

J E F F R E Y H I G H T O W E R

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INTERESTS AND EXPERTISE

My technical expertise is in the broad area of mobile computing systems including location and mapping technology, sensors, machine learning, and mobile operating systems. I have worked and published extensively in these areas.

EDUCATION

University of Washington Ph.D. Computer Science and Engineering Dissertation: "The Location Stack" Supervisor: Gaetano Borriello	Seattle, WA	2004
University of Washington M.S. Computer Science and Engineering Title: "Investigating an Indoor 3D Location Sensing Technology Based on RF Signal Strength"	Seattle, WA	2000
University of Colorado B.S. Computer Science, with High Distinction	Boulder, CO	1998

EXPERIENCE

Google Software Engineering Manager • Mobile maps and navigation.	Seattle, WA	2011-present
Intel Labs Senior Scientist & Engineering Manager • I did research and manage the hardware and software engineering staff at Intel Labs Seattle. I also ran finances and operations for the lab. I previously co-led the Place Lab project which established the viability of the radio-beacon location technology that is a core capability in most modern smartphones and mobile devices.	Seattle, WA	2003-2011

- Predrag Klasnja, Sunny Consolvo, Tanzeem Choudhury, Richard Beckwith, and **Jeffrey Hightower**, "[Exploring Privacy Concerns about Personal Sensing](#)," in Proceedings of the Seventh International Conference on Pervasive Computing, (Nara, Japan), May 2009.
- Tanzeem Choudhury, Gaetano Borriello, Sunny Consolvo, Dirk Haehnel, Beverly Harrison, Bruce Hemingway, **Jeffrey Hightower**, Pedja Klasnja, Karl Koscher, Anthony LaMarca, Jonathan Lester, James Landay, Louis Legrand, Ali Rahimi, Adam Rea, and Danny Wyatt, "[The Mobile Sensing Platform: An Embedded System for Capturing and Recognizing Human Activities](#)," IEEE Pervasive Computing, vol. 7, no. 2, pp. 32-41, IEEE Computer Society Press, April-June 2008.
- Mike Chen, Dirk Haehnel, **Jeffrey Hightower**, Timothy Sohn, Anthony LaMarca, Ian Smith, Dmitri Chmelev, Jeff Hughes, and Fred Potter, "[Practical Metropolitan-scale Positioning for GSM Phones](#)," in Proceedings of the Eighth International Conference on Ubiquitous Computing (UbiComp 2006), Sep. 2006.
- Timothy Sohn, Alex Varshavsky, Anthony LaMarca, Mike Y. Chen, Tanzeem Choudhury, Ian Smith, Sunny Consolvo, **Jeffrey Hightower**, William G. Griswold, and Eyal de Lara, "[Mobility Detection Using Everyday GSM Traces](#)," in the Eighth International Conference on Ubiquitous Computing (UbiComp 2006), Sep. 2006.
- Anthony LaMarca, **Jeffrey Hightower**, Ian Smith, and Sunny Consolvo, "[Self-Mapping in 802.11 Location Systems](#)," in Proceedings of the Seventh International Conference on Ubiquitous Computing (UbiComp 2005), pp. 87-104, Sep. 2005.
- Anthony LaMarca, Yatin Chawathe, Sunny Consolvo, **Jeffrey Hightower**, Ian Smith, James Scott, Tim Sohn, James Howard, Jeff Hughes, Fred Potter, Jason Tabert, Pauline Powladge, Gaetano Borriello, and Bill Schilit, "[Place Lab: Device Positioning Using Radio Beacons in the Wild](#)," in Proceedings of the Third International Conference on Pervasive Computing (Pervasive 2005), May 2005.
- Dieter Fox, **Jeffrey Hightower**, Lin Liao, Dirk Schulz, and Gaetano Borriello, "[Bayesian Filtering for Location Estimation](#)," IEEE Pervasive Computing, vol. 2, no. 3, pp. 24-33, IEEE Computer Society Press, July-September 2003.
- **Jeffrey Hightower** and Gaetano Borriello, "[Location Systems for Ubiquitous Computing](#)," Computer, vol. 34, no. 8, pp. 57-66, IEEE Computer Society Press, Aug. 2001. (also excerpted in "IT Roadmap to a Geospatial Future," a 2003 report from the Computer Science and Telecommunications Board of the National Research Council).
- Dirk Schulz, Dieter Fox, and **Jeffrey Hightower**, "[People Tracking with Anonymous and ID-Sensors using Rao-Blackwellised Particle Filters](#)," in Proceedings of the Eighteenth International Joint Conference on Artificial Intelligence (IJCAI), pp. 921-926, Aug. 2003.

PATENTS

- Techniques for Automatically Distinguishing Between Users of a Handheld Device, #20100042564 *pending*

INTERNS

These great PhD students have worked with me as interns:

- Donnie Kim, *UCLA* 2010
- Sidhant Gupta, *University of Washington* 2009
- Keng-hao Chang, *UC Berkeley* 2008
- Sidhant Gupta, *Georgia Tech* 2008
- Daniel Klein, *University of Washington (now UC Santa Barbara)* 2007
- Patrick Hall, *University of Washington* 2006
- Alex Varshavsky, *University of Toronto (now AT&T Research)* 2005

SOFTWARE

- **Place Lab** Low-cost device positioning allowing notebooks and mobile devices to locate themselves by listening for radio beacons like 802.11 access points, GSM towers, and fixed Bluetooth devices that exist in large numbers in the environment. Clients privately compute their own location by hearing one or more IDs, looking up the associated beacons' positions in a locally cached map, and estimating their own position referenced to the beacons' positions.
- **The Location Stack** Software interfaces and services for building indoor location-aware systems. The Location Stack performs multisensor fusion using Bayes filters. Location-enhanced applications can be built on the probabilistic location interface.

SERVICE

Chairs and Editorships

- Program Chair, Pervasive 2011 2011
- Guest Editor, IEEE Pervasive Computing magazine 2010
- Program Chair, Symposium on Location and Context Awareness (LoCA) 2007

Student PhD Thesis Committees

- Pre-examiner for Petteri Nurmi, Helsinki Institute for Information Technology 2010

Program Committees

- Seventh International Conference on Pervasive Computing (Pervasive) 2009
- 4th International Symposium on Location and Context Awareness (LoCA) 2005,6,9
- IEEE Workshop on Mobile Computing Systems and Applications (HotMobile) 2009
- Workshop on Ubiquitous Systems Evaluation 2008 (USE) 2008
- IEEE Workshop on Mobile Computing Systems and Applications (HotMobile) 2007
- Workshop on Location Based Services for Health Care (LOCARE) 2006
- ACM Workshop on Wireless Mobile Apps and Services (WMASH) 2004,6

Peer Reviewing

- I regularly review for publications in mobile computing and related fields.

ASSOCIATIONS

Technical

- IEEE, IEEE Computer Society, IEEE Communications Society, member
- ACM, member
- Amateur Radio Relay League, member

Other, Personal

- Wilderness First Responder, Wilderness Medical Institute/NOLS certified
- Swiftwater Rescue Technician, Rescue3 International certified
- FCC licensed amateur radio operator KD7MTZ
- Professional Ski Instructors of America, Alpine Level II certified
- American Association of Snowboard Instructors, Level I certified