

AMIT MONDAL

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Education

Ph.D. Computer Science, [Northwestern University](#), June, 2010

- Dissertation: *Transport and Application Layer Approaches to Improve end-to-end Performance in the Internet.*
- Advisor: [Prof. Aleksandar Kuzmanovic](#)

M.S. Computer Science, [Northwestern University](#), June, 2007 (GPA: 4.0/4.0)

B.S. Computer Science and Engineering, [IIT Kanpur](#), India, May 2004 (GPA: 7.9/10.0)

Industry Experience

Microsoft Research, Redmond, Washington

Research Intern

June 2008 to September 2008

Contractor

April 2009 to June 2009

- Developed a distributed measurement framework to collect packet traces of emulated VoIP and video conferencing traffic using C# on .NET platform.
- Analyzed packet traces to detect key reasons for audio/video conferencing quality impairments in IP networks.
- Designed and implemented a relay-based solution to enhance VoIP quality for WiFi users.

HP Labs, Palo Alto, California

Research Intern

July 2007 to September 2007

- Designed a framework to find routes that meet individual QoS metrics efficiently and scalably under multiple QoS constraints.
- Built a functional prototype in C++ on UNIX.

Hughes Software Systems, Gurgaon, INDIA

Software Engineer

June 2004 to July 2005

- Incorporated High Speed Downlink Packet Access (HSDPA) protocol in 3G network stack.

Research Experience

Northwestern Network Group, [Northwestern University](#), Evanston, Illinois

Research Assistant

August 2005 to present

- Designed a CDN-based data delivery approach in P2P that significantly reduces the inter-AS traffic volume generated by network oblivious P2P applications. Developed a monitoring BitTorrent client, BitPlane, to monitor fine-grained swarm dynamics of large number of torrents (C++, Perl).
- Designed a DoS-resilient TCP stack to mitigate large scale poisoning attacks in the Internet (C++).
- Investigated application and transport layer techniques to improve response times of thin-stream TCP applications (C++).
- Challenged the need of exponential backoff mechanism in TCP through large-scale simulations, analytical modeling, and Emulab experiments (C++, Perl).

Teaching Experience

EECS Department, [Northwestern University](#), Evanston, Illinois

Teaching Assistant

September 2006 to December 2007

- Provided in-class support to undergraduate engineering students.
- Mentored multiple undergraduate students in their class projects.

Selected Course Projects

Implemented TCP/IP stack for Minet simulator (C++) (Winter, 2006)
Developed remote procedure call (RPC) library for UNIX (C++) (Spring, 2006)
Implemented kernel memory allocation algorithms in UNIX (C) (Fall, 2005)
Implemented ext-2 file system in UNIX (C) (Fall, 2005)

Technical Skills

Extensive software experience in networking and information technology.

Programming: C, C++, C#, Perl, UNIX shell scripting, SQL

Protocols: TCP/IP, UDP, HTTP, BitTorrent

Packages: NETWORK SIMULATOR 2, CLICK MODULAR ROUTER, NETFLOW

Network Experiment Testbed: PLANETLAB, EMULAB

Honors and Awards

Murphy Fellowship, Northwestern University, EECS Dept., 2005-06

NSF student conference travel grant for SIGCOMM 2006, Pisa, Italy

Among top 0.005% students out of 150,000 candidates appearing in IIT-JEE, 2000

Ranked 11 amongst 100,000 candidates appearing for State level Engineering Entrance Exam, 2000

Professional Service

Referee for IEEE/ACM ToN, INFOCOM, ICNP, IWQoS, ICCCN, Elsevier, etc.

Working Committee member of Indian Graduate Student Association at Northwestern University.

Patents

1. A. Mondal *et al.*, “Flow Path Discovery in Network to Guarantee Multiple Metric QoS Constraints”, US Patent application filed, June 2008.
2. A. Mondal *et al.*, “Data Communication with Compensation for Packet Loss”, US Patent application filed, December 2009.

Selected Publications

1. A. Mondal, I. Trestian, Z. Qin, and A. Kuzmanovic. “P2P as a CDN (Akamizing BitTorrent)”. Under submission.
2. J. Miller, A. Mondal, R. Potharaju, P. Dinda, and A. Kuzmanovic. “Network Monitoring is People: Understanding End-user Perception of Network Problems”. Under submission.
3. A. Mondal, R. Cutler, C. Huang, J. Li, and A. Kuzmanovic. “SureCall: Towards Glitch-Free Real-time Audio/Video Conferencing”. *In Proceedings of IEEE IWQoS 2010*, Beijing, China, June 2010.
4. A. Mondal, C. Huang, J. Li, M. Jain, and A. Kuzmanovic. “A Case for WiFi Relay: Improving VoIP Quality for WiFi Users”. *In proceedings of IEEE ICC 2010*, Cape Town, South Africa, May 2010.
5. A. Mondal and A. Kuzmanovic. “Upgrading Mice to Elephants: Effects and End-Point Solutions”. *In IEEE/ACM Transactions on Networking*, Vol. 18, No. 2, April 2010.
6. A. Mondal, P. Sharma, S. Banerjee, and A. Kuzmanovic. “Supporting Application Network Flows with Multiple QoS Constraints”. *In Proceedings of IEEE IWQoS 2009*, Charleston, SC, July 2009.

7. A. Kuzmanovic, A Mondal, S. Floyd, and K.K. Ramakrishnan. “Adding Explicit Congestion Notification (ECN) Capabilities to TCP’s SYN/ACK Packets”. RFC 5562, June 2009.
8. A. Mondal and A. Kuzmanovic. “Removing Exponential Backoff from TCP”. *In ACM SIGCOMM Computer Communication Review*, October 2008.
9. A. Mondal and A. Kuzmanovic. “A Poisoning-Resilient TCP Stack”. *In Proceedings of IEEE ICNP 2007*, Beijing, China, October 2007.
10. A. Mondal and A. Kuzmanovic. “When TCP Friendliness Becomes Harmful”. *In Proceedings of IEEE INFOCOM 2007*, Anchorage, Alaska, May 2007.

Professional References

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Prof. Peter Dinda
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