

# Timothy Sohn

1919 Cambridge Drive  
Mountain View, CA 94043

<http://timothysohn.com>  
timsohn@gmail.com  
650.353.7646

## Research Interests

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My broad research interests are in Human-Computer Interaction (HCI) and Ubiquitous Computing (UbiComp). I design, build, and evaluate new approaches to help mobile users address their information needs. My research approach explores the problems and challenges users face in the adoption of mobile computing technologies, which enables me to build technology to address these problems and study its use in real situations. My past work includes developing a GSM infrastructure for localization, building context-aware mobile applications, and exploring mobile interfaces for information streams. Most recently, I have been investigating the support of cross-device interaction, helping people continue tasks between their personal devices.

## Education

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Sept 2003 – June 2008 **Ph.D., Computer Science, University of California at San Diego**  
Thesis Title: *Addressing the Needs of Mobile Users*  
Advisors: William G. Griswold and James D. Hollan

Sept 2003 – June 2005 **M.S., Computer Science and Engineering, University of California at San Diego**  
Aug 1999 – May 2003 **B.S., Electrical Engineering and Computer Science, University of California at Berkeley**

## Professional Employment

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Aug 2008 – Present **Senior Research Scientist**, Nokia Research Center, Palo Alto  
Led the concept, design, and implementation of Myngle, a cross-device service that automatically classifies and tags webpages with relevant filters that mobile users typically need later. *Has led to work-in-progress paper [c.5] and conference papers [C.18, C.20].*

Developed a system that combines social media streams into a universal inbox and enables filtering around people and topics. *Has led to conference paper [C.15].*

Exploring new mobile interfaces and novel uses of mobile phone sensors. *Has led to conference papers [C.14, C.16, C.17, C.19].*

Sept 2003 – June 2008 **Research Assistant**, University of California at San Diego  
Created infrastructure and applications to support the needs of mobile users. Developed applications for location-based reminders and mobile peripheral cues. *Led to conference papers [C.3, C.4, C.5, C.11, C.12, C.13] and one technical report [T.5].*

Aug 2006 – Jan 2007 **Consultant**, Biztelligence.com  
Designed and implemented a prototype location-based application for Windows Mobile phones. The location infrastructure uses an 802.11-based positioning system in order to correctly locate the device and deliver relevant content (e.g., text/video).

Jun 2006 – Sep 2006 **Research Intern**, Motorola Labs  
Implemented a prototype for Motorola's social TV concept, enabling friends to watch TV together.

Apr 2006 – Jun 2006 **Teaching Assistant**, University of California at San Diego

Teaching assistant for undergraduate discrete mathematics course. Responsibilities included teaching discussion sections, tutoring students, and grading homework assignments and exams.

Jun 2005 – Dec 2005

**Research Intern**, Intel Research Seattle

Developed an algorithm that detects a person's mobility state (*i.e.* at a place, walking, driving) based solely on GSM signals. *Led to one conference paper [C.10] and one workshop paper [W.5].*

Helped implement the Privacy Observant Location System (POLLS). Analyzed GSM data from a 208-hour, 4350 km wardrive trace in the city of Seattle. *Led to two conference papers [C.9] and [C.6].*

Jun 2004 – Nov 2004

**Research Intern**, Intel Research Cambridge

Extended the Place Lab toolkit to use GSM and Bluetooth radios for beacon-based positioning in addition to 802.11. *Led to conference papers [C.2, C.8] and one poster [c.2].*

Jan 2002 – May 2003

**Research Assistant**, University of California at Berkeley

Designed and implemented tools to help end users build context-aware applications. *Led to one conference paper [C.7], one poster [c.1], and one technical report [T.1].*

Helped develop WebQuilt, a web logging and visualization system to assist web designers in performing remote usability testing. *Led to one conference paper [C.1].*

May 2002 – May 2003

**Software Engineer**, Cisco Systems

Helped design and write automation test code for the PIX Firewall Management Console. Used Winrunner to develop four different automation test suites

May 2001 – Aug 2001

**Research Intern**, Ericsson Bay Area Research Center

Implemented and tested the TCP-Friendly Rate Control mechanism to evaluate its performance over wireless links. Helped design and implement this congestion control mechanism in the Datagram Congestion Control Protocol (DCCP)

## Publications

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### Refereed Conference Papers

- [C.20] E. Bales, **T. Sohn**, V. Setlur. Exploring Cross-device Content Reaccess. To Appear in Pervasive 2011. [22% acceptance rate]
- [C.19] D. Dearman, **T. Sohn**, K. Truong. Opportunities Exist: Supporting the Development of Spatial Knowledge with Continuous Place Discovery for Activities. To Appear in CHI 2011. [26% acceptance rate]
- [C.18] **T. Sohn**, A. Battestini, H. Horii, E. Bales, V. Setlur, K. Mori. Supporting Unplanned Activities Through Cross-Device Interaction. To Appear in Automotive User Interfaces and Interactive Vehicular Applications (Automotive UI 2010). [48% acceptance rate]
- [C.17] K. Truong, J. Kientz, **T. Sohn**, A. Rosenzweig, A. Fonville, T. Smith. The Design and Evaluation of a Task-Centered Battery Interface. In Proceedings of the 12<sup>th</sup> International Conference on Ubiquitous Computing (UbiComp), Copenhagen, Denmark, pp. 341-350, 2010. [19% acceptance rate]
- [C.16] A. Battestini, V. Setlur, and **T. Sohn**. A Large Scale Study of Text-messaging Use. In Proceedings of the 12<sup>th</sup> International Conference on Human Computer Interaction with Mobile Devices and Services (MobileHCI), Lisbon, Portugal, pp. 229-238, 2010. [20% acceptance rate]
- [C.15] **T. Sohn**, V. Setlur, K. Mori, J. Kaye, H. Horii, A. Battestini, R. Ballagas, C. Paretto, M. Spasojevic. Addressing Mobile Information Overload in the Universal Inbox through Lenses. In Proceedings of the 12<sup>th</sup>

*International Conference on Human Computer Interaction with Mobile Devices and Services (MobileHCI), Lisbon, Portugal, pp. 361-364, 2010. [35% acceptance rate]*

- [C.14] V. Setlur, A. Battestini, **T. Sohn**, H. Horii. Using gestures on mobile phones to create SMS Comics. In *Proceedings of Tangible and Embedded Interaction 2010*, pp. 217-220, 2010. [34% acceptance rate]
- [C.13] K.A. Li, **T. Sohn**, S. Huang, and W.G. Griswold. PeopleTones: A System for Delivering Buddy Proximity Cues on Mobile Phones. In *Proceedings of Mobisys 2008*, pp. 160-173, 2008. [18% acceptance rate]
- [C.12] **T. Sohn**, K.A. Li, J. Hollan, and W.G. Griswold. A Diary Study of Mobile Information Needs. In *Proceedings of CHI 2008*. Florence, Italy, pp. 433-442, 2008. [22% acceptance rate]
- [C.11] C. C. Tsai, G. Lee, F. Raab, G. J. Norman, **T. Sohn**, W.G. Griswold, and K. Patrick. Usability and Feasibility of PmEB: A Mobile Phone Application for Monitoring Real Time Caloric Balance. In *Proceedings of the First International Conference Pervasive Computing Technologies for Healthcare*. Innsbruck, Austria, 2006.
- [C.10] **T. Sohn**, A. Varshavsky, A. LaMarca, M.Y. Chen, T. Choudhury, I. Smith, S. Consolvo, J. Hightower, W.G. Griswold, E. de Lara. Mobility Detection Using Everyday GSM Traces. In *Proceedings of the Eighth International Conference on Ubiquitous Computing (UbiComp)*. Irvine, California, pp. 212-224, 2006. [13% acceptance rate]
- [C.9] M.Y. Chen, **T. Sohn**, D. Chmelev, D. Haehnel, J. Hightower, J. Hughes, A. LaMarca, F. Potter, I. Smith, A. Varshavsky. Practical Metropolitan-Scale Positioning for GSM Phones. In *Proceedings of the Eighth International Conference on Ubiquitous Computing (UbiComp)*. Irvine, California, 2006. [13% acceptance rate]
- [C.8] **T. Sohn**, W.G. Griswold, J. Scott, A. LaMarca, Y. Chawathe, I. Smith, M.Y. Chen. Experiences with Place Lab: an Open Source Toolkit for Location-Aware Computing. In *Proceedings of ICSE 2006*, Experience Track. [18% acceptance rate]
- [C.7] A.K. Dey, **T. Sohn**, S. Streng, J. Kodama. iCAP: Interactive Prototyping of Context-Aware Applications. In *Proceedings of Fourth International Conference on Pervasive Computing*, Dublin, Ireland, 2006. [13% acceptance rate]
- [C.6] A. Varshavsky, M. Chen, E. de Lara, J. Froehlich, D. Haehnel, J. Hightower, A. LaMarca, F. Potter, **T. Sohn**, K. Tang, I. Smith. Are GSM phones THE solution for Localization? In *Proceedings of WMCSA 2006*. [30% acceptance rate]
- [C.5] **T. Sohn**, K.A. Li, G. Lee, I. Smith, J. Scott, W.G. Griswold. Place-Its: A Study of Location-Based Reminders on Mobile Phones. In *Proceedings of Seventh International Conference on Ubiquitous Computing (UbiComp 2005)*. Tokyo, Japan, pp. 232-250 2005. [9% acceptance rate]
- [C.4] G. Iachello, I. Smith, S. Consolvo, G.D. Abowd, J. Hughes, J. Howard, F. Potter, J. Scott, **T. Sohn**, J. Hightower, A. LaMarca. Control, Deception, and Communication: Evaluating the Deployment of a Location-Enhanced Messaging Service. In *Proceedings of Seventh International Conference on Ubiquitous Computing (UbiComp)*. Tokyo, Japan, pp. 213-231 2005. [9% acceptance rate]
- [C.3] I. Smith, S. Consolvo, A. LaMarca, J. Hightower, J. Scott, **T. Sohn**, J. Hughes, G. Iachello, G.D. Abowd. Social Disclosure of Place: From Location Technology to Communication Practice. In *Proceedings of Third International Conference on Pervasive Computing (Pervasive)*. Munich, Germany, pp. 134-151 2005. [15% acceptance rate]
- [C.2] A. LaMarca, Y. Chawathe, S. Consolvo, J. Hightower, I. Smith, J. Scott, **T. Sohn**, J. Howard, J. Hughes, F. Potter, J. Tabert, P. Powledge, G. Borriello, B. Schilit. Place Lab: Device Positioning Using Radio Beacons in the Wild. In *Proceedings of Third International Conference on Pervasive Computing (Pervasive)*. Munich, Germany, pp. 116-133 2005. [15% acceptance rate]
- [C.1] S.J. Waterson, J.I. Hong, **T. Sohn**, J. Heer, T. Matthews, J.A. Landay. What Did They Do? Understanding Clickstreams with the Webquilt Visualization System. In the *Proceedings of Advanced Visual Interfaces: AVI 2002*. Trento, Italy. pp. 94-102, 2002. [30% acceptance rate]

### Refereed Conference Posters

- [c.5] **T. Sohn**, Koichi Mori, and Vidya Setlur. Enabling cross-device interaction with web history. In *Extended Abstracts of CHI 2010*, pp. 3883-3888, 2010.
- [c.4] **T. Sohn**, Leila Takayama, Dean Eckles, and Rafael Ballagas. Auditory Priming for Upcoming Events. In *Extended Abstracts of CHI 2009*, pp. 4225-4230, 2009.

- [c.3] **T. Sohn**, Rafael Ballagas, and Leila Takayama. At Your Service: Using Butlers as a Model to Overcome the Mobile Attention Deficit. In Extended Abstracts of *CHI 2009*, pp. 4219-4224, 2009.
- [c.2] J.W. Scott and **T. Sohn**. Client-based Location-Sensing on Mobile Phones. In *6<sup>th</sup> IEEE Workshop on Mobile Computing Systems and Applications (WMCSA) 2004*.
- [c.1] **T. Sohn**, and A.K. Dey. iCAP: An Informal Tool for Interactive Prototyping of Context-Aware Applications. In Extended Abstracts of *Human Factors in Computing Systems: CHI 2003*, pp. 974-975, Apr. 5-10, 2003. [38% acceptance rate]

### Workshop Papers

- [W.6] **T. Sohn**. A Holistic Approach to Address Mobile Information Needs. In *UbiComp Mobile User Experience Workshop 2007*, Innsbruck, Austria.
- [W.5] I. Smith, M. Chen, A. Varshavsky, **T. Sohn**, K. Tang. Algorithms for Detecting Motion of a GSM Mobile Phone. In *ECSCW Workshop on Location-Awareness and Community 2005*, Paris, France
- [W.4] **T. Sohn**. Community-Oriented Programming through Instant Messaging. In Proceedings of the *IEEE Symposium on Visual Languages and Human-Centric Computing*, pp. 294-295. Sept. 26-29, 2003. (Presentation made in special NSF Funded Graduate Student Event on Designing for Diversity in End-User Development Tools)
- [W.3] **T. Sohn**. Building Attractive Location-Aware Applications. Presented at the 2004 Workshop on Location-Aware Computing: Applications, held in conjunction with UbiComp 2004.
- [W.2] **T. Sohn**. Context-Aware Computing Support for the Educationally Disadvantaged. In Proceedings of the *IEEE Symposium on Human Centric Computing Languages and Environments*, pp. 293-294. Oct. 28-31, 2003. (Presentation made in special NSF Funded Graduate Student Event on Programming for the Educationally Disadvantaged)
- [W.1] A.K. Dey. and **T. Sohn**. *Supporting End User Programming of Context-Aware Applications*. Presented at the CHI 2003 Workshop on Perspectives in End User Development

### Technical Reports

- [T.4] K.A. Li, **T. Sohn**, S. Huang, and W.G. Griswold. PeopleTones: Exploring Peripheral Cues in the Wild Using mobile Phones. CS2007-0888, University of California, San Diego.
- [T.3] **T. Sohn**, K.A. Li, W.G. Griswold, J. Hollan. A Diary Study of Mobile Information Needs. CS2007-0909, University of California, San Diego.
- [T.2] K.A. Li, **T. Sohn**. and W.G. Griswold. Evaluating Location-Based Reminders. CS2005-0826, University of California, San Diego.
- [T.1] **T. Sohn**, and A.K. Dey. Interactive Prototyping of Context-Aware Applications. IRB-TR-03-016, Intel Research Berkeley.

### Invited Talks

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- [IT.5] A Large-Scale Study of Text Messaging Use, Society of Behavioral Medicine, April 7, 2010.
- [IT.4] Understanding Mobile Users in Context, UC Berkeley iSchool, February 18, 2010.
- [IT.3] At Your Service: Using Butlers as a Model to Assist Mobile Users, UCSD School of Medicine, May 17, 2009.
- [IT.2] Addressing the Needs of Mobile Users, IBM Research Almaden, April 17, 2008.
- [IT.1] Addressing the Needs of Mobile Users, Nokia Research Center, Palo Alto, March 6, 2008.

### Selected Media Coverage

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- [M.2] Out of Many, One In-Box. MIT Technology Review, November 24, 2010.
- [M.1] What's the next big thing for the wireless industry? San Jose Mercury News, April 29, 2008

### Interns Supervised

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**Elizabeth Bales**, UCSD Computer Science (Winter/Spring 2010)

## Professional Activities

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Program Committee    ACM International Conference on Ubiquitous Computing (UbiComp) 2010  
International Conference on Mobile Computing, Applications, and Services (MobiCASE) 2009  
ACM Workshop on Mobile Computing Systems and Applications (HotMobile) 2009  
International Workshop on Location and Context Awareness (LoCa) 2009

Organizing Committee    *Posters Co-Chair*  
ACM International Conference on Ubiquitous Computing (UbiComp) 2011  
  
*Doctoral Consortium Chair*  
ACM Workshop on Mobile Computing Systems and Applications (HotMobile) 2010  
  
*Publications Co-Chair*  
ACM International Conference on Ubiquitous Computing (UbiComp) 2008  
  
*Publicity Co-Chair*  
ACM International Conference on Ubiquitous Computing (UbiComp) 2006

Reviewer    ACM International Conference on Ubiquitous Computing (UbiComp)  
ACM Human Factors in Computing Systems (CHI)  
ACM User Interface Software and Technology (UIST)  
ACM Computer Supported Cooperative Work (CSCW)  
International Conference on Pervasive Computing  
Usenix Technical Conference

## References

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Available on Request