Jonathan Tormod Ledlie

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21 Mead St
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Work Address
CIC
1 Broadway
Cambridge, MA 02142

Research Interests Experimental wired and mobile distributed systems;
Information and Communication Technology for Development (ICTD)

Education

HARVARD UNIVERSITY
Ph.D. in Computer Science awarded September 2007
Dissertation: *A Locality-Aware Approach to Distributed Systems*
Committee: Prof. Margo Seltzer (advisor), Prof. Michael Mitzenmacher, Dr. Jim Waldo

UNIVERSITY OF WISCONSIN-MADISON
M.S. in Computer Science awarded December 2000
Advisor: Prof. Remzi Arpaci-Dusseau
Thesis: *Dámelo! An Explicitly Co-locating Web Cache File System*

COLUMBIA UNIVERSITY
B.A. awarded May 1996
Double major in Computer Science, Computer Systems concentration,
and History, East Asian concentration

Work Experience

CAMBRIDGE MOBILE TELEMATICS ENGINEER *Oct. 2012 - present*
Principal Software Engineer

- Member of initial engineering team at start-up spun out of MIT's CarTel project
- Designed and implemented usage-based auto insurance (UBI) product, including:
  - Cloud-based, scalable processing pipeline
  - Energy- and bandwidth-efficient mobile phone-based Android applications

NOKIA RESEARCH SCIENTIST, Cambridge, MA *Sept. 2007 - Sept. 2012*
Senior Researcher, Networked Systems

- Designed and implemented new services and applications for mobile devices:
  - Crowd-sourced indoor localization and maps
  - Location prediction for "next billion" Internet users
  - Social networks for emerging markets
- Member of Rich Context Mobile Platforms group, lead by Jamey Hicks, which developed Linux and Qt-based platform for high-volume, low-cost mobile devices
- Conducted joint research with MIT (Seth Teller, Tommi Jaakkola) and Imperial College London (Peter Pietzuch)
- Transferred technology and provided expert advice for business units
- Filed twelve patents and published novel aspects of each project.

MICROSOFT RESEARCH INTERN, Cambridge, UK *May-Aug. 2004*
Intern in Cambridge Distributed Systems Group

- Developed scalable architecture for distributed resource discovery
- Mentored by Antony Rowstron and Miguel Castro.

HARVARD UNIVERSITY RESEARCH ASSISTANT, Cambridge, MA *2001-2007*
Member of Systems Research Group led by Margo Seltzer, Matt Welsh, and Radhika Nagpal

- Contributed to grant applications and group publications
- Coordinated and maintained research group compute cluster, including large-scale network emulation software.

VIVIDON OPERATING SYSTEMS ENGINEER, Sudbury, MA *Jan.-Oct. 2001*

- Developed specialized file system for streaming video caches (acquired by Starbak Communications in 2003)
- Contributed to initial commercial implementation of MIT's Exokernel OS.

SUN MICROSYSTEMS INTERN, Burlington, MA *June-Aug. 2000*
Intern in Performance Applications/High End Server Engineering groups

- Characterized Oracle DSS I/O performance on ccNUMA hardware
- Developed visual Java tool to monitor thread migration and scheduler capability
- Mentored by Gupa Kumar.

NYTIMES.COM SENIOR WEB ENGINEER, New York, NY *Mar. 1998 - May 1999*
Engineer at the online version of the New York Times:

- Rewrote user login and registration programs to be faster and require fewer database transactions using Roguewave C++, Perl's DBI module, and FastCGI (millions of users daily)
- Stress-tested online NYT article archive by building a multi-threaded Java application to simulate and track simultaneous client requests.

WEB DEVELOPER / DATABASE ENGINEER, New York, NY *Feb. 1997 - Dec. 2000*

- Wrote applications in PL/SQL, Perl, and Java to present search results, handle shopping carts, and track customers and advertising for Dissemination, Inc.
- Configured Oracle, Netscape, and Apache web servers and handled Unix system administration for several Solaris and Linux servers, including setup of a secure commerce site
- Continued as consultant for two years.

Teaching Experience

TEACHING FELLOW, Harvard University *Spring 2004*
Graduate Peer-to-Peer Systems:

- Assisted Prof. Mema Roussopoulos in creating and teaching seminar on recent peer-to-peer research topics
- Guided small groups of students in semester-long research projects
- Analyzed papers in detail in one-on-one sessions with students.

TEACHING FELLOW, Harvard University *Spring 2003*
Undergraduate Operating Systems:

- Taught weekly section and graded student projects.

TEACHING FELLOW, Harvard University *Fall 2001*
Graduate Operating Systems:

- Helped plan syllabus on classical Operating Systems material
- Evaluated students' analyses of each paper
- Counseled small groups of students on semester-long research projects.

TEACHING ASSISTANT, University of Wisconsin-Madison *Fall 2000*
Graduate Operating Systems:

- Evaluated students' analyses of each paper
- Counseled small groups of students on semester-long research projects.

TEACHING ASSISTANT, University of Wisconsin-Madison *Fall 1999, Spring 2000*
Undergraduate Introduction to Programming:

- Conducted weekly section and graded as part of large teaching team.

HIGH SCHOOL TEACHER at DWIGHT-ENGLEWOOD, Englewood, NJ *1996 - 1997*
Tenth grade computer science and electronics teacher:

- Implemented experimental curriculum that integrates math, science, and technology in innovative project-based high school program
- Wrote 150+ page textbook for on-going use in curriculum
- Coached cross-country team and served as faculty advisor to students' advanced programming activities.

Mentoring Experience

INTERN MENTOR *September 2007 - Present*
Mentored MIT, Harvard, NYU, and Stanford students at Nokia Research Cambridge:

- Jay Chen, New York University *Feb. 2010 - Dec. 2010*
  Computer Science Ph.D. candidate
  Focus: User studies of SMS Find
- Billy Odero, University of Nairobi (U.S. J-1 Visa) *Oct. 2008 - Aug. 2009*
  Undergraduate completed in 2007; majored in Computer Science
  Post-internship: research engineer at NRC/Nairobi; graduate school
  Focus: Mosoko (phone-based marketplace) Development and Testing
- Brian Omwenga, MIT *June - Nov. 2008*
  Technology and Policy Master's candidate
  Post-internship: project development at NRC/Nairobi
  Focus: Tangaza Business Development
- Ryan Newton, MIT *June - Sept. 2008*
  Computer Science Ph.D. candidate
  Focus: Wavescope's Streaming Garbage Collector in mobile environments
- Matt Tierney, Harvard *Dec. 2007 - Feb. 2008*
  Undergraduate concentrating in Computer Science
  Post-internship: Ph.D. in Computer Science at NYU
  Focus: Mosoko User Interface.

COURSE PROJECT ADVISOR *Spring 2008*
Led group of six international students as part of MIT's new ICT4D course:

- Guided business and technical students to make tangible additions to an industry research project based in Kenya
- Helped them present their work through presentations and videos
- Introduced students to speech recognition.

GRADUATE STUDENT ADVISOR *Fall 2007*
While at Nokia Research, advised two groups of students taking Harvard's Graduate Operating Systems course:

- Examined mobile file systems and applications of Bell Labs' 9p to mobile devices
- Culminated in publication submission to USENIX for one project
- Students mentored: Bryan Kate, Michael Lyons, John Niesz, Ian Rose.

UNDERGRADUATE ADVISOR, Harvard University *Summer 2003*
Advised Matthew Amis, a Harvard undergraduate, on research in peer-to-peer systems leading to NSDI conference submission.

Professional Activities

Committees:

- Nokia Open Source Software Group, Nokia Research Representative, 2009-2012.

Program Committees:

- Third IEEE International Conference on Indoor Positioning and Indoor Navigation (IPIN), 2012
- Third ACM Workshop on Networking, Systems, and Applications on Mobile Handhelds (MobiHeld), 2011
- Second IEEE International Conference on Indoor Positioning and Indoor Navigation (IPIN), 2011
- Fifth ACM Workshop on Networked Systems for Developing Regions (NSDR), 2011.
- World Wide Web Conference (WWW), Web for Emerging Regions Track, 2011
- International Conference on Information and Knowledge Management (CIKM), Industrial Track, 2010
- Euro-Par Conference, Peer-to-Peer Track, 2010
- First Workshop on Social Network Systems (SocNets), 2008

Reviewer: HotOS (2003), OSDI (2004), INFOCOM (2005), FAST (2005), Pervasive Computing (2008), Distributed Systems Online (2008), NSDI (2009), IEEE Communications Surveys and Tutorials (2009), IEEE Transactions on Parallel and Distributed Systems (2009), IEEE Transactions on Network and Service Management (2010), ACM Transactions on Computer Systems (2011).

Awards

- Best Paper: International Conference on Indoor Positioning and Indoor Navigation, 2011
- File and Storage Technologies 2003 Conference (FAST) Student Stipend Winner
- Best Class Graduate Operating Systems Project, Univ. of Wisconsin-Madison, 2000
- National Merit Scholar (1990)

Journal Publications

[1] Jonathan Ledlie, Jun-geun Park, Dorothy Curtis, André Cavalcante, Leonardo Camara, Afonso Costa, and Robson Vieira, *Molé: a Large-Scale, User-Generated Positioning Engine*, Journal of Location Based Services, Volume 6, Number 2, 2012.

[2] Jonathan Ledlie, Billy Odero, Einat Minkov, Imre Kiss, Joseph Polifroni, *Crowd Translator: On Building Localized Speech Recognizers through Micropayments*, SIGOPS Operating Systems Review, Volume 43, Issue 4, 2009.

Conference Publications

[3] Álvaro Fialho, André Cavalcante, Afonso Costa, Jonathan Ledlie, *Classifying and Using Motion in Organic Indoor Positioning*, In Proceedings of the International Conference on Indoor Positioning and Indoor Navigation (IPIN), Sydney, Australia, November 2012.

[4] Jun-geun Park, Ami Patel, Dorothy Curtis, Jonathan Ledlie, Seth Teller, *Online Pose Classification and Walking Speed Estimation using Handheld Devices*, In Proceedings of the Fourteenth ACM International Conference on Ubiquitous Computing (UbiComp), Pittsburg, PA, September 2012.

[5] Jonathan Ledlie, Jun-geun Park, Dorothy Curtis, André Cavalcante, Leonardo Camara, Afonso Costa, and Robson Vieira, *Molé: a Large-Scale, User-Generated Positioning Engine*, In Proceedings of the International Conference on Indoor Positioning and Indoor Navigation (IPIN), Guimarães, Portugal, September 2011 (Best Paper Award).

[6] Jun-geun Park, Dorothy Curtis, Seth Teller, Jonathan Ledlie, *Implications of Device Diversity for Organic Localization*, In Proceedings of IEEE INFOCOM 2011, Shanghai, China, April 2011.

[7] Jay Chen, Russell Power, Lakshmi Subramanian, Jonathan Ledlie, *Design and Implementation of Offline Education Web Portals*, In Proceedings of the 20th World Wide Web Conference (WWW), Web for Emerging Regions Track, Hyderabad, India, March 2011.

[8] Thom Haddow, Sing Wang Ho, Jonathan Ledlie, Cristian Lumezanu, Moez Draief, and Peter Pietzuch, *On the Feasibility of Bandwidth Detouring on the Internet*, In Proceedings of Passive and Active Measurement Conference (PAM), Atlanta, GA, March 2011.

[9] Billy Odero, Brian Omwenga, Pauline Githinji, Mokeira Masita-Mwangi, and Jonathan Ledlie, *Tangaza: Frugal Group Messaging through Speech and Text*, In Proceedings of Computing for Development (DEV), London, England, December 2010.

[10] Einat Minkov, Ben Charrow, Jonathan Ledlie, Seth Teller, Tommi Jaakkola, *Collaborative Future Event Recommendation*, In Proceedings of the 19th ACM Conference on Information and Knowledge Management (CIKM), Toronto, Canada, October 2010.

[11] Jun-geun Park, Ben Charrow, Dorothy Curtis, Jonathan Battat, Einat Minkov, Jamey Hicks, Seth Teller, Jonathan Ledlie, *Growing an Organic Indoor Location System*, In Proceedings of the Eighth International Conference of Mobile Systems, Applications, and Services (MobiSys), San Francisco, CA, June 2010.

[12] Jonathan Ledlie, Paul Gardner, and Margo Seltzer, *Network Coordinates in the Wild*, In Proceedings of the Fourth USENIX Symposium on Networked Systems Design and Implementation (NSDI), Cambridge, MA, April 2007.

[13] Ian Rose, Rohan Murty, Peter Pietzuch, Jonathan Ledlie, Mema Roussopoulos, and Matt Welsh, *Cobra: Content-based Filtering and Aggregation of Blogs and RSS Feeds*, In Proceedings of the Fourth USENIX Symposium on Networked Systems Design and Implementation (NSDI), Cambridge, MA, April 2007.

[14] Jonathan Ledlie, Peter Pietzuch, and Margo Seltzer, *Stable and Accurate Network Coordinates*, In Proceedings of IEEE International Conference on Distributed Computing Systems (ICDCS), Lisbon, Portugal, July 2006.

[15] Peter Pietzuch, Jonathan Ledlie, Jeffrey Shneidman, Mema Roussopoulos, Matt Welsh, and Margo Seltzer, *Network-Aware Operator Placement for Stream-Processing Systems*, In Proceedings of the 22nd International Conference on Data Engineering (ICDE), Atlanta, GA, April 2006.

[16] Jonathan Ledlie and Margo Seltzer, *Distributed, Secure Load Balancing with Skew, Heterogeneity, and Churn*, In Proceedings of IEEE INFOCOM 2005, Miami, FL. March 2005.

[17] Daniel Ellard, Jonathan Ledlie, Pia Malkani, and Margo Seltzer, *Passive NFS Tracing of Email and Research Workloads*, In Proceedings of the Second Annual USENIX File and Storage Technologies Conference (FAST), San Francisco, CA. March 2003.

Workshop Publications

[18] Johannes Schmid, Dorothy Curtis, Tobias Gädeke, Jonathan Ledlie, *Improving Sparse Organic WiFi Localization with Inertial Sensors*, In Proceedings of the Workshop on Positioning, Navigation, and Communication (WPNC), Dresden, Germany, March 2012.

[19] Jonathan Ledlie, *"Huzzah for my thing:" Evaluating a Pilot of a Mobile Service in Kenya*, In Proceedings of Qual Meets Quant (QMQ), London, England, December 2010.

[20] Jonathan Ledlie, Billy Odero, Einat Minkov, Imre Kiss, Joseph Polifroni, *Crowd Translator: On Building Localized Speech Recognizers through Micropayments*, In Proceedings of the Third ACM Workshop on Networked Systems for Developing Regions (NSDR), Big Sky, Montana, October 2009.

[21] Jonathan Ledlie, Billy Odero, and Nathan Eagle, *Including Local Entrepreneurs in ICT4D*, In Proceedings of the CCC Workshop on Computer Science and Global Development, Berkeley, CA, August 2009.

[22] Sing Wang Ho, Thom Haddow, Jonathan Ledlie, Moez Draief, and Peter Pietzuch, *Deconstructing Internet Paths: An Overlay for AS-Level Detour Routing*, In Proceedings of the Eighth International Workshop on Peer-to-Peer Systems (IPTPS), Boston, MA. April 2009.

[23] Jonathan Ledlie, Nathan Eagle, Matthew Tierney, Mark Adler, Harri Hansen, and Jamey Hicks, *Mosoko: a Mobile Marketplace for Developing Regions*, In Proceedings of Designing Interactive Systems for Communities in the Developing World, Cape Town, South Africa, February 2008.

[24] Jonathan Ledlie, Peter Pietzuch, Michael Mitzenmacher, and Margo Seltzer, *Wired Geometric Routing*, In Proceedings of the Sixth International Workshop on Peer-to-Peer Systems (IPTPS), Bellevue, WA, February 2007.

[25] Peter Pietzuch, Jonathan Ledlie, Michael Mitzenmacher, and Margo Seltzer, *Network-Aware Overlays with Network Coordinates*, In Proceedings of International Workshop on Dynamic Distributed Systems (IWDDS), Lisbon, Portugal, July 2006.

[26] Peter Pietzuch, Jonathan Ledlie, and Margo Seltzer, *Supporting Network Coordinates on PlanetLab*, In Proceedings of the Second Workshop on Real, Large Distributed Systems (WORLDS), San Francisco, CA, December 2005.

[27] Jonathan Ledlie, Chaki Ng, David Holland, Kiran-Kumar Muniswamy-Reddy, Uri Braun, and Margo Seltzer, *Provenance-Aware Sensor Data Storage*, In Proceedings of the IEEE International Workshop of Networking Meets Databases (NetDB), Tokyo, Japan, April 2005.

[28] Peter Pietzuch, Jeff Shneidman, Jonathan Ledlie, Matt Welsh, Margo Seltzer, Mema Roussopoulos, *Evaluating DHT-Based Service Placement for Stream-Based Overlays*, In Proceedings of the International Workshop on Peer-to-Peer Systems (IPTPS), Ithaca, NY, February 2005.

[29] Jonathan Ledlie, Jeff Shneidman, Mema Roussopoulos, Matt Welsh, and Margo Seltzer, *Open Problems in Data Collection Networks*, In Proceedings of the Eleventh ACM SIGOPS European Workshop, Leuven, Belgium, September 2004.

[30] Jonathan Ledlie, Jeff Shneidman, Margo Seltzer, and John Huth, *Scooped, Again*, In Proceedings of the Second International Workshop on Peer-to-Peer Systems (IPTPS), Berkeley, CA. February 2003.

[31] Jonathan Ledlie, Jacob Taylor, Laura Serban, and Margo Seltzer, *Self-Organization in Peer-to-Peer Systems*, In Proceedings of Tenth ACM SIGOPS European Workshop, Saint-Emilion, France, September 2002.

Theses

[32] Jonathan Ledlie, *A Locality-Aware Approach to Distributed Systems*, Ph.D. Thesis, Harvard University Computer Science Technical Report, September 2007.

[33] Jonathan Ledlie, *Dámelo! An Explicitly Co-locating Web Cache File System*, Master's Thesis, University of Wisconsin-Madison, December 2000.

Patents

[34] Jun-geun Park, Ami Patel, Dorothy Curtis, Seth Teller, Jonathan Ledlie, *Methods, Apparatuses, and Computer Program Products for Determining Speed of Movement of a Device and Device Pose Classification*, US Patent 9,069,003, granted June 30, 2015

[35] Jonathan Ledlie, *Methods, Apparatuses, and Computer Program Products for Providing Automatic Maintenance of a Geopositioning System*, US Patent 8,977,207, granted March 10, 2015.

[36] Jonathan Ledlie, *Method and Apparatus for Private Collaborative Filtering*, US Patent 8,832,016, granted September 9, 2014.

[37] Jonathan Ledlie, *Method and Apparatus for On-Device Positioning Using Compressed Fingerprint Archives*, US Patent 8,660,577, granted February 25, 2014.

[38] Jonathan Ledlie and Jun-geun Park, *Methods, Apparatuses, and Computer Program Products for Providing a Private and Efficient Geolocation System*, US Patent 8,594,680, granted November 26, 2013.

[39] Jonathan Ledlie, Jamey Hicks, Seth Teller, Jonathan Battat, Ben Charrow, Dorothy Curtis, *Method, Apparatus, and Computer Program Product for Facilitating Location Discovery*, US Patent 8,581,698, granted November 12, 2013.

[40] Jonathan Ledlie, *Method and Apparatus for Prefetching Location-based Data while Maintaining User Privacy*, US Patent 8,457,653, granted June 4, 2013.

[41] Jonathan Ledlie, Leo Karkkainen, Pentti Valtteri Niemi, *Method and Apparatus for Context-based on Spatial Trails*, Under submission (US 12/980864), December 29, 2010.

[42] Cynthia Kuo, Quinn Jacobson, Jonathan Ledlie, *Location-based CAPTCHAs for Map Data Collection and Verification*, Under submission (US 61/367248), July 23, 2010.

[43] Jun-geun Park, Jonathan Ledlie, Ben Charrow, Jonathan Battat, Dorothy Curtis, Einat Minkov, Jamey Hicks, Seth Teller, *Method and Apparatus for Constructing a User-Generated Geolocation System*, Under submission (US 61/285454), December 10 2009.

Technical Reports

[44] Seth Teller, Jonathan Battat, Ben Charrow, Dorothy Curtis, Russell Ryan, Jonathan Ledlie, Jamey Hicks, *Organic Indoor Location Discovery*, MIT CSAIL Technical Report TR-2008-075, December 2008.

[45] Jonathan Ledlie, *File System Support for Low-Bandwidth Thumbnails*, Nokia Research Technical Report NRC-TR-2008-004, May 2008.

[46] Jonathan Ledlie, Peter Pietzuch, and Margo Seltzer, *Proxy Network Coordinates*, Imperial College Department of Computing Technical Report 2008/4, January 2008.

[47] Margo Seltzer, Kiran-Kumar Muniswamy-Reddy, David Holland, Uri Braun, and Jonathan Ledlie, *Provenance-Aware Storage Systems*, Harvard University Computer Science Technical Report TR-18-05, July 2005.

[48] Jeff Shneidman, Peter Pietzuch, Jonathan Ledlie, Mema Roussopoulos, Margo Seltzer, and Matt Welsh, *Hourglass: An Infrastructure for Connecting Sensor Networks and Applications*, Harvard University Computer Science Technical Report TR-21-04, May 2004.

[49] Jonathan Ledlie, Jeff Shneidman, Matthew Amis, Michael Mitzenmacher, and Margo Seltzer, *Reliability- and Capacity-based Selection in Distributed Hash Tables*, Harvard University Computer Science Technical Report, September 2003.

[50] Jonathan Ledlie, *Improving Topology Awareness in Structured Overlays with Logical Identifier Selection*, Harvard University Computer Science Qualifying Examination, May 2003.

[51] Daniel Ellard, Jonathan Ledlie, and Margo Seltzer, *The Utility of File Names*, Harvard University Computer Science Technical Report TR-05-03, March 2003.

[52] Daniel Ellard, Jonathan Ledlie, Pia Malkani, and Margo Seltzer, *Everything You Always Wanted to Know About NFS Trace Analysis, But Were Afraid to Ask*, Harvard University Computer Science Technical Report TR-06-02, June 2002.

[53] Jonathan Ledlie, Laura Serban, and Dafina Toncheva, *Scaling Filename Queries in a Large-Scale Distributed File System*, Harvard University Computer Science Technical Report TR-03-02, January 2002.

[54] Jonathan Ledlie, Matthew McCormick, and Omer Zaki, *Adaptively Scheduling Processes on a Simultaneous Multithreading (SMT) Processor*, University of Wisconsin-Madison Computer Architecture Project, December 2000.

[55] Jonathan Ledlie and Justin Forrester, *X-Join and the Benefits of Free Work*, University of Wisconsin-Madison Databases Project, May 2000.

Invited Talks and Panels

[56] Reverse Innovation, Emerging Markets, and Global Strategy Panel at the Social Enterprise Conference, Harvard Business School, Cambridge, MA, March 2011.

Media Interviews

[57] "Trickle-Up Economics," in *Fast Company*. Interviewed by Michael Fitzgerald in November 2008.

[58] "Upwardly Mobile," in *Communications of the ACM*. Interviewed by Samuel Greengard in July 2008.

Posters

[59] Peter Pietzuch, Jonathan Ledlie, Jeff Shneidman, Matt Welsh, Mema Roussopoulos, and Margo Seltzer, *Service Placement in Stream-Based Overlay Networks*. Poster at the Second USENIX Symposium on Networked Systems Design and Implementation (NSDI), Boston, MA, May 2005.

[60] Peter Pietzuch, Jeff Shneidman, Jonathan Ledlie, Matt Welsh, Margo Seltzer, and Mema Roussopoulos, *Hourglass: A Stream-Based Overlay Network for Sensor Applications*. Poster at the Harvard Industrial Partnership (HIP), Cambridge, MA, USA, October 2004.

[61] Jonathan Ledlie, Jeff Shneidman, Matt Amis, Michael Mitzenmacher, and Margo Seltzer, *Neighbor and Identifier Selection in Peer-to-Peer Networks*. Poster at the First USENIX Symposium on Networked Systems Design and Implementation (NSDI), San Francisco, CA, March 2004.

[62] Daniel Ellard, Jonathan Ledlie, Pia Malkani, and Margo Seltzer, *Passive NFS Tracing of Email and Research Workloads*, Poster at the Harvard Industrial Partnership (HIP), Cambridge, MA, USA, October 2003.

Software Artifacts

Metro Note *2012-2014*
- Windows Phone application (C# and XAML)
- Client of Simplenote, a json-based note sharing service
- Distributed under Nokia's Employee Publisher program

Molé: Mobile Organic Localization Engine *2010-2012*
- Scalable, crowd-sourced, indoor/outdoor, WiFi-based positioning system
- Phone client implemented in Qt C++; Server in Perl, Java, and SQL (MySQL) using several Amazon Web Services (EC2, CloudFront, DynamoDB)
- License: Apache (client) and AGPL v3 (server).

Tangaza: a Frugal Group Messaging Service for Emerging Markets *2009-2012*
- Helps users send spoken messages and group texts cheaply
- Written in Perl, Python/Django, and MySQL using Asterisk
- Deployed and evaluated in Kenya
- Transferred to Nokia Corporate Social Responsibility
- License: AGPL v3.

Pyxida: an open source network coordinate library *Fall 2006*
- Part of the popular Azureus and Vuze BitTorrent clients (Java)
- Development and test platform for researchers at Microsoft Research Asia and Redmond, Boston University, UCSD, and Imperial.
- License: Apache v2.

Courses

Coursework on computational complexity, networks, software modeling, digital logic, architecture, distributed systems, cryptography and security, sensor networks, artificial intelligence, operating systems, and database systems.

Activities

HARVARD DUDLEY HOUSE FELLOW, Cambridge, MA *2004 - 2006*
Organized graduate student extracurricular sports and arts activities.

HARVARD EECS GRADUATE STUDENT SOCIETY, Cambridge, MA *2003 - 2005*
Co-founded and lead student gatherings and informational sessions.

QUAD BIKES, Cambridge, MA *2002 - 2008*
Served on Board of Directors for non-profit bicycle shop whose mission is to encourage safe, accessible bike use in the Boston area.

VARSITY INTERCOLLEGIATE CREW, New York, NY *1991 - 1996*
Rowed on varsity lightweight sweep squad at Columbia.

OTHER EXTRACURRICULAR ACTIVITIES
- Bicycling: long-distance trips through Finland (2008), Eastern Europe (2004), Canada (2003), and Ireland (2002)
- Rowing: Harvard's Dudley House Intramural team (2001-2006)
- Triathlons: Timberman Half-Ironman (2003)
- Pottery: Radcliffe Ceramics Studio (2002-2005)

Citizenship

United States and United Kingdom

References

References available on request.