

Kurtis Heimerl

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Interests

My research focuses on community-based systems across computer networks, international development, and HCI.

Academic

University of Washington Assistant Professor Computer Networks and ICTD	2016
University of California, Berkeley Doctor of Philosophy, Computer Science Thesis: <i>Community Cellular Networks</i> Advisors: Eric Brewer and Tapan Parikh	2013
University of California, Berkeley Master of Science, Computer Science Thesis: <i>Metamouse: Improving Sharing of Existing Educational Applications</i>	2009
University of Washington Bachelor of Science, Computer Engineering (Magna Cum Laude)	2007

Active Research

Community Cellular Networks

Investigating small-scale, locally owned cellular networks. Prior work conducted longitudinal deployment of local GSM in rural Papua, Indonesia and demonstrated sustainability in the Papuan context as well as value to local community. Active large-scale deployment in the Philippines focused on RCT on impact of cellular access.

Digital Financial Inclusion

Exploring digital financial services and how to increase their adoption among marginalized communities. Specific research agendas include big data analysis of cellular TAC logs and routing in Interledger networks.

Community LTE

Developing new extensions to Open Air Interface to support community owned and operated LTE networks. Extensions include caching, hot spot semantics, and limited service support.

Rural Repair

Developing solutions to enable local repair through instrumenting the infrastructure with sensors. Includes both the creations of tools, exploring mechanisms for engagements, and measuring of latent capability in marginalized communities.

Awards

MIT Technology Review "35 under 35"	2014
Best Paper at DySPAN 2014: GSM Whitespaces: An Opportunity for Rural Cellular Service	2014
Community Award at NSDI 2013: Expanding Rural Cellular Networks with Virtual Coverage	2013
Best Paper at CHI 2012: Communitysourcing: Engaging Local Crowds to Perform Expert Work Via Physical Kiosks	2012
NSF Graduate Research Fellowship	2008
NSF Graduate Research Fellowship (Honorable Mention)	2007
Bob Bandes Memorial Teaching Award (Honorable Mention)	2005

Selected Press

Facebook Hires Founders Of Cellular-Network-In-A-Box Company Endaga Tech Crunch	2015
DIY Telecoms The Economist	2015
Endaga Brings Rural Villages Online With a Cell Network in a Box Re/code	2014
Kurtis Heimerl: 35 Innovators under 35 MIT Technology Review	2014
New Eavesdropping Equipment Sucks All Data Off Your Phone Newsweek	2014
Cellular's Open Source Future is Latched to Tallest Tree in the Village Ars Technica	2014
Powered by the Sun, Telcos Open up Cellphone's Final Frontier Reuters	2012

Industry Experience

Facebook - Visiting Scientist Endaga joined Facebook to continue their rural access initiatives.	Menlo Park, CA 2015-Present
Endaga, Inc - Founder/CEO Developed simple cellular networks that can be operated by anyone. Raised 1.2M seed round from investors such as Mitch Kapor, Jeff Hammerbacher, and Sanjit Biswas. Joined Facebook August 2015.	Oakland, CA 2014-2015
Range Networks - Community Manager/Developer Managed for open-source OpenBTS release.	San Francisco, CA 2011-2014
Microsoft Research India - Intern Assisted with SMS and voice technologies for the Digital Study Hall distance learning project.	Bangalore, India 2007
Google.com - Intern Developed additions to the Hadoop map-reduce framework.	Mountain View, CA 2007
Amazon.com - Intern Created scalable, secure, and extensible service-oriented architecture components.	Seattle, WA 2005,2006

Peer-reviewed Conference or Journal Publications

An Investigation of Phone Upgrades in Remote Community Cellular Networks Kushal Shah, Philip Martinez, Emre Tepedelenlioglu, Shaddi Hasan, Cedric Angelo Festin, Joshua Blumenstock, Jo Dionisio, Kurtis Heimerl . <i>International Conference on Information and Communication Technologies and Development (ICTD)</i> 2017
Towards Building a Community Cellular Network in the Philippines: Initial Site Survey Observations Mary Claire Barela, Mae Sincere Blanco, Philip Martinez, Miguel Carlo Purisima, Kurtis Heimerl , Matthew Podolsky, Eric Brewer, Cedric Angelo Festin. <i>International Conference on Information and Communication Technologies and Development (ICTD)</i> 2016
A Longitudinal Study of Local, Sustainable, Small-Scale Cellular Networks Kurtis Heimerl , Shaddi Hasan, Kashif Ali, Eric Brewer, Tapan Parikh. <i>Information Technologies & International Development (ITID)</i> 2015
Analysis of Smartphone Adoption and Usage in a Rural Community Cellular Network Kurtis Heimerl , Anuvind Menon, Shaddi Hasan, Kashif Ali, Eric Brewer, Tapan Parikh. <i>International Conference on Information and Communication Technologies and Development (ICTD)</i> 2015
Rescue Base Station Ibrahim Ghaznavi, Kurtis Heimerl , Umar Muneer, Abdullah Hamid, Kashif Ali, Tapan Parikh, Umar Saif. <i>5th Annual ACM Symposium on Computing for Development (DEV)</i> 2014
GSM Whitespaces: An Opportunity for Rural Cellular Service Shaddi Hasan, Kurtis Heimerl , Kate Harrison, Kashif Ali, Anant Sahai, Eric Brewer. <i>IEEE Dynamic Spectrum Access Networks (DySPAN)</i> 2014 (Best Paper Award)
An Experiment in Reducing Cellular Base Station Power Draw With Virtual Coverage Kurtis Heimerl , Shaddi Hasan, Kashif Ali, Tapan Parikh, Eric Brewer. <i>4th Annual ACM Symposium on Computing for Development (DEV)</i> 2013

Local, Sustainable, Small-Scale Cellular Networks

Kurtis Heimerl, Shaddi Hasan, Kashif Ali, Eric Brewer, Tapan Parikh. *International Conference on Information and Communication Technologies and Development (ICTD)* 2013

Expanding Rural Cellular Networks with Virtual Coverage

Kurtis Heimerl, Kashif Ali, Joshua Blumenstock, Brian Gawalt, Eric Brewer. *10th USENIX symposium on Networked Systems Design and Implementation (NSDI)* 2013 (**Community Award**)

Convergence of Position Auctions under Myopic Best-Response Dynamics

Matthew Cary, Aparna Das, Benjamin Edelman, Ioannis Goitis, **Kurtis Heimerl**, Anna Karlin, Scott Kominers, Claire Mathieu, Michael Schwarz. *Transactions on Economics and Computation (TEAC)* 2013

Communitysourcing: Engaging Local Crowds to Perform Expert Work Via Physical Kiosks

Kurtis Heimerl, Brian Gawalt, Kuang Chen, Tapan Parikh, Björn Hartmann. *Annual conference on Human Factors in Computing Systems (CHI)* 2012 (**Best Paper Award**)

A Case Study on Designing Interfaces for Multiple Users in Developing Regions

Kurtis Heimerl, Janani Vasudev, Kelly Buchanan, Tapan Parikh, Eric Brewer. *1st Annual ACM Symposium on Computing for Development (DEV)* 2010

Metamouse: Improving Multi-user Sharing of Existing Educational Applications

Kurtis Heimerl, Janani Vasudev, Kelly Buchanan, Tapan Parikh, Eric Brewer. *International Conference on Information and Communication Technologies and Development (ICTD)* 2010

Greedy Bidding Strategies for Keyword Auctions

Matthew Cary, Aparna Das, Benjamin Edelman, Ioannis Giotis, **Kurtis Heimerl**, Anna Karlin, Claire Mathieu and Michael Schwarz. *ACM Conference on Electronic Commerce (EC)* 2007

Workshop Papers

Unplanned Obsolescence: Hardware and Software After Collapse

Esther Jang, Matt Johnson, Edward Burnell, **Kurtis Heimerl**. *Proceedings of the 2017 Workshop on Computing Within Limits*, 2017

The Village Base Station

Kurtis Heimerl, Eric Brewer. *4rd ACM Workshop on Networked Systems for the Developing World (NSDR)*, 2010

Message Phone: A User Study and Analysis of Asynchronous Messaging in Rural Uganda

Kurtis Heimerl, RJ Honicky, Eric Brewer, Tapan Parikh. *3rd ACM Workshop on Networked Systems for the Developing World (NSDR)*, 2009

Metamouse: Multiple Mice for Legacy Applications

Kurtis Heimerl, Divya Ramachandran, Joyojeet Pal, Eric Brewer, Tapan Parikh. *Proceedings of the 27th international conference extended abstracts on Human factors in computing systems (CHI Extended Abstracts)* 2009

Demonstrations

Poster and Demonstration of Expanding Rural Cellular Networks with Virtual Coverage

Kurtis Heimerl, Kashif Ali, Joshua Blumenstock, Brian Gawalt, Eric Brewer. *Demo at 10th USENIX symposium on Networked Systems Design and Implementation (NSDI)* 2013

Communitysourcing: Engaging Local Crowds to Perform Expert Work Via Physical Kiosks

Kurtis Heimerl, Brian Gawalt, Kuang Chen, Tapan Parikh, Björn Hartmann. *Interactivity at the annual conference on Human Factors in Computing Systems (CHI)* 2012

Metamouse: Multiple Mice for Legacy Applications

Kurtis Heimerl, Divya Ramachandran, Joyojeet Pal, Eric Brewer, Tapan Parikh. *Demo at International Conference on Information and Communication Technologies and Development (ICTD)* 2009

Technical Reports

How Users Understand Cellular Infrastructure

Kurtis Heimerl, Tapan Parikh. *University of California, Berkeley Technical Report No. UCB/EECS-2012-42*

Transforming Community-based Healthcare with CommScope

Kuang Chen, **Kurtis Heimerl**, Tapan Parikh, Christine Robson and Beth Trushkowsky. *University of California, Berkeley Technical Report No. UCB/EECS-2009-155*

Enabling Innovation Below the Communication API

Ganesh Ananthanarayanan, **Kurtis Heimerl**, Matei Zaharia, Michael Demmer, Teemu Koponen, Arsalan Tavakoli, Scott Shenker, Ion Stoica. *University of California, Berkeley Technical Report UCB/EECS-2009-141*

Teaching Experience

- University of Washington** **Seattle, WA, 2017**
CSE 590: Information and Communication Technology and Development (ICTD) PMP. Professional Masters class focused on ICTD
- University of Washington** **Seattle, WA, 2017**
CSE 461: Computer Networks. Undergraduate networking class.
- University of Washington** **Seattle, WA, 2017**
CSE 599: Information and Communication Technology and Development (ICTD). Graduate seminar on ICTD.
- University of California, Berkeley** **Berkeley, CA, 2013**
Summer Undergraduate Program in Engineering Research at Berkeley (SUPERB) Mentor for Cristine Dierk working on communitysourcing and Mark Watt working on cellular security
- University of California, Berkeley** **Berkeley, CA 2012**
CS-194-22 Cellphones as a computing platform. Lead Instructor of undergraduate class focused on mobile development.
- University of California, Berkeley** **Berkeley, CA, 2011**
Summer Undergraduate Program in Engineering Research at Berkeley (SUPERB) Mentor for Kehontas Rowe from Mills College working on communitysourcing.
- University of California, Berkeley** **Berkeley, CA 2010**
CS-294-35 Cellphones as a computing platform. Graduate Student Instructor of graduate class on mobile technologies under Professor Eric Brewer.
- University of Washington** **Seattle, WA 2006-2007**
Teacher's assistant for operating systems courses under Professor Ed Lazowska
- University of Washington** **Seattle, WA 2005**
Teacher's assistant for introductory computer programming courses under Professor Hal Perkins and Lecturer Stuart Reges.

Academic Experience

- Program Committee: ICTD 2017, 2016, 2015, 2013**
- Program Committee: ACM DEV-5, 2014**
- Program Committee: HotMobile 2015**
- Program Committee: CHI Work-in-Progress 2014, 2013**
- Reviewer: CHI 2018, 2017, 2016, 2015, 2013**
- Reviewer: UIST 2014**
- Reviewer: UIST Demos 2012**
- Reviewer: ITID 2011**

References

- Eric Brewer**
Professor, Computer Science, University of California, Berkeley
brewer@eecs.berkeley.edu
- Tapan Parikh**
Associate Professor, Cornell Tech
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- Richard Anderson**
Professor, Computer Science, University of Washington
anderson@cs.washington.edu
- Bill Thies**
Researcher, Microsoft Research India
thies@microsoft.com