

Hars Vardhan
2700 Waterview Pkwy Apt 5123
Richardson, TX, USA 75080
(214) 830-0786

harsv@utdallas.edu
<http://www.utdallas.edu/~harsv/>

Objective

To acquire more knowledge of the current work on wireless networking and related topics and apply it into recent research problems.

Education

PhD (Doctor of Philosophy), Computer Science
The University of Texas at Dallas

GPA 3.96/4.0

Graduation Expected: May 2012

M.S. (Master of Science), Computer Science
The University of Texas at Dallas

GPA 3.96/4.0

Aug 2009

Courses:

- Advanced Operating Systems
- Design and Analysis of Algorithms
- Parallel Architecture & Programming
- Advanced Computer Networks
- Combinatorics & Optimization Theory
- Telecom Software Design
- Mobile Computing
- Graph Algorithms
- Performance Computer Network

B.E. (Bachelor of Engineering), Computer Science & Engg.
Manipal Institute of Technology, Manipal, India

GPA 3.93/4.0 (Univ. Rank 3)

June 2005

Courses:

- Compiler Design
- Computer Architecture
- Distributed Systems
- Artificial Intelligence

Current Research

Designing a reconfigurable and scalable wireless Data Center Networks (DCN). Recently released *IEEE 802.15.3c* standard promises required features for emulating DCN. Here, the key challenges are to model the existing and next generation DCN architecture with Line of Sight (LOS) links and developing wireless protocols for the integration.

Technical Skills

Programming Languages: C/C++ , Java, Assembly, Prolog

Software Applications: MS Office, Clear Case, NS-2, QT, Stpx, Visual Studio.NET, Eclipse

Scripting Languages: Python, Tel/oTel, Unix-Shell, MATLAB

Operating Systems: Windows, Mac-OSX, Linux(s), Solaris

Computer Networking: TCP-IP/UDP, MPLS/OSPF, IEEE 802.11x, 802.15.3c, Mobile-IP, VoIP, CDMA/GSM

Internet Technologies: HTML, ASP, JSP, Java Script, VBScript, XML, WAP

Hardware: Microprocessors (8086), Micro-controller (8051)

Skills

- 4 years of experience in C/C++ and Java programming (Excellent programming skill).
- Excellent problem solving skills, tenacious learning abilities.
- 2 years of experience in quality assurance, debugging and test-automation (Motorola, VMware).
- 2 years of experience in network design (algorithm) for a corporate entity.
- A very good team player as well as a self motivated person.

Awards and Honors

- Google-Code Jam 2005, *Rank-110* (International level online contest).
- Louis Beecherl, Jr., Graduate Fellowship, 2009-2010, UT Dallas.
- *Certificate of Merit*: Third Rank in University Exam 2002, Manipal University.
- Merit *Scholarship* from the Manipal University for the year 2004 and 2005.
- *First Prize* in SCUBA(C-contest) INTELLECT 04 (National Level Technical Symposium, IEEE).

Professional Experience

System Engineer Intern

Intel Corporation

[Jun 10 - Dec 10]

RouterBricks-Enabling General Purpose Network Infrastructure: A Intel Lab Berkeley research project which is a software based network router built on commodity servers that is also capable to run common user applications. This provides provision to run applications along with state-of-art routing protocols on the servers.

Province: System validation, User-space interaction and NAT features development.

Technology: Nehalem Intel Architecture, Click, Netperf.

Teaching Assistant

The University of Texas at Dallas

[Sep 09 - Present]

Courses: • Design & Analysis of Algorithms • OO Programming in Java • Advanced Operating Systems
• Advanced Computer Networks • Mobile Computing

Province: Designing Programming Projects, Grading Assignments, Conducting Tests & Computer Lab Assistance

Research Assistant

The University of Texas at Dallas

[Jan 08 - Aug 09]

Network Planning Tool for Packet Transport Network: A corporate sponsored research project in which I was part of a team of six students. I designed and implemented failure adaptive network *routing protocols* for MPLS networks with various constraints. My research contribution was a proposal of a heuristic algorithm for constraint based routing problem. Also, I developed software (GUI) in C++ .NET for visualization of routing of Link State Packets.

Software Engineer

Motorola India Pvt. Ltd.

[Nov 05 - Jul 07]

WAP based Ad-application for Mobile Phone: The application fetches the ads Over The Air (OTA) from the Google ad-server, which are contextually related to the message being read. My responsibility was to design and implement the *Content Delivery* module of the OMA (Open Mobile Alliance) specification. In addition to it, I implemented customized *http cache* and UI modules. This involved the interaction with network transport layer of IP (TCP/UDP).

Software Engineer Intern

Vmware Inc.

[Jan 05 - Jul 05]

Functional Verification of ESX: ESX is a virtualization technology based server. My responsibility was to ensure that the functionalities of the software must comply with requirements . It included hardware as well as various operating system interaction of the software. I was also involved in the complete test automation of the UI of ESX.

Major Academic Projects at UTDallas

Energy Efficient Broadcasting in Multichannel Wireless Network

[Fall 08]

Given a multichannel wireless ad-hoc network, the aim was to design a broadcasting algorithm which must be able to make broadcast process energy efficient. I designed a fast, simple, sub-optimal algorithm for this NP-hard problem in order to make it feasible to implement on mobile devices and making use of multichannel capabilities of the network.

Technologies: Mobile-IP, Sensor Networks, IEEE 802.11g, C++ .

A Call Based Alarm - A VoIP application

[Summer 08]

Developed a VoIP based application on sipx (open source) framework which was able to call on the given number on triggering the alarm event. It was playing a pre-recorded message to the user in order to notify the forthcoming events. The front end provided the facility to configure the alarm and message files.

Technologies: Sipx, XHTML, VoIP, Apache Tomcat, Java.

SNMP based network management software

[Fall 07]

A network management system for VoIP based system using XML based SNMP. I designed and implemented features for the administrator in order to fetch required information and also to control the network environment parameters.

Technologies: XML, SNMP, C++ , .NET, VoIP.

Wireless-TCP design with flat header concept

[Fall 07]

Designed a modified version of TCP-IP protocol with flat-header concept for wireless networks. A common header was used for transport and network layers. Services like FIFO, QoS options, stream delivery for bulk data (multi-media) were implemented. The simulation result showed improvement of 15% in performance.

Technologies: NS-2, Flat Header Concept, IEEE 802.11x, C++ , Tcl/oTcl.

Selected Publications

1. **Hars Vardhan**, Navine Thomas, Seong-Ryong Ryu, Bhaskar Banerjee and Ravi Prakash. “Wireless Data Center with Millimeter Wave Network”, *IEEE GLOBECOM '10*.
2. **Hars Vardhan**, Shreejith Billenahalli, Wanjun Huang, Miguel Razo, Arularasi Sivasankaran, Limin Tang, Marco Tacca, Paolo Monti and Andrea Fumagalli, “Finding a Simple Path with Multiple Include Nodes”, *IEEE MASCOTS '09*. (Best Poster Award)
3. M. Razo, S. Billenahalli, W. Huang, A. Sivasankaran, L. Tang, **Hars Vardhan**, M. Tacca, P. Monti, A. Fumagalli, Y. Lee, X. Liu, and Z. Sui, “Design of Hierarchical WDM Networks”, *ACP, Optical Society of America, 2009*.
4. L. Tang, S. Billenahalli, W. Huang, M. Razo, A. Sivasankaran, **Hars Vardhan**, P. Monti, M. Tacca, and A. Fumagalli, “The PlaNet-OTN module: A Double Layer Design Tool for Optical Transport Networks”, *ICTON '09*.
5. Miguel Razo, Arie Litovsky, Wanjun Huang, Arularasi Sivasankaran, Limin Tang, **Hars Vardhan**, Paolo Monti, Marco Tacca, and Andrea Fumagalli, “The PlaNet-PTN Module: a Single Layer Design Tool for Packet Transport Networks”, *IEEE CAMAD '09*.

REFERENCES AVAILABLE ON REQUEST