

# Muhammad Mukarram Bin Tariq

Ph.D Student (Third Year)  
College of Computing,  
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## Contact

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## Current Research Interests

I am broadly interested in the area of networked computer systems, with an emphasis on using machine learning algorithms to learn various functions that govern these networks. Particularly, I am interested in learning various functional and performance dependencies in the system, and using these dependencies to diagnose and localize faults in the networks and answer questions about “what-if” configuration scenarios. To this end, I am presently working on developing a scalable system for collaborative and secure fault diagnosis using mostly passive, and low volume measurements.

In the past, I have worked in the following areas.

- Quantifying Efficacy of Evolution of ISP Topologies (2006)
- Internet Measurements (Spring 2005)
- Disruption Tolerant Networks (Fall 2005)

## Education

*Jan 2005- Present:*

Ph.D. Student.  
College of Computing, Georgia Institute of Technology, Atlanta, GA  
Advisors: Prof. Nick Feamster and Mostafa Ammar

*Spring 1997- Fall 2000:*

Bachelor of Science (Major: Computer Science).  
National University of Sciences and Technology, Rawalpindi, Pakistan.  
CGPA of 4.0/4.0.  
Recipient of President of Pakistan gold medal in Computer Science (yr. 2000)  
Recipient of Rector's gold medal in Computer Science (yr. 2000)

## Work Experience

### *Spring 2005 - Present*

Graduate Research Assistant, College of Computing, Georgia Inst. of Technology.  
Atlanta, GA.

### *Summer 2007*

Summer Intern.

Infrastructure Group. Google Inc. Mountain View, CA.  
Host: Amgad Zeitoun

Project:

Predictly: A “What-if” deployment scenario evaluator

### *Fall 2004 (while awaiting F1 visa)*

Teaching Assistant for Prof. Qasim Sheikh  
Dept. of Computer Science, NUCES, Islamabad.

Research Assistant

Center for Advanced Studies in Engineering, Islamabad.  
Design of a soft real-time scheduler for an OC-48 rate VoIP gateway.  
This project was funded under Cisco URP.

### *March 2001 - June 2004*

Research Engineer,

DoCoMo Communications Laboratories USA, Inc.

Research Contractor,

NTT DoCoMo Inc. Japan. (*May 2000 - March 2001*)

(while completing my undergraduate degree and awaiting the H1-B visa).

Projects

Multimedia Gateway Design

Mobile Content Distribution Networks

Location Privacy Enabled IP Addressing and Routing

Next Generation IP based Mobile Network Architecture

### *Jan 2000 - May 2000*

Software Design Engineer (Part Time)

Communication Enabling Technologies, Islamabad. Pakistan

Project

Design and Implementation of H.323 and SIP based VoIP solutions

## Publications

(electronic copies for most of these are available through my website)

M. Tariq, A. Zeitoun, N. Feamster, M. Ammar. WISE: Predicting Service Response Times in “What-If” Deployment Scenarios. (Under review, copy available on request)

M. Tariq, M. Ammar, E. Zegura. Message Ferry Route Design for Sparse Ad hoc Networks with Mobile Nodes. ACM Mobihoc 2006. May 2006 22-27, Florence. Italy.

M. Tariq, A. Dhamdhere, C. Dovrolis, M. Ammar. Poisson versus periodic path probing (or, does PASTA matter?) Internet Measurements Conference, Oct. 2005, Berkeley, CA.

M. Tariq, T. Kawahara. Introducing Dynamic Distributed Coordination in Web Services for Next Generation Service Platforms. IEEE International Conference on Web Services (ICWS 2004). July 6-9, 2004. San Diego. CA.

J. Trostle, H. Matsuoka, M. Tariq, J. Kempf, T. Kawahara, R. Jain. Cryptographically Protected Prefixes for Location Privacy in IPv6 Networks. Workshop on Privacy Enhancing Technologies. Toronto, Canada. 26-28 May 2004.

R. Jain. M. Tariq, J. Kempf, T. Kawahara. The All-IP 4G Network Architecture. NTT DoCoMo Technical Journal. Vol.5. No. 4. pp 11-16. March 2004.

M. Tariq, R. Jain, T. Kawahara. Mobility Aware Server Selection in Mobile Streaming Multimedia Content Distribution Networks. IWCW-2003. Sept. 2003.

M. Tariq, A. Takeshita. Management of Cacheable Streaming Multimedia Content in Networks with Mobile Hosts. IEEE Globecom2002, Nov 17-22, 2002. Taipei, Taiwan.

## Standardization Activities

C. Sayre (ed.), T. Suzuki, M. Tariq, S. Shoaib. ITU-T Standard H.248 Annex M.4, H.323/H.324 Interworking. Approved July 2001. (now published as ITU-T H.248.12)

T. Suzuki (ed.), C. Sayre, M. Tariq, S. Shoaib. ITU-T Standard H.246 Annex F, H.323-H.324 Interworking, Approved July 2001.

Yokote, A. Yegin, M. Tariq, C. Williams, A. Takeshita. Mobile IP API. IETF Internet Draft version 01. June 2002. (expired)

## Book Chapters

T. Wu, S. Verma, M. Tariq, T. Yoshimura. Multimedia Streaming in Mobile Wireless Networks (Chapter 9) in *Content Networking in Mobile Internet (Dixit, Wu. Ed.)* Wiley-Interscience (August 27, 2004).

R. Jain, M. Tariq, J. Kempf, T. Kawahara. 4G Network Architecture (Chapter 2) in *4G Mobile Networks : Technologies for mobile communications of the future. M. Etoh (Ed.)*. John Wiley & Sons (May 13, 2005)

## Misc

### *Workshop Presentations*

M. Tariq, A. Zeitoun, N. Feamster, M. Ammar. WISE: Predicting Service Response Times in What-If? Deployment Scenarios. Workshop on Configuration at 21st Large Installations System Administrations (LISA) Nov. 2007.

### *Mini Projects*

M. Tariq, F. Khan. Tuple Set Bloom Filters (TSBF): Bloom Filter Extensions for Membership Queries on Database Tables. TSBF allows membership queries with partially specified tuples.

Tariq, M. Motiwala, A. Mansy. YASF: Yet Another Spam Filter. YASF is a spam classifier that uses Rabin Fingerprinting to chunk email messages and classifies spam messages based on the frequencies of the of the chunks appearing in the messages.

## Professional Services

- Submissions Coordinator, ACM SIGMETRICS 2007: The International Conference on Measurement and Modeling of Computer Systems.

- I have also served as reviewer for a number of conferences and journals in the computer networks area, including IEEE Infocom, IEEE JSAC, IEEE Communications Magazine, WCNC, ACM Sigmetrics either on the request of the organizers or on the behest of my advisors who were on the program committees for the events.

## References

Nick Feamster

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Qasim Sheikh

CEO, National ICT R&D Fund  
Previously:  
Professor, Dept. of Computer Science. NUCES, FAST.  
Senior Applications Analyst at Cray Research  
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Please visit my website for latest information, my course work, and copies of publications.  
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