Katrina LaCurts

32 Vassar St., Room 38-587
Massachusetts Institute of Technology
Cambridge, MA 02139

katrina@csail.mit.edu
Phone: +1 617 253 5994
http://csail.mit.edu/~katrina

EDUCATION

06/2014 **Doctor of Philosophy** in Computer Science
Massachusetts Institute of Technology, Cambridge, MA
Advisor: Dr. Hari Balakrishnan, Networks and Mobile Systems Group
Thesis: *Application Workload Prediction and Placement in Cloud Computing Systems*

06/2010 **Master of Science** in Computer Science
Massachusetts Institute of Technology, Cambridge, MA
Advisor: Dr. Hari Balakrishnan, Networks and Mobile Systems Group
Thesis: *Measurement and Analysis of Real-World 802.11 Mesh Networks*

05/2008 **Bachelor of Science** in Computer Science, **Bachelor of Science** in Mathematics
University of Maryland, College Park, Maryland
Magna Cum Laude, *University Honors*, *Departmental Honors in Computer Science*

TEACHING EXPERIENCE

Lecturer, MIT EECS

Spring 2018 Computer Systems Engineering (6.033)
Fall 2017 Digital Communication Systems (6.02)
Spring 2017 Computer Systems Engineering (6.033)
Fall 2016 Digital Communication Systems (6.02)
Spring 2016 Computer Systems Engineering (6.033)
Fall 2015 Digital Communication Systems (6.02)
Spring 2015 Computer Systems Engineering (6.033)
Fall 2014 Digital Communication Systems (6.02)

Instructor, MIT EECS

Summer 2014 Discrete Math, Women's Technology Program
Summer 2013 Discrete Math, Women's Technology Program

Graduate Instructor, MIT EECS

Spring 2014 Computer Systems Engineering (6.033)
Spring 2012 Digital Communication Systems (6.02)

Spring 2013 Certification, Graduate Student Teaching Program, MIT EECS

RESEARCH EXPERIENCE

2012–2014 **Bandwidth Guarantees for Public Clouds**
Designed Cicada, a system that uses machine learning to make predictions about application traffic in cloud computing environments. Cicada uses these predictions to offer better bandwidth guarantees to customers, and to improve network utilization within the cloud.

2011–2014 **Network-aware Workload Placement for Cloud Computing Infrastructures**
Designed Choreo, a network-aware placement system for distributing a user's workload across machines in a cloud computing infrastructure such that the total time to complete the workload is minimized. Tested Choreo on realistic workloads over hundreds of Amazon EC2 topologies.

2010–2012 **Real-time Network Monitoring**
Analysis of performance issues in live traffic from a variety of environments. Focus on TCP-level diagnosis.
http://bro-ids.org

2009–2010 **Large-scale 802.11 Mesh Measurement**
Analysis of data from hundreds of real-world 802.11 mesh deployments. Focus is on using the SNR as a predictor in bit-rate selection algorithms, the potential improvements of opportunistic routing, and the prevalence of hidden terminals.

2008–2009 **File-swarming Incentives**
Analyzed incentive mechanisms in file-swarming systems such as BitTorrent.
`http://www.cs.umd.edu/projects/propshare`

2008–2009 **CarTel**
Helped design and implement VTrack, a system for using WiFi-localization data for route planning and hotspot detection in an energy-aware manner.
`http://cartel.csail.mit.edu`

REFEREED PUBLICATIONS

[1] **Cicada: Introducing Predictive Guarantees for Cloud Networks**
K. LaCurts, J. C. Mogul, H. Balakrishnan, Y. Turner
HotCloud 2014

[2] **Choreo: Network-Aware Task Placement for Cloud Applications**
K. LaCurts, S. Deng, A. Goyal, H. Balakrishnan
IMC 2013

[3] **Making Currency Inexpensive with iOwe**
D. Levin, A. Schulman, K. LaCurts, N. Spring, B. Bhattacharjee
NetEcon 2011

[4] **Measurement and Analysis of Real-World 802.11 Mesh Networks**
K. LaCurts, H. Balakrishnan
IMC 2010

[5] **VTrack: Accurate, Energy-aware Traffic Delay Estimation Using Mobile Phones**
A. Thiagarajan, L. Ravindranath, K. LaCurts, S. Toledo, J. Eriksson, S. Madden, H. Balakrishnan
ACM SenSys 2009. *Best Paper Award*

[6] **BitTorrent is an Auction: Analyzing and Improving BitTorrent's Incentives**
D. Levin, K. LaCurts, N. Spring, B. Bhattacharjee
ACM SIGCOMM 2008

TECHNICAL REPORTS

[1] **Cicada: Predictive Guarantees for Cloud Network Bandwidth**
K. LaCurts, J. C. Mogul, H. Balakrishnan, Y. Turner
MIT-CSAIL-TR-2014-004

[2] **A Plan for Optimizing Network-Intensive Cloud Applications**
K. LaCurts, S. Deng, H. Balakrishnan
MIT-CSAIL-TR-2013-003

HONORS AND AWARDS

2016	HKN Best Instructor Award
2016	EECS Outstanding Educator
2016	Teaching with Digital Technology Award (nominee)
2009	ACM SenSys Best Paper Award
2009–2012	NSF Graduate Research Fellowship
2008–2009	Jacobs Presidential Fellowship (MIT)

EMPLOYMENT HISTORY

09/2014–present	Lecturer, MIT EECS
06/2014–08/2014	Discrete Math Instructor, Women's Technology Program, MIT EECS
08/2013–12/2013	Research Intern, Plexxi
06/2013–07/2013	Discrete Math Instructor, Women's Technology Program, MIT EECS
06/2012–08/2012	Research Intern, HP Labs
06/2010–08/2010	Research Intern, International Computer Science Institute
09/2008–06/2014	Graduate Student, MIT Computer Science and Artificial Intelligence Laboratory
06/2008–08/2008	Researcher, University of Maryland Computer Science
06/2007–08/2007	Software Engineering Intern, Google, NYC
06/2006–08/2006	Undergraduate Researcher, University of Maryland CATT Lab
2003–2005	Systems Software Engineering Summer Intern, NASA WFF

PROFESSIONAL ACTIVITIES

Fall 2014-present	Academic advisor for MIT EECS
Fall 2014-present	MIT EECS Education Curriculum Committee
Fall 2011	MIT EECS Graduate Experience Committee
2012	PC member for TinyToCS
2008-present	External reviewer for Transactions on Networking (2013, 2012, 2011, 2010), ICNP (2012, 2008), IMC (2012), NetEcon (2011), Systor (2011), PAM (2011), NSDI (2011, 2010), Sigmetrics (2009)