April Rasala Lehman

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Education

Massachusetts Institute of Technology — Cambridge, MA

Candidate for Ph.D. in Computer Science — January 2005
Studied theoretical limits on data transmission through digital networks.

Master of Science in Electrical Engineering and Computer Science — 2001
Designed cost-efficient cross-connects for optical networks.

Dartmouth College — Hanover, NH

Bachelor of Arts — 1999
Summa Cum Laude with High Honors in computer science.

Honors and Awards

Outstanding Undergraduate Award 1999
Awarded by the Computing Research Association to the top female and male undergraduate in computer science in the United Sates and Canada.

National Science Foundation Fellowship Award 1999
Lucent Technologies Graduate Research Program for Women Fellowship Recipient 1999
Dartmouth College Rufus Choate Scholar 1996-99
Women's Soccer First Team All Ivy-League 1998

Professional Experience

IBM Almaden Research Center — San Jose, CA

Research Intern — summer 2001
Examined properties of random processes that model internet browsing behavior.

Bell Laboratories of Lucent Technologies — Murray Hill, NJ

Research Intern — summer 1999, 2000
Designed cost-efficient optical cross-connects that allow signals encoded in different light wavelengths from multiple fibers to be simultaneously switched between fibers and wavelengths. Discovered instabilities in a widely-used internet routing protocol.

Dartmouth College — Hanover, NH

Research Assistant — 1997-1999
Developed algorithms and techniques for finding schedules that are near-optimal with respect to multiple criteria.

University of Washington — Seattle, WA

Computing Research Association Intern — summer 1998
Proved bounds on the performance of algorithms that optimize a database in response to user queries.

Teaching Experience

Dartmouth College — Hanover, NH

Visiting Lecturer — summer 2002
Taught undergraduate and graduate students fundamental mathematical techniques for the study of computer science. Supervised graduate teaching assistants and an undergraduate grader.

Publications

Articles in Refereed Conferences

Network Information Flow: Does the Model Need Tuning?, with Eric Lehman. Symposium on Discrete Algorithms (SODA '05). To appear, January 2005.

Complexity Classification of Network Information Flow Problems, with Eric Lehman. Symposium on Discrete Algorithms (SODA '04). January 2004.

Approximating the Smallest Grammar: Kolmogorov Complexity in Natural Models, with M. Charikar, E. Lehman, D. Liu, M. Prabhakaran, A. Sahai, and A. Shelat. Symposium on Theory of Computing (STOC '02). May 2002.

Wide-sense Nonblocking WDM Cross-connects, with P. Haxell, G. Wilfong and P. Winkler. European Symposium on Algorithms (ESA '02). September 2002.

Route Oscillations in I-BGP with Route Reflection, with A. Basu, L. Ong, F. B. Shepherd and G. Wilfong. (SIGCOMM '02). August 2002.

Existence Theorems, Lower Bounds and Algorithms for Scheduling to Meet Two Objectives, with Cliff Stein, Eric Torng and Patchrawat Uthaisombut. Thirteenth ACM-SIAM Symposium on Discrete Algorithms (SODA '02). January 2002.

Strictly non-blocking WDM cross-connects for heterogeneous networks, with Gordon Wilfong. Symposium on Theory of Computing (STOC '00). May 2000.

Strictly non-blocking WDM cross-connects, with Gordon Wilfong. Eleventh ACM-SIAM Symposium on Discrete Algorithms (SODA '00). January 2000.

Improved Bicriteria Existence Theorems for Scheduling, with Javed Aslam, Cliff Stein and Neal Young. Tenth ACM-SIAM Symposium on Discrete Algorithms (SODA '99). January 1999.

On List Update and Work Function Algorithms, with Eric J. Anderson, Kirsten Hildrum, Anna Karlin, and Michael Saks. Proceedings of the Seventh Annual European Symposium on Algorithms (ESA '99), July 1999.

Master's Thesis Advisor: David Karger. *Strictly non-blocking WDM Cross-connects*, Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, June 2001.

Undergraduate Thesis Advisor: Cliff Stein. *Existence Theorems for Scheduling to Meet Two Objectives*, Dartmouth College Computer Science Technical Report PCS-TR99-347, June 1999

Technical Reports

Comparing Network Coding with Multicommodity Flow for the k-pairs Communication Problem, with Nicholas J. A. Harvey and Robert D. Kleinberg . MIT LCS Technical Report 964, September 2004.

Patents

Optical cross-connect design (#6,535,310; #6,487,332)
Improved border gateway protocol (application #20030174653)