Vidhyashankar Venkataraman

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Objective

Seeking a full-time position that will fulfil my goals of designing and building efficient, scalable systems and applying my analytical skills to solve challenging real-world problems faced by the industry.

Education

2003 - Present — **PhD Student in Computer Science, Cornell University.**

Thesis	: Network Protocols for High-Throughput Applications
Advisor	: Paul Francis
Expected Graduation Date	: December 2008
Minor	: Finance (Johnson School of Business)
CGPA	: 4.01/4

1999 - 2003 — **B. Tech in Computer Science, Indian Institute of Technology (IIT), Madras, India.**

Thesis	: Real Time Resource Allocation in Ad Hoc Wireless Networks
Advisor	: C. S. R. Murthy
Minor	: Biomedical Engineering
CGPA	: 9.5/10

Interests

Research Foci	Distributed Systems, Computer Networking, TCP/IP, Multicast, P2P systems, Live Streaming, Overlay Networks, Aggregation, DHTs, Distributed Filesystems, Mobile Ad hoc networks.
Interests	Discrete Algorithms, Databases, Publish/Subscribe.

Research Experience

Summer'08

Data Highway: Conceived a scalable distributed design and implemented a simple prototype of a content-based publish subscribe used for streaming applications. *At Yahoo Inc., Sunnyvale, California.*

Summer'06 - Spring'08
Project Lead

Priority-layered Transport: Developed a new transport protocol, PLT, for long-haul networks. Spent two summers at Bell Labs, New Jersey working on this problem. I designed the protocol over the Linux TCP code and implemented a performance-enhancing proxy that connects two subnets and serves hosts inside the subnet. The work also involved building a simulation code for the protocol in NS (C++). We are currently working on a patent for the technology and we intend to integrate with the UNIX kernel. (Collaborated with T. V. Lakshman, M. Kodialam, and P. Francis.) *At Cornell University and Lucent Technologies.*

Fall'04 - Spring'06
Project Lead

Chunkyspread: Designed and developed Chunkyspread, a heterogeneity-aware end-to-end multicast protocol for live streaming applications. The protocol has been tested on Emulab, and will be shortly deployed on Planetlab. The system along with the simulator has been implemented in C++. (Collaborated with P. Francis and K. Yoshida.) Chunkyspread got a mention in the ten emerging innovations in an issue of MIT Technology Review. *At Cornell University.*

Spring'04

Willow: Involved in a performance analysis of Willow, an overlay infrastructure implemented in Java. This was in collaboration with R. V. Renesse. *At Cornell University*

Fall'03

Capacity awareness: Involved in the design and analysis of a capacity-balancing infrastructure in structured P2P systems. This was in collaboration with Prof. Gun Sirer. *At Cornell University*

Summer'02 - Summer'03	**RT-MAC:** Involved in developing real-time resource allocation algorithms for synchronous and asynchronous Ad Hoc wireless mesh networks. This also involved wide-scale simulations in the GloMoSim simulator. (Collaborated with Prof. C. S. R. Murthy.) *At IIT Madras.*

Work and Teaching Experience

Summer'08	Summer intern at Yahoo!
Summer'07 '06	Summer intern at Bell Laboratories, Lucent Technologies.
Spring'08	Teaching Assistant for the graduate course **'Large-scale Architectural Models over the Internet'**; involved projects designed on *Amazon EC2, S3 and Hadoop's Map-Reduce API*.
Spring'07 '06	Teaching Assistant for the senior courses, *'Computer Networks'* and *'Computer Architecture'*.

Publications

- V. Venkataraman, P. Francis, M. Kodialam, T. V. Lakshman.
  A Priority Layered Approach to Transport for High Bandwidth Delay Product Networks.
  CoNEXT'08: To appear in the 4th ACM International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT 2008).

- V. Venkataraman, K. Yoshida, P. Francis.
  Heterogeneous Unstructured End System Multicast
  ICNP'06: In The Fourteenth IEEE International Conference on Network Protocols (ICNP), Nov 2006 (Speaker).

- V. Venkataraman, P. Francis, J. Calandrino.
  Chunkyspread: Multitree Unstructured Peer to Peer Multicast.
  IPTPS'06: In The Fifth International Workshop on Peer-to-Peer Systems (IPTPS), February 2006 (Speaker).

- V. Venkataraman, P. Francis.
  Unstructured Overlay Multicast with Fine-grained Load Control
  NSDI'05: Poster in The Second Symposium on NSDI, May 2005.

- V. Venkataraman, B.S. Manoj, C. Siva Ram Murthy.
  Slot allocation schemes for delay sensitive traffic support in asynchronous wireless mesh networks
  JCTN: In The International Journal of Computer and Telecommunications Networking, Computer Networks and ISDN Systems, 2005.

- V. Venkataraman, B.S. Manoj, and C. Siva Ram Murthy.
  Slot Allocation Schemes for Delay Sensitive Traffic Support in Asynchronous Wireless Mesh Networks.
  HiPC'03: In The International Conference on High Performance Computing, 2003.

Other Documents

- V. Venkataraman
  A performance analysis of Willow, a peer-to-peer middleware for aggregation and multicast.
  614: Systems design course

- V. Venkataraman.
  A capacity-aware infrastructure over a structured peer-to-peer system.
  615: P2P systems design course

Programming & System building Skills

Languages	C, C++, Java, bash and awk scripting, C#, SML, Prolog, yack and lex.
Experience	Built the transport system over Linux TCP code of 25K lines and designed a new network-transport protocol for long high-bandwidth networks. Designed and built from scratch, Chunkyspread (over 15K lines), a P2P multicast system in C++. Developed and worked on a P2P multicast simulator Willow in Java. Used FreePastry code to develop capacity-balancing techniques in a structured P2P infrastructure. Have used and developed code for the network simulators NS and GloMoSim and worked extensively on the Emulab and the WAIL-router testbeds.

Course Work

At Cornell	*Computer Science:* Advanced Systems, Analysis of Algorithms, Compiler Design for High-Performance Architectures, Adaptive Systems, Algorithmic Game Theory, Information Theory, Programming Languages, Automata Theory. *Finance:* Fixed Income Securities and Interest Rate Derivatives, Derivative Securities, Managerial Finance.
At IIT	Discrete Mathematics, Graph Theory, Advanced Algorithms, Compilers, Operating Systems, Computer Networks, Databases, Systems Design, Real Time and High Performance Computing.

Awards/ Honours

2007	Chunkyspread was mentioned in the *Ten Emerging Innovations* in MIT Technology Review (March'07).
2006	*Outstanding TA Award* for the course on Computer Architecture.
2003	*Cornell University Fellowship* for incoming PhD students.
2000	Received the *top prize for Academic Excellence* for the first year of my undergraduate study.
1998	Ranked among the top 0.2% of the examinees in the IIT Entrance Examination
1999	*Topper in Math and Chemistry* at AISSCE (All India Senior Secondary Certificate Examination).
1997	Received the *National Talent Search Scholarship* awarded by National Council for Educational Research and Training (NCERT), New Delhi.

Misc. Presentations

Summer'08	End of internship talk & poster presentation: Scalable design of the Data Highway. *At Yahoo*
Summer'08	Thoughts on a scalable Data Highway. *At Yahoo*
Fall'07	Proposal Exam talk based on PLT.
Fall'06	Cornell Systems Seminar: Chunkyspread: Heterogeneity-aware peer-to-peer live-streaming, ICNP 06.
Spring'05	Cornell Systems seminar: Feasibility of Supporting LargeScale Live Streaming Applications, SIGCOMM 04
Spring'04	CS 614 Class Presentation: U-Net and Light-weight RPCs
Fall'03	Cornell Systems Seminar: Protecting Applications with Transient Authentication, Mobisys 03
Fall'03	CS 615 Class Presentation: Overlook: A Scalable name service on an overlay network (ICDCS02)
Fall'02	Presented a survey on the IEEE 802.11/ HIPERLAN WLAN standards and contributed a chapter in the book titled Ad Hoc Wireless Networks: Architectures and Protocols, by C. S. Murthy and B. S. Manoj.

References

References available upon request.