

Matthew L. Lee

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Curriculum Vitae

RESEARCH INTERESTS

My expertise lies at the intersection of human-computer interaction, mobile health, Internet-of-Things, patient-generated health data, and building applications to address real-world problems in collaboration, healthcare, and wellness.

My work brings about the future of mobile and ubiquitous computing by tracking and making sense of Observations of Daily Living from in people's everyday lives to reveal rich patterns about people's behaviors, help people achieve their goals, and enable meaningful patient-doctor communication.

I have designed, built, and deployed systems that intelligently sense and record life logs of people's everyday behaviors for reflection. I have studied the processes people use to make sense of detailed, long-term sensor data about their everyday behaviors for behavior change.

My way of working spans the entire cycle of user-centered design, starting with uncovering hidden user needs, designing and building systems to address user needs, evaluating their effectiveness, and rapidly iterating towards a more ideal solution.

EDUCATION

- 2012 **Ph.D. in Human-Computer Interaction**
Carnegie Mellon University, School of Computer Science
Thesis: Task-based Embedded Assessment of Functional Abilities for Aging in Place
Committee: Anind K. Dey (chair), Scott Hudson, Sara Kiesler, Judith Matthews, Elizabeth Mynatt
- 2009 **M.S. Computer Science**
Carnegie Mellon University, School of Computer Science
- 2003 **B.A. Cognitive Science & Computer Science**
University of California, Berkeley
- 2002 **Visiting Scholar**
Oxford University, St. Catherine's College

HONORS + AWARDS

- 2014 Best Paper Award, CHI 2014
- 2011 Best Paper Honorable Mention, CHI 2011
- 2011 Intel PhD Fellowship Nomination by School of Computer Science
- 2010 \$480,000 ProjectHealth Design Grant, Robert Wood Johnson Foundation
- 2008, 2009, 2011 Elevator Pitch Competition, First Place, Quality of Life Technology Center
- 2006-08 NSF Graduate Fellowship in Assistive Technology, IGERT program
- 2006 NSF Graduate Research Fellowship, Honorable Mention
- 2002 Phi Beta Kappa, UC Berkeley
- 1999-2003 National Merit Scholarship, Finalist and Scholar

- 1999-2001 Dean's List, UC Berkeley
- 1999 Leadership Scholarship, California Alumni Association

PROFESSIONAL EXPERIENCE

- 2012-present **Philips Research North America**, Briarcliff Manor, NY
Member of Research Staff
- Started, led, and grew a Personal Health research group (now at 4 full-time PhDs, and growing)
 - Established research agenda in personal health informatics and secured corporate funding
 - Developed solutions to enhance collaboration and communication between patients and doctors
- 2005-2012 **Carnegie Mellon University**, Human-Computer Interaction Institute, Pittsburgh, PA
Graduate Research Assistant
- Designed, built, and evaluated sensor system to unobtrusively capture observations of daily living (ODLs) for self-reflection and collaboration with clinicians to maintain independence.
 - Designed, built, and evaluated multimodal lifelogging system for people with memory impairments.
- 2006 **Microsoft Research**, Computer-Mediated Living Group, Cambridge, United Kingdom
Research Intern
- Evaluated SenseCam, a wearable camera, as a memory aid for people with memory impairments.
- 2004-2005 **Oracle Corporation**, ADF Faces Team, Redwood Shores, CA
Member of Technical Staff
- Developed UI framework for rich client applications.
- 2002-2003 **University of California, Berkeley**, EECS Department, Berkeley, CA
Teaching Assistant, CS160: User Interface Design
Lab Assistant, CS3: Introduction to Symbolic Programming
- 2003 **Lockheed Martin Corporation**, Advanced Technology Center, Sunnyvale, CA
Senior Specialist Intern
- 2002 **Group for User Interface Research**, UC Berkeley, Berkeley, CA
Undergraduate Researcher
- 2001 **BravoBrava!**, Play Team, Emeryville, CA
Research and Development Intern

PUBLICATIONS | Google Scholar: <http://goo.gl/MJfsjO>

- CONFERENCE PAPERS
- Real-time Feedback to Improve Medication Taking**
Matthew L. Lee & Anind K. Dey
Conference on Human Factors in Computing Systems (CHI'14), Toronto, BC, Canada, 2014. (22.8%)
Best Paper Award (top 1%)
- Reflecting on Pills and Phone Use: Supporting Awareness of Functional Abilities for Older Adults.**
Matthew L. Lee & Anind K. Dey
Conference on Human Factors in Computing Systems (CHI'11), Vancouver, BC, Canada, 2011. (23%)
Best Paper Honorable Mention (top 5%)
- Embedded Assessment of Older Adults: A Concept Validation.**
Matthew L. Lee & Anind K. Dey
Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth), Munich, Germany, 2010.
- Lifelogging Memory Appliance for People with Episodic Memory Impairment.**
Matthew L. Lee & Anind K. Dey
Conference on Ubiquitous Computing (Ubicomp'08), Seoul, Korea, 2008.

Providing Good Memory Cues for People with Episodic Memory Impairment

Matthew L. Lee & Anind K. Dey

Conference on Computers and Accessibility (ASSETS'07), Phoenix, AZ, USA, 2007.

Connected Giving: Ordinary People Coordinating Disaster Relief on the Internet.

Cristen Torrey, Matthew Lee, Moira Burke, Anind Dey, Susan Fussell, & Sara Kiesler

Hawaii International Conference on Science Systems (HICSS'07), Manoa, HI, USA, 2007.

MiTV: Rethinking Interactive TV.

Jehan Bing, Jérôme Dubreuil, Joanes Espanol, Luc Julia, Matthew Lee, Martin Loyer and Makloul Serghine

Conference on Virtual Systems and Multimedia (VSMM'01), Berkeley, CA, 2001.

JOURNAL ARTICLES

Sensor-based Observations of Daily Living for Aging in Place

Matthew L. Lee & Anind K. Dey

Personal and Ubiquitous Computing. September 2014, pages 1-17.

BOOK CHAPTERS /
MAGAZINE ARTICLES

Did I take my meds today?

Matthew L. Lee

XRDS: Crossroads – Health Informatics. Vol 21, Issue 2, Winter 2014, pages 38-43.

Architecture and Applications of Virtual Coaches

Matthew L. Lee (contrib.), Daniel Siewiorek, Asim Smailagic, & Anind Dey

In *Quality of Life Technology Handbook*, Richard Schulz (Ed.) CRC Press, 2012

Smart Lifelogging Technology for Episodic Memory Support.

Matthew L. Lee & Anind K. Dey

Smart Healthcare Applications and Services: Developments and Practices, Röcker, C. & Ziefle, M. (Eds.) IGI Global, 2011.

Approaches to Authority in Online Disaster Relief Communities after Hurricane Katrina.

Cristen Torrey, Moira Burke, Matthew Lee, Anind Dey, Susan Fussell, & Sara Kiesler

Leadership at a Distance, L. and Weisband, S. (Eds.). Atwater, 2008.

SHORT PAPERS

Wearable Experience Capture for People with Episodic Memory Impairment.

Matthew L. Lee & Anind K. Dey

International Symposium on Wearable Computing (ISWC'08), Pittsburgh, PA, 2008

Capture and Access Lifelogging Assistive Technology for People with Episodic Memory Impairment.

Matthew L. Lee & Anind K. Dey

Workshop on Intelligent Systems for Assisted Cognition, Rochester, NY, 2007.

TrinetraOCR: Augmented camera phone for the visually-impaired.

Tudor Dumitras, Matthew L. Lee, & Pablo Quinones

International Symposium on Wearable Computing (ISWC'06), Montreux, Switzerland, 2006.

Capturing and Reviewing Context in Memory Aids.

Matthew L. Lee & Anind K. Dey

CHI Workshop on Designing Technology for People with Cognitive Impairments, Montreal, Canada, 2006.

DOCTORAL COLLOQUIA

Creating salient summaries of home activity lifelog data.

Matthew L. Lee

ACM Conference on Human Factors in Computing Systems (CHI '10), Atlanta, GA, USA, 2010.

Embedded Assessment of Wellness with Smart Home Sensors

Matthew L. Lee

ACM Conference on Ubiquitous Computing (Ubicomp'10), Copenhagen, Denmark, 2010.

Supporting Awareness of Functional Abilities for Older Adults, their Caregivers, and Clinicians

Matthew L. Lee

American Medical Informatics Association Annual Symposium (AMIA'10), Washington D.C., USA, 2010.

INVITED TALKS

- 2015 **"Better Communication and Collaboration Among Informal Caregivers"**
Chronic Disease Management Department, Philips Research, March 2015
- 2014 **"Finding and Getting an Industry Research Job"**
PervasiveHealth Doctoral Consortium, May 2014
- 2012 **"dwellSense: Wellness Through Sensing and Reflection"**
Health 2.0 Conference, San Francisco, CA, October 2012
- 2012 **"Sensing and Sense-making of Everyday Actions"**
HCI Seminar, University of Wisconsin at Madison, April 2012
- 2011 **"Designing and Evaluating Technology for Older Adults"**
TAGLab, University of Toronto, Toronto, ON, Canada, 2011.
- 2011 **"Older Adults Reflecting on Home Sensor Data"**
International Symposium on Quality of Life Technology, Toronto, ON, Canada, 2011.
- 2010 **"The State of the Art in Computer Assisted Cognition"**
Wilkinsburg Rotary Club, Wilkinsburg, PA, 2010.
- 2009 **"Creating Salient Summaries for People with Episodic Memory Impairment"**
First Annual SenseCam Conference, Chicago, IL, 2009.
- 2008 **"Lifelogging as Memory Support"**
Assistive Tech Seminar, College of Engineering, University of Colorado, Boulder
- 2007 **"Capture and Access Lifelogging Assistive Technology for Episodic Memory Impairment"**
Workshop on Intelligent Systems for Assisted Cognition, Rochester, NY, 2007.

PATENT FILINGS

- 2015 **Method and apparatus for building supportive relationships and communication using context-sensitive prompts**
- 2014 **Personalized Patient Decision Support For Choosing Self-Care Behaviors**
- 2014 **Supporting Patient-Centeredness in Telehealth Communications**
- 2009 **Apparatuses and Methods for Lifelogging**
- 2001 **System and method for interactive television**

SELECTED MEDIA COVERAGE

- July 2014 **Je m'enregistre, donc je suis ("I register, therefore I am")** <http://goo.gl/4IRiU6>
Le Temps
- September 2010 **Technology Solutions for Age-Related Ills** <http://goo.gl/TqPz0w>
AARP Bulletin
- March 2010 **A Little Black Box to Jog Failing Memory** <http://goo.gl/FMfDZu>
New York Times
- March 2010 **CMU to research sensors to track elderly** <http://goo.gl/DqAAYA>
Pittsburgh Post-Gazette
- March 2010 **Testing the Ability of Embedded Sensors to Detect Onset of Dementia, Infirmary** <http://goo.gl/USLkvt>
Medical News Today
- January 2010 **A Helping Hand from a Robot** <http://goo.gl/XMyVg7>
IEEE Spectrum & National Public Radio & National Science Foundation

GRANTS

- 2009 **Embedded Assessment of Elder Activities for Augmenting Personal Health Records**
ProjectHealth Design Grant, Robert Wood Johnson Foundation
\$480,000 / 2yrs, Co-written with Anind K. Dey
- 2006 **Capturing and Reviewing Context for Memory Support**
Microsoft Research, Digital Memory (Memex) Award,
\$50,000 / 1yr, Co-written with Anind K. Dey

TEACHING

- 2015 **“UbiComp: From Vision to Reality”**
Guest Lecture, Cornell Tech, February 2015
- 2009 **Human-Computer Interaction Methods** (05-610), 60 students
HCI Institute, Carnegie Mellon University
Teaching Assistant for Bonnie John & John Zimmerman
- 2008 **Software Architectures for User Interfaces** (05-613), 45 students
HCI Institute, Carnegie Mellon University
Teaching Assistant for Scott Hudson
- 2003 **User Interface Design** (CS 160), 40 students
EECS Department, University of California, Berkeley
Teaching Assistant for Jennifer Mankoff

STUDENTS MENTORED

- 2013 Berthel Tate, Ph.D. in Computer Science, Bowie State University
- 2012 Kelechi Anyadiegwu M.S. Human-Computer Interaction, CMU (class of 2013)
- 2011 Faye Han, M.S. Human-Computer Interaction, CMU (class of 2012)
- 2011 Vinay Vemuri, B.S. Computer Science, CMU (class of 2013)
- 2010-11 Xiuyuan Zhang, B.S. Computer Science, CMU (class of 2014)
- 2010 William Livingston, B.S. Rehabilitation Science, University of Pittsburgh (class of 2011)
- 2009-10 Clive Myrie, B.S. Electrical Engineering, CMU (class of 2011)
- 2009 Jonpaul Zelik, B.S. Industrial Eng., Ohio State Univ. (c/o 2010), now pursuing PhD at Univ. of Texas, Austin
- 2009 Rohith Salim, B.S. Computer Science, CMU (class of 2012)
- 2009 Joyce Xu, B.S. Computer Science, CMU (class of 2011)
- 2008-09 Akshay Goel, B.S. Computer Science, Chemistry, CMU (class of 2009)
- 2007 Jose Ramon Torres, B.S. Computer Science, University of Puerto Rico (class of 2009)

PROFESSIONAL ACTIVITIES / SERVICE

- 2015 PervasiveHealth Conference, Technical Program Committee
- 2014 CHI 2015 Conference, Associate Chair, Technical Program Committee Member
- 2014 HCI-Korea, Doctoral Consortium Panelist
- 2014 PervasiveHealth Conference, Technical Program Committee & Doctoral Consortium Panelist
- 2013 PervasiveHealth Conference, Technical Program Committee
- 2012 UbiComp 2012 Conference, Publications Chair
- 2011 CHI 2012 Workshops Committee/Jury Member
- 2011 Journal Reviewer, Journal of Pervasive and Mobile Computing
- 2009-10 CHI Works-in-Progress, Committee Member
- 2009 Journal Reviewer, Memory Journal
- 2007-11 Student Leadership Council, Quality of Life Technology Center, Research Chair and President
- 2006 Journal Reviewer, International Journal of Human-Computer Studies

REFERENCES

available upon request