NICHOLAS G. FEAMSTER

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RESEARCH INTERESTS

Network protocol design, analysis, and measurement; network traffic engineering; computer systems; security.

EDUCATION

Massachusetts Institute of Technology, *Cambridge, MA* September 2001-Present
Candidate for *Ph.D., Electrical Engineering and Computer Science.* June 2000-Present
Current research involves developing improvements to wide-area routing.
Advisor: Prof. Hari Balakrishnan

M.Eng., Electrical Engineering and Computer Science, June 2001. June 2000-May 2001
Thesis: Adaptive Delivery of Real-Time Streaming Video *William A. Martin Memorial Thesis Award*

S.B., Electrical Engineering and Computer Science. September 1997-June 2000
Cumulative Undergraduate GPA: 5.0/5.0

PUBLICATIONS

Interdomain Routing: Modeling and Architecture

The Case for Separating Routing from Routers,
N. Feamster, H. Balakrishnan, J. Rexford, A. Shaikh, K. van der Merwe. *Proc. ACM SIGCOMM Future Directions in Network Architecture*, Portland, OR, August 2004.

A Model of BGP Routing for Network Engineering, N. Feamster, H. Balakrishnan. Proc. *ACM SIGMETRICS*, New York, NY, June 2004.

Practical Verification Techniques for Wide-Area Routing, N. Feamster. *2nd ACM Workshop on Hot Topics in Networking (HotNets-II)*, November 2003.

Techniques for Interdomain Traffic Engineering, N. Feamster, J. Borkenhagen, and J. Rexford. *ACM SIGCOMM Computer Communications Review*, October 2003.

Towards a Logic for Wide-Area Internet Routing, N. Feamster, H. Balakrishnan. Proc. *ACM SIGCOMM Workshop on Future Directions in Network Architecture*, Karlsruhe, Germany, August 2003.

Network-Wide BGP Route Prediction for Traffic Engineering, N. Feamster and J. Rexford. Proc. *ITCOM*, Boston, MA, August 2002.

Routing Dynamics

BorderGuard: Detecting Cold Potatoes from Peers, N. Feamster, Z. M. Mao, J. Rexford. Proc. *ACM SIGCOMM Internet Measurement Conference*, Taormina, Sicily, October 2004.

Measuring the Effects of Internet Path Faults on Reactive Routing, N. Feamster, D. Andersen, H. Balakrishnan, M.F. Kaashoek. Proc. *ACM SIGMETRICS*, San Diego, CA, June 2003.

Topology Inference from BGP Routing Dynamics, D. Andersen, N. Feamster, S. Bauer, H. Balakrishnan. Proc. *ACM SIGCOMM Internet Measurement Workshop* , Marseille, France, November 2002.

Location Diversity in Anonymity Networks,
N. Feamster, R. Dingledine
Proc. Workshop on Privacy in the Electronic Society, Washington, D.C., October 2004.

Defeating Web Censorship with Untrusted Messenger Discovery, N. Feamster, M. Balazinska, W. Wang, H. Balakrishnan, D. Karger. Proc. *Privacy Enhancing Technologies*, Dresden, Germany, March 2003.

Infranet: Circumventing Web Censorship and Surveillance, N. Feamster, M. Balazinska, G. Harfst, H. Balakrishnan, D. Karger. *Proceedings of the 11th USENIX Security Symposium*, San Francisco, CA, August 2002.

Do's and Don'ts of Client Authentication on the Web, K. Fu, E. Sit, K. Smith, and N. Feamster. *Proceedings of the 10th USENIX Security Symposium*, Washington, D.C., August 2001. *Best Student Paper Award*

Network Video: Streaming and Coding

Packet Loss Recovery for Streaming Video, N. Feamster and H. Balakrishnan, *12th International Packet Video Workshop*, Pittsburgh, PA, April 2002.

On the Interactions Between Layered Quality Adaptation and Congestion Control for Streaming Video, N. Feamster, D. Bansal, and H. Balakrishnan. *11th International Packet Video Workshop 2001*, April 2001.

Field-to-Frame Transcoding with Temporal and Spatial Downsampling, S.J. Wee, J.G. Apostolopoulos, and N. Feamster. *IEEE International Conference on Image Processing*, Kobe, Japan, October 1999.

An MPEG-2 to H.263 Transcoder, N. Feamster and S.J. Wee. *SPIE Voice, Video, and Data Communications Conference*, Boston, MA, September 1999.

SELECTED INVITED TALKS

Verifying Wide-Area Routing Configuration with rcc, NYU Systems Reading Group, February 2004.
A Systematic Approach for BGP Configuration Checking, *NANOG 29*, Chicago, IL, October 2003.
Rethinking Router Configuration: Beyond Stimulus-Response Reasoning, *Workshop on Internet Routing Evolution and Design*, Mt. Hood, OR, October 2003.
Understanding Path Failures: Location, Characterization, Correlation, *ISMA 2002*, Leiden, The Netherlands, October 2002.
Controlling the Impact of BGP Policy Changes on IP Traffic, *NANOG 25*, Toronto, Canada, June 2002.

TEACHING

Teaching assistant for 6.829, graduate computer networks course, Fall 2002.

EMPLOYMENT

AT&T Labs–Research, *Florham Park, NJ* May 2001-September 2001
Technical Intern
Research on traffic engineering with the Border Gateway Protocol (BGP). Developed a set of guidelines for making predictable import policy changes to predictably control changes in traffic flow.

Lucent Technologies, Bell Labs, *Murray Hill, NJ* May 1999-August 1999
Technical Associate, Software Technology
Designed and implemented a JavaBeans-based call filtering/disposition system which allows end users to easily design a call flow based on various criteria.

Hewlett-Packard Laboratories, *Palo Alto, CA* December 1998-January 2000
Intern, Streaming Media Systems
Designed and implemented a transcoding algorithm for real-time conversion of MPEG-2 to H.263 bitstreams. Patent application filed.

LookSmart, Pty Ltd.; **Matrix International**: system administration. 1996 and 1997

HONORS

Cisco URP Grant Recipient, 2004
NSF Graduate Research Fellow, 2002-
USENIX Security Best Student Paper Award, 2002
USENIX Security Best Student Paper Award, 2001
William A. Martin Memorial Thesis Award, 2001
Tau Beta Pi Engineering Honor Society
Eta Kappa Nu Honor Society
First Place, Regional ACM Poster Contest, 2000
Letter of Commendation for Outstanding Performance – Digital Design Laboratory (6.111)
Phi Sigma Kappa Scholarship Award, 1998-1999
National Merit Scholar, 1997
Rotary Club Honor Scholarship, 1997
AP Scholar with Distinction, 1996
AP Scholar with Honor, 1996

WORKS IN PROGRESS

Modeling BGP Route Selection Within an AS,
N. Feamster, J. Rexford
Submitted to *Transactions on Networking*.

An Empirical Analysis of Invalid BGP Routes,
N. Feamster, J. Jung, H. Balakrishnan

Verifying the Correctness of Wide-Area Internet Routing,
MIT-LCS-TR-948, May 2004.
N. Feamster, H. Balakrishnan

Managing the 802.11 Energy/Performance Tradeoff with Machine Learning,
C. Monteleoni, N. Feamster, H. Balakrishnan, T. Jaakkola

SERVICE

External reviewer for *IEEE/ACM Transactions on Networking*, *SIGCOMM* (2002, 2003, 2004), *SOSP* (2001, 2003), *Infocom* (2004), *HotNets* (2003), *HotOS* (2001), *ACM Computer Communication Review*, *IEEE Network Magazine*, *Image Communication* (EURASIP), *ASPLOS* (2004), *MobiSys* (2004).

OTHER INTERESTS

squash, running, cycling, swimming, sailing