Centers over InfiniBand and iWARP.

Member of Technical Staff, Force10 Networks.

Force10 Networks, Chennai, India.

Dec'06 - Aug'07

Architected and developed multicast management and routing software for Force10's C-Series switch.

Maintained previously developed IP unicast routing software for Force10's C-Series switch.

In depth knowledge of Broadcom software and chipsets (5675, 5679, 5650x) and software.

Worked with team on porting multicast protocols like IGMP.

Software Engineer, ISoftTech-Sasken Communications.

Technology Consultant to **Force10 Networks**.

Aug'04 - Nov'06

Designed and developed the IP unicast for Force10's C-Series switch.

Worked on development and debugging cycles for the QoS software on Force10's E-Series routers.

Developed algorithm for optimized usage of QoS Content Accessible Memory (CAM).

Designed and developed backend for MPLS MIB's for Force10's E-Series routers.

Involved in design, development and debugging of network packet debug infrastructure.

Developed shell scripts for database management activities with MySQL and TimesTen (a proprietary DBMS).

Publications

1. **H. Subramoni**, K. Kandalla, J. Vienne, S. Sur, B. Barth, K. Tomko, R. McLay, K. Schulz and D. K. Panda, *Design and Evaluation of Network Topology-/Speed-Aware Broadcast Algorithms for InfiniBand Clusters*, IEEE Cluster '11, Sept. 2011 - *To be presented*.
2. **H. Subramoni**, P. Lai, S. Sur and D. K. Panda, *Improving Application Performance and Predictability using Multiple Virtual Lanes in Modern Multi-Core InfiniBand Clusters*, International Conference on Parallel Processing (ICPP '10), Sept. 2010.
3. **H. Subramoni**, K. Kandalla, S. Sur and D. K. Panda, *Design and Evaluation of Generalized Collective Communication Primitives with Overlap using ConnectX-2 Offload Engine*, Int'l Symposium on Hot Interconnects (HotI), Aug. 2010.
4. **H. Subramoni**, P. Lai, R. Kettimuthu and D. K. Panda, *High Performance Data Transfer in Grid Environment Using GridFTP over InfiniBand*, Int'l Symposium on Cluster Computing and the Grid (CCGrid), May 2010.
5. **H. Subramoni**, P. Lai, M. Luo, Dhableswar K. Panda, *RDMA over Ethernet - A Preliminary Study*, Workshop on High Performance Interconnects for Distributed Computing (HPIDC'09), September 2009.
6. **H. Subramoni**, M. Koop and D. K. Panda, *Designing Next Generation Balanced Clusters with InfiniBand QDR and Intel Nehalem Architecture*, Symposium on High Performance Interconnects (HOTI'09), Aug 2009.
7. **H. Subramoni**, G. Marsh, S. Narravula, P. Lai and D. K. Panda, *Design and Evaluation of Benchmarks for Financial Applications using Advanced Message Queueing Protocol (AMQP) over InfiniBand*, Workshop on High Performance Computational Finance (WHPCF'08), held in conjunction with SC'08, Nov 2008.
8. K. Kandalla, **H. Subramoni**, J. Vienne, K. Tomko, S. Sur and D. K. Panda, *Designing Non-blocking Broadcast with Collective Offload on InfiniBand Clusters: A Case Study with HPL*, Hot Interconnect '11, Aug. 2011 - *To be presented*.
9. K. Kandalla, **H. Subramoni**, K. Tomko, D. Pekurovsky, S. Sur and D. K. Panda, *High-Performance and Scalable Non-Blocking All-to-All with Collective Offload on InfiniBand Clusters: A Study with Parallel 3D FFT*, Int'l Supercomputing Conference (ISC), June 2011.
10. K. Kandalla, **H. Subramoni**, A. Vishnu and D. K. Panda, *Designing Topology-Aware Collective Communication Algorithms for Large Scale InfiniBand Clusters: Case Studies with Scatter and Gather*, The 10th Workshop on Communication Architecture for Clusters (CAC 10), Apr. 2010.

Presentations

1. **H. Subramoni**, P. Lai, S. Sur and D. K. Panda, *Improving Application Performance and Predictability using Multiple Virtual Lanes in Modern Multi-Core InfiniBand Clusters*, International Conference on Parallel Processing (ICPP '10), Sept. 2010.
2. **H. Subramoni**, P. Lai, R. Kettimuthu and D. K. Panda, *High Performance Data Transfer in Grid Environment Using GridFTP over InfiniBand*, Int'l Symposium on Cluster Computing and the Grid (CCGrid), May 2010.
3. **H. Subramoni**, P. Lai, M. Luo, Dhableswar K. Panda, *RDMA over Ethernet - A Preliminary Study*, Workshop on High Performance Interconnects for Distributed Computing (HPIDC'09), September 2009.
4. **H. Subramoni**, P. Lai and D. K. Panda, *Designing QoS Aware MPI for InfiniBand*, Int'l Conference on Parallel Processing (ICPP'09), Sept. 2009.
5. **H. Subramoni**, M. Koop and D. K. Panda, *Designing Next Generation Balanced Clusters with InfiniBand QDR and Intel Nehalem Architecture*, Symposium on High Performance Interconnects (HOTI'09), Aug 2009.
6. **H. Subramoni**, G. Marsh, S. Narravula, P. Lai and D. K. Panda, *Design and Evaluation of Benchmarks for Financial Applications using Advanced Message Queueing Protocol (AMQP) over InfiniBand*, Workshop on High Performance Computational Finance (WHPCF'08), held in conjunction with SC'08, Nov 2008.

Professional Service

IEEE Student member

Reviewer, Journal of Parallel and Distributed Computing (JPDC), 2009, 2010, 2011

Student Volunteer for SC'08

Member of Career Guidance and Placement Cell at undergrad university

Skills

Programming Languages: C, C++, Shell script, Basic HTTP and XML scripting.

Operating Systems: VxWorks, NetBSD, Linux, Sun Solaris, Windows.

Software: DBMS, Perforce, CVS, SVN, Extraview, Clearcase, Coverity, GDB, Tornado debugging tools for VxWorks.

Hardware Chips: Force10 proprietary routing chips, Broadcom chipsets - 5675, 5679, 5650x.