

# Amy Hurst

PhD student, Human-Computer Interaction Institute, Carnegie Mellon

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<http://www.amyhurst.com>

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## Research Interests

I develop technology that is rooted in real world problems and is constrained by pre-existing human behaviors. My work has spanned many domains including assistive technology (C13-C18), design (C8-C12, J2), and mobile computing (C1-C7, J3). I have worked extensively with a variety of populations including individuals with severe cognitive or motor impairments, elders, and novice technology users. My passion for research comes from a desire to find how technology can make a positive impact on current social problems. This has led me to work on problems encountered by individuals with disabilities who have limited access to the opportunities provided by computers, and elders who have to move out of their homes and into assisted living facilities.

## Education

*Carnegie Mellon University*. PhD in Human-Computer Interaction (2003 – present) (pending)

*Carnegie Mellon University*. Masters in Human-Computer Interaction (2007)

*Georgia Institute of Technology*. Bachelors of Science in Computer Science (2003)

*Georgia Institute of Technology*. Certificate in Film Studies (2003)

## Awards

Richard King Mellon Presidential Fellowship in the Life Sciences (2009)

Google Anita Borg Scholarship (2008)

National Science Foundation Graduate Research Fellowship (2005)

## Employment

Research Assistant, Carnegie Mellon, Pittsburgh, PA (2005 – present)

Built tools and developed techniques to automatically detect user computer pointing behavior. Focused research on several contexts for detecting user needs, including motor impaired PC users, situationally impaired mobile PDA users, and novice users of a specific application. [C13-C18, W2]

Supervisors: Jennifer Mankoff and Scott E. Hudson

Publications:

Research Assistant, Carnegie Mellon, Pittsburgh, PA (2003-2005)

Designed and built fabric sensors to help enable elders to live at home longer. These sensors were built cover the whole chair, or just an arm rest cover to turn an elder's favorite lounge chair into a ubiquitous computing sensing device. [J2, C9-C12, W1]

Supervisors: Chris Atkeson and John Zimmerman

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Summer Intern, PARC, Palo Alto, CA (1999, 2000, 2001, 2003)

2003: Designed and Prototyped techniques to display large images on small displays.  
Supervisor: Ruth Rosenholtz

2000 & 2001: Worked on the Sotto Voce Project to design and create several iterations of an electronic guidebook on a PDA to facilitate interaction between guests in historic houses and to provide on-demand information. [J3, C1- C7, P1]

Supervisors: Paul Aoki, Allison Woodruff

1999: BibTeX Duplicated and organized publications for a publications database.  
Supervisors: Stu Card, Allison Woodruff

Research Assistant, Georgia Institute of Technology, Atlanta, GA with Dr. Tucker Balch (2002-2003)

Wrote program to perform color tracking of marked bees from video of a beehive and created user interface for biologists to watch tracked bees in video recordings.

Research Assistant, Georgia Institute of Technology, Atlanta, GA, with Dr. Thad Starner (2000-2003)

Collaborated with physicians and computer scientists to design and develop system to measure the manual dexterity of Parkinson's patients using a pressure sensitive tablet display. Evaluated system at Emory University Brain Clinic with individuals with Parkinson's Disease.

Built 3D animations that were used in an interactive pool game driven by the perspective workbench. [J1]

## Teaching Experience

Instructor, Carnegie Mellon, Human-Computer Interaction Institute: Human Computer Interaction for Computer Science (2007)

Co-taught project-based introduction course to the field of Human Computer Interaction designed for undergraduate students with Dr. Carolyn Rose, Dr. Lisa Anthony, and Karen Tang. As a co-teacher I wrote and gave one third of the lectures, helped write and grade assignments, and advised student projects.

Teaching Assistant, Carnegie Mellon, Human-Computer Interaction Institute: Programming Usable Interfaces (2006)

Assisted Dr. Scott E. Hudson teach this introductory course for masters students and senior undergraduates. As a TA in this course, I taught lectures on high and low fidelity prototyping, and several tutorials on Visual Basic and Flash. I also helped students build prototypes and iterate on their designs.

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## Service

CHI'2009 Work-in-Progress Program Committee Member (2009)

Co-president of Student Body in Quality of Life Technology Center ([www.QoLT.org](http://www.QoLT.org)) (2007-2009)

Founder of Quality of Life Technology Center Undergraduate Research Program (2008)

Member of United Cerebral Palsy Pittsburgh's Technology Committee (2008-2009)

Volunteer for United Cerebral Palsy Pittsburgh as a co-instructor in computer classes (2007-2009)

Volunteer for International Vision Volunteers in Zimba, Zambia. Helped teach local children about dental care (2007)

## Management Experience

Managed 2 Computer Science Masters students, 1 staff member and 10 undergraduates on my PhD thesis work between 2004-2009. I have managed people who performed a wide range of tasks including conducting user evaluations, designing prototypes and writing code. The efforts of these individuals were valuable contributions to several of my research papers.

Served two one-year terms as the co-president of the student group in the Quality of Life Technology Center (<http://www.qolt.org>). In this office, I helped manage a group of 10 student leaders to organize many research, social and outreach events for the center's 60 graduate students.

Founded an undergraduate research program for the Quality of Life Technology center in 2008. This program has enabled 12 undergraduates to work on research projects with a graduate and faculty mentor. Several of these students stayed in the program for multiple semesters and significantly contributed to their projects.

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## Publications

### Journal Articles

- [J.3] M. H. Szymanski, P.M. Aoki, R.E. Grinter, A. Hurst, J.D. Thornton, and A. Woodruff, Sotto Voce: Facilitating Social Learning in a Historic House. *Computer Supported Cooperative Work* 17 (1), 2008, 5-34.
- [J.2] J. Zimmerman, A. Hurst, and M. M. R. Peeters, Fabric-circle-slider: Prototype Exploring the Interaction Aesthetic of Contextual Integration. *Journal of Knowledge, Technology, and Policy*, 20 (1), 2007), 51-57.
- [J.1] T. Starner, B. Leibe, D. Minnen, T. Westyn, A. Hurst, and J. Weeks, Computer Vision-Based Gesture Tracking, Object Tracking, and 3D Reconstruction for Augmented Desks. *Machine Vision and Applications*, 14 (1), 2003, 59-71.

### Peer Reviewed Conference Papers

- [C.18] A. Hurst, S. E. Hudson, and J. Mankoff, Automatically Identifying Targets Users Interact With During Real World Tasks. In *Intelligent User Interfaces (IUI)*, 2010, (to appear).
- [C.17] A. Hurst, J. Mankoff, and S.E. Hudson, Understanding Pointing Problems in Real World Computing Environments. In *ACM SIGCHI Conference on Computers and Accessibility (ASSETS)*, (Halifax, Nova Scotia, Canada, 2008), 43-50.
- [C.16] A. Hurst, S. E. Hudson, J. Mankoff, and S. Trewin, Automatically Detecting Pointing Performance. In *Intelligent User Interfaces (IUI)*, (Canary Islands, Spain, 2008), 11-19.
- [C.15] A. Hurst, J. Mankoff, A. Dey, and S. E. Hudson, Dirty Desktops: Using a Patina of Magnetic Mouse Dust to Make Common Interactor Targets Easier to Select. In *ACM Symposium on User Interface Software and Technology (UIST)*, (Newport, RI, 2007), 183-186.
- [C.14] A. Hurst, S.E. Hudson, and J. Mankoff, Dynamic Detection of Novice vs. Skilled Use Without a Task Model. In *ACM SIGCHI Conference on Human Factors in Computing Systems (CHI)*, (San Jose, CA, 2007), 271-280.
- [C.13] S. Carter, A. Hurst, J. Mankoff, and J. Li, Dynamically Adapting GUIs to Diverse Input Devices. In *ACM SIGACCESS Conference on Computers and Accessibility (ASSETS)*, (Portland, OR, 2006), 63-70.
- [C.12] A. Hurst, J. Zimmerman, and M. Peeters, Fabric-circle-slider: Prototype Exploring the Interaction Aesthetic of Contextual Integration. In *Designing Pleasurable Products and Interfaces (DPPI)* (Eindhoven, The Netherlands,

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2005), 272-282.

- [C.11] J. Forlizzi, C. DiSalvo, J. Zimmerman, B. Mutlu, and A. Hurst, 2005. The SenseChair: the Lounge Chair as an Intelligent Assistive Device for Elders. In Conference on Designing For User Experience (DuX), (San Francisco, CA, 2005), Volume 135, 31.
- [C.10] N. Jafarinaimi, J. Forlizzi, A. Hurst, and J. Zimmerman, Breakaway: an Ambient Display Designed to Change Human Behavior. In ACM SIGCHI Conference on Human Factors in Computing Systems (CHI), (Portland, OR, 2005), 1945 – 1948.
- [C.9] A. Hurst, J. Zimmerman, C. Atkeson, and J. Forlizzi, The Sense Lounger: Establishing a Ubicomp Beachhead in Elders' Homes. In ACM SIGCHI Conference on Human factors in Computing Systems (CHI), (Portland, OR, 2005), 1467 – 1470.
- [C.8] D. Holstius, J. Kembel, A. Hurst, P. Wan, and J. Forlizzi, Infotropism: Living and Robotic Plants as Interactive Displays. In ACM Conference on Designing Interactive Systems: processes, practices, methods, and techniques (DIS), (Cambridge, MA, 2004), 215 – 221.
- [C.7] A. Woodruff, P.M. Aoki, R.E. Grinter, A. Hurst, M.H. Szymanski, and J.D. Thornton, Eavesdropping on Electronic Guidebooks: Observing Learning Resources in Shared Listening Environments. In Museums and the Web (MW), (Boston, MA, 2002), 21-30.
- [C.6] P.M. Aoki, R.E. Grinter, A. Hurst, M.H. Szymanski, J.D. Thornton, and A. Woodruff, Sotto Voce: Exploring the Interplay of Conversation and Mobile Audio Spaces. In ACM SIGCHI Conference on Human Factors in Computing Systems (CHI), (Minneapolis, MN, 2002), 431-438.
- [C.5] R.E. Grinter, P.M. Aoki, A. Hurst, M.H. Szymanski, J.D. Thornton, and A. Woodruff, Revisiting the Visit: Understanding How Technology Can Shape the Museum Visit. In ACM Conference on Computer Supported Cooperative Work (CSCW), (New Orleans, LA, 2002), 146-155.
- [C.4] A. Woodruff, P.M. Aoki, A. Hurst, and M.H. Szymanski, Electronic Guidebooks and Visitor Attention. In Cultural Heritage Informatics Meeting (ICHIM), (Milan, Italy, 2001), 437-454.
- [C.3] A. Woodruff, M.H. Szymanski, P.M. Aoki, and A. Hurst, The Conversational Role of Electronic Guidebooks. In ACM Conference on Ubiquitous Computing (UbiComp), (Atlanta, GA, 2001), 187-208.
- [C.2] A. Woodruff, P.M. Aoki, A. Hurst, and M.H. Szymanski, The Guidebook, the Friend, and the Room: Visitor Experience in a Historic House. In ACM SIGCHI Conference on Human Factors in Computing Systems (CHI),

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(Seattle, WA, 2001), 273-274.

- [C.1] P.M. Aoki, A. Hurst, and A. Woodruff, Tap Tips: Lightweight Discovery of Touchscreen Targets. In ACM SIGCHI Conference on Human Factors in Computing Systems (CHI), (Seattle, WA, 2001), 237-238.

## Workshop and Other Publications

- [W.2] A. Hurst, Automatic Assessment and Adaptation to Real World Pointing Performance. In ACM SIGACCESS Accessibility and Computing, 93, (2009), 4-10.
- [W.1] A. Hurst and J. Zimmerman, Evaluating a Fabric Device Controller. in Workshop W14: Innovative Approaches to Evaluating Affective Interfaces. In ACM SIGCHI Conference on Human Factors in Computing Systems (CHI), (Portland, OR, 2005).

## Doctoral Consortium Participant

- [D.3] ACM Symposium on User Interface Software and Technology (UIST), (Monterrey, CA, October, 2008).
- [D.2] ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), (Halifax, Nova Scotia, CA, October, 2008).
- [D.1] International Symposium on Wearable Computers (ISWC), (Pittsburgh, PA, September, 2008).

## Artifacts and Patents

- [P.1] P.M. Aoki, R.R. Burton, A. Hurst, and A. Woodruff, "Feedback Mechanism for Use with Visual Selection Mechanisms," U.S. Patent Application Ser. 09/906,667, July 2001.