Final Program

UBICOMP 2009
11th International Conference on Ubiquitous Computing

Sep 30 - Oct 3, 2009, Orlando, Florida, USA
Disney’s Yacht & Beach Club Resort
# Program at a Glance

## Tuesday, September 29, 2009 - Doctoral Colloquium

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<td>19:00 - 21:00</td>
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## Wednesday, September 30, 2009 - Workshops

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<td>MELT, DIPSO, Globicomp, HDP, Archibots, PerEd</td>
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## Thursday, October 1, 2009. Technical Program - Day 1

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<td>Paper Session #1, #2</td>
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<td>16:00 - 17:00</td>
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<td>Panel</td>
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<td>Town Hall Meeting</td>
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<td>Conference Banquet</td>
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## Saturday, October 3, 2009 - Technical Program - Day 3

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<td>Paper Session #7, #8</td>
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<td>03:45 - 15:00</td>
<td>Closing Panel</td>
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<td>15:30 - 17:05</td>
<td>Keynote II &amp; Closing Remarks</td>
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Keynote I

Poor Man's Ubicomp

Dr. Henry Tirri (Sr. Vice President and Head of Nokia Research Center, Nokia)

Abstract: Ubicomp is usually defined as a post-desktop model of human-computer interaction in which information processing has been thoroughly integrated into everyday objects and activities. The observation that modern mobile phones are radio equipped computers with a growing ability to sense their surroundings via embedded sensors (camera, GPS, accelerometer etc.) allows us to discuss a "poor man's" version of ubicomp - pervasive computing enabled by networks of "standard" mobile phones. The handsets are always with us, but unlike a passive device like a watch, they are frequently "activated" to help us absorb and broadcast information. Because of the global pervasiveness of these devices they form a potential sensing network with billions of sensors without any new additional infrastructure. As a result of this connectivity and location-awareness, combined with the mobile device's ability to record the usage patterns of its user, it can measure context information in ways that has not been possible ever before; not just any context but context of the life of people. Due to the law of large numbers, we can collect context data on the macrotrends of society and build services that help us to tap into the pulse of the activities surrounding us (such as traffic, weather, shopping, diseases, environmental changes). The first steps in this poor man's ubiquitous computing are already a reality but it is also evolving fast. In this talk we will discuss the challenges and opportunities of building services based on mobile phone ubiquity.

Biography: Dr. Henry Tirri is SVP and Head of Nokia Research Center (NRC). Nokia Research Center drives breakthroughs that reach far into the future, enabling new business opportunities for Nokia. As Head of Nokia Research Center, Henry is responsible for labs worldwide that pursue disruptive innovation. NRC works closely with all Nokia operating units and promotes open innovation, working on research projects in collaboration with leading universities and research institutes around the world.

Henry joined Nokia in 2004 as a Research Fellow in the Software and Applications Laboratory. Henry holds a Ph.D. in Computer Science from the University of Helsinki, Finland. In addition to his Nokia role, he is also an Adjunct Professor of Computer Science at the University of Helsinki and an Adjunct Professor of Computational Engineering at the Helsinki University of Technology. He has extensive experience in running research activities in the fields of intelligent systems and networking and his personal research interests span artificial intelligence, information theory, search technologies and wireless sensor networks.

Before joining Nokia, Henry was a Professor of Computer Science and Head of the Graduate School and the Intelligent Systems Laboratory at the University of Helsinki, leading a large, world-class research group in probabilistic modeling. Previous positions include working as a Research Scientist at Microelectronics and Computer Technology Corporation (MCC), MTS at AT&T Bell Laboratories, Visiting Scientist at NASA AMES where he contributed to the Mars Rover technology for the 2003 mission.

In the academic world, Henry has been a Visiting Professor at Stanford University and the University of California at Berkeley. He was also Vice President of Scientific Operations and Co-Founder of Ekahau. He is the author and co-author of more than 175 academic papers in various fields of computer science, social sciences and statistics and holds five patents.
Keynote II

Honest Signals from Reality Mining

Prof. Alex (Sandy) Pentland  (Massachusetts Institute of Technology)

Abstract: We have developed the technology of reality mining, which uses sensor data to extract subtle patterns that predict future human behavior. These predictive patterns are based on "honest signals," which are human behaviors that evolved from ancient primate signaling mechanisms, and which are major factors in human decision making in everything from job interviews to first dates. By building interfaces based on honest signals, we have been able to obtain dramatic improvements in human-machine systems.

Biography: Professor Alex ("Sandy") Pentland's focus is the development of human-centered technology, and the creation of ventures that take this technology into the real world. He directs the Human Dynamics Lab, helping companies to become more productive and creative through organizational engineering, and the Media Lab Entrepreneurship Program, established to facilitate technology commercialization. He is among the most-cited computer scientists in the world, and in 1997 Newsweek magazine named him one of the 100 Americans likely to shape this century. More recently his work was named ‘breakthrough idea of the year’ by Harvard Business Review and one of ‘10 technologies poised to change the world’ by Technology Review.
Tuesday, September 29, 2009

Doctoral Colloquium

Chairs: Andreas Butz (Ludwig-Maximilians-Universitaet, Germany)
Raja Bose (Nokia Research Center, USA)

07:45-08:00 Bus pickup from Disney Yacht & Beach Club to University of Central Florida. **Pickup location:** In front of the main entrance of the Yacht & Beach Club Convention Center. *All sessions will be held in the Harris Corporation Engineering Center (HEC) Conference Room, University of Central Florida, Orlando.*

08:45-09:00 Continental Breakfast

09:00-09:15 Welcome address and Introduction to the Panelists.

09:15-10:45 **Session I: (Chairs: Andreas Butz and Raja Bose)**

- **Addressing Fluidity Through Mixed Technical-Design Practices**
  Lucian Leahu, Cornell University
- **Investigating Techno-Spiritual Practices Among Culturally Different Religious Groups**
  Susan P. Wyche, Georgia Tech
- **Sensing and Feedback of Everyday Activities to Promote Environmentally Sustainable Behaviors**
  Jon Froehlich, University of Washington

10:45-11:00 Coffee Break

11:00-12:30 **Session II: (Chairs: Andreas Butz and Raja Bose)**

- **Beyond Counting Steps: Using Context to Improve Monitoring of Physical Activity**
  Ian Li, Carnegie Mellon University
- **Supporting Mobile Multitasking with Wearable Tactile Displays**
  Seungyon Lee, Georgia Tech
- **Through-the-Display Interaction in Heterogeneous Multi-Display Environments**
  Sebastian Boring, University of Munich

12:30-14:00 Lunch Break (Lunch provided)

14:00-15:30 **Session III: (Chairs: Andreas Butz and Raja Bose)**

- **Child’s Play: Activity Recognition for Observing Children’s Developmental Progress with Augmented Toys**
  Tracy Westeyn, Georgia Tech
- **Advanced Natural and Tangible Interfaces for Spatial Information**
  Johannes Schöning, Deutsche Forschungszentrum für Künstliche Intelligenz (DFKI)
- **Limited-Infrastructure Indoor Localization using Existing Building Power**
15:30-15:45 Coffee Break

15:45-17:15 **Session IV: Concluding Panel (Chairs: Andreas Butz and Raja Bose)**

- Panelists: Gregory Abowd (Georgia Tech), Rafael Ballagas (Nokia Research Center), AJ Brush (Microsoft Research), Tanzeem Choudhury (Dartmouth College), Hani Hagras (University of Essex), Joe McCarthy (Strands)
- Panel feedback and discussion. Panelists will also report on their Ph.D. experiences and provide advice on how to navigate successfully through a Ph.D.

17:30 Bus Pickup (back to Disney Yacht & Beach Club).

19:00-21:00 Doctoral Colloquium Dinner. Information about dinner arrangement is available from Ubicomp website.
Wednesday, September 30, 2009

Workshops
Chair: Jakob Bardram (IT University of Copenhagen, Denmark)

- Morning Coffee Break will be served 10:30-11:30
- Afternoon Coffee Break will be served 15:30-16:30
- Lunch (on your own)

8:30-17:00
Salon 1

Workshop 1
The 2nd International Workshop on Mobile Entity Localization and Tracking in GPSless Environments (MELT 2009)
Location: Salon 1
Organizers: Richard Fuller (Wireless Communications Alliance, USA)
Xenofon Koutsoukos (Vanderbilt University, USA)
Ying Zhang (Palo Alto Research Center)
Andras Nadas (Vanderbilt University, USA)
Isaac Amundson (Vanderbilt University, USA)

- MGALE: A Modified Geometry-Assisted Location Estimation Algorithm Reducing Location Estimation Error in 2D Case under NLOS Environments
  Pampa Sadhukhan (Jadavpur University), Pradip K. Das (Mody Institute of Technology & Science)

- Predicting User-Cell Association in Cellular Networks from Tracked Data
  Katerina Dufkova (Czech Technical University in Prague), Jean-Yves Le Boudec (EPFL), Lukas Kencl (Czech Technical University in Prague), Milan Bjelic (University of Belgrade)

- Discovering Significant Places from Mobile Phones -- a Mass Market Solution
  Guang Yang (Nokia Research Center)

- Adaptive Motion Model for a Smart Phone based Opportunistic Localization System
  Maarten Weyn (Artesis University College of Antwerp & University of Antwerp), Martin Klepal, Widyawan (Cork Institute of Technology)

- Model-free probabilistic localization of wireless sensor network nodes in indoor environments
  Ioannis Ch. Paschalidis, Keyong Li, Dong Guo (Boston University)

- A Calibration-Free Localization Solution for Handling Signal Strength Variance
  Fangfang Dong, Yiqiang Chen, Junfa Liu, Qiong Ning, Songmei Piao (Chinese Academy of Sciences)

- Indoor Location and Orientation Determination for Wireless Personal Area Networks
  Zekeng Liang, Ioannis Barakos, Stefan Poslad (Queen Mary, University of London)

- Localize Vehicles using Wireless Traffic Sensors
  Peng Zhuang, Yi Shang (University of Missouri)

- On the Feasibility of Determining Angular Separation in Mobile Wireless Sensor Networks
  Isaac Amundson, Manish Kushwaha, Xenofon Koutsoukos (Vanderbilt University)

- Controlling Error Propagation in Mobile-Infrastructure Based Localization
  Ying Zhang, Juan Liu (Palo Alto Research Center Inc.)
• Estimation of Indoor Physical Activity Level Based on Footstep Vibration Signal Measured by MEMS Accelerometer for in Smart Home Environments
  Heyoung Lee (Seoul National University of Technology), Jung Wook Park (Ajou University), Abdelsalam(Sumi) Helal (University of Florida)

• Inferring Motion and Location using WLAN RSSI
  Kavitha Muthukrishnan, Berend Jan van der Zwaag, Paul Havinga (University of Twente)

• WASP: An Enhanced Indoor Locationing Algorithm for a Congested Wi-Fi Environment
  Hsiuping Lin, Ying Zhang, Martin Griss, Ilya Landa (Carnegie Mellon Silicon Valley)

• A Long-Duration Study of User-Trained 802.11 Localization
  Andrew Barry, Benjamin Fisher, Mark L. Chang (F. W. Olin College of Engineering)

Workshop 2
8:30-17:00
Cape Cod A

3rd International Workshop on Design and Integration Principles for Smart Objects (DIPSO 2009)
Location: Cape Cod A
Organizers: Fahim Kawsar (Lancaster University, UK)
Gerd Kortuem (Lancaster University, UK)
Jin Nakazawa (Keio University, Japan)
Kaori Fujinami (Tokyo University of Agriculture and Technology, Japan)
Jong Hyuk Park (Kyungnam University, Korea)

• Atlas: An Open Model for Automatic Integration and Tele-programming of Smart Objects
  Chao Chen, Raja Bose and Sumi Helal (University of Florida)

• Design Issues of Smart Objects in Activity-based Micro Pricing Systems
  Hitoshi Ito, Tetsuo Yamabe and Tatsuo Nakajima (Waseda University)

• Smart Corridor: Development of Smart Space for Corridors and Public Streets
  Masaki Ogawa, Jumpei Yamamoto, Yoshiyuki Tokuda, Takatoshi Kanazawa, Naoki Nakagawa, Masaki Ito, Soko Aoki, Hiroto Aida, Jin Nakazawa, Kazunori Takashio and Hideyuki Tokuda (Keio University)

• Ontology-based reuse in Ubiquitous Computing Systems
  Lambrini Seremeti and Achilles Kameas (Hellenic Open University)

• Designing Interactions for Smart Objects with Flows
  Fahim Kawsar and Gerd Kortuem (Lancaster University)

Workshop 3
8:30-17:00
Salon 2

Globicomp: Taking Ubicomp Beyond Developed Worlds (Globicomp 2009)
Location: Salon 2
Organizers: Matt Jones (FIT LAB, Swansea University, Wales, UK)
Gary Marsden (Computer Science, UCT, South Africa)

• Designing for Homeless Young People: Precaution in Ubiquitous Computing
  Jill Palzkill Woelfer and David G. Hendry (University of Washington)

• Small Hammers and Silver Bullets
  Julie Maitland (NRC-IIT) and Katie A. Siek (University of Colorado at Boulder)

• Application for Freelance Truck Drivers in India
  Shweta Sali and Anirudha Joshi (IIT Bombay)

• A Market Anywhere: Establishing an SMS-based Virtual Market in
Developing Regions
Ryo Kawaguchi, Shameem Ahmed, Aukrit Unahalekhaka, Ang Pan, Roy Campbell (University of Illinois at Urbana Champaign)
• A Development Perspective on the Challenges in Implementing ‘Auto-Identification’ of Products
Ann Light (Sheffield Hallam University)
• Making Computer-based Cognitive Stimulation Technologies accessible to Illiterate Elders
Victoria Meza-Kubo (UABC), Alberto L. Morán (CICESE), Marcela D. Rodriguez (UABC)
• MDphone: A Doctor’s Tools in a Phone
Gaetano Borriello and Waylon Brunette (University of Washington)
• Ubicomp from the Edge of the North Atlantic: Lessons from Fishing Villages in Iceland and Newfoundland
Hrönn Brynjarsdóttir and Phoebe Sengers (Cornell)
• Four Frames of Social Software Use by Mobile-centric Internet Users
Jonathan Donner (Microsoft Research India) and Shikoh Gitau (University of Cape Town)
• Legitimacy at the Outskirts: Categories, Use, and Adoption in Marginal Communities
Christopher A. Le Dantec (Georgia Institute of Technology)
• Saral: Devanagari Text Input System in Mobile Phones
Anshuman Kumar, Hemruchi Shah, Anirudha Joshi (IIT Bombay)
• Design Charrettes as a Resource: A Case Study with Students at the University of Nairobi
Susan P. Wyche (Georgia Institute of Technology)

Workshop 4
Hybrid Design Practice (HDP 2009)
Location: Cape Cod B
Organizers: Eric Baumer (University of California, Irvine)
Johanna Brewer (FreStyl)
Barry Brown (University of California, San Diego)
Lucian Leahu (Cornell University)
Silvia Lindtner (University of California, Irvine)
Karen Martin (University College London)
• Ubiquitous Urban Game
Simona Sofronie (Universitaire Campus Agoralaan), Oswald Devisch
• Critical Making: conceptual and material studies in technology and social life
Matt Ratto (University of Toronto)
• Airy Notes Project: Creating Landscape Planning Method for the Ubicomp World
Masaki Ito (Keio University), Yukiko Katagiri (University of Toronto), Mikiko Ishikawa, Hideyuki Tokuda

Workshop 5
Architectural Robotics: An Emerging Case of Ubiquitous Computing in the Built Environment (ArchiBots 2009)
Location: Salon 3
Organizers: Keith Evan Green (Clemson University, USA)
Mark D. Gross (Carnegie Mellon University, USA)
• Shape-Shifting Materials for Programmable Structures
John Amend and Hod Lipson (Cornell University)
• Ambient Assistive Home Environments
Martin Becker (Fraunhofer Institute)
• Prototypes for Non-standard and Interactive Architecture
Henriette H. Bier and Marcus Chaidez (Delft Univ. of Technology)
• Notes on Habitat-scale Robotics and its Constraints
Benjamin Bratton (University of California, San Diego)
• Floor, Come and Embrace Me!
Ellen Yi-Luen Do (Georgia Institute of Technology)
• The End of Robotics in Architecture (As We Almost Got to Know It)
Michael Fox (Cal Poly Pomona; Fox Lin, LA)
• The Future of Collaboration: Two Cases on the Design of Architectural Robotics
Henrique Houayek and Paul Yanik (Clemson University)
• ADIC Solar Responsive Facade 2009
Abdulmajid Karanouh, Aedas Architects, and John Lyle (Arup, London)
• Challenges in Modular Spatial Robots
Miles Robert Kemp (Variate Labs, LA)
• Elasticity: the case for elastic materials for kinetic and responsive architecture
Omar Kahn (Univ. of Buffalo)
• Brick Printing Technologies for In-Situ Smart Structure Fabrication
Jeff Lipton and Hod Lipson (Cornell University)
• Smart textiles as actors and actuators of the domestic space
Aurelie Mosse (Royal Acad. of FA, Copenhagen)
• Architectural Robotics: Unpacking the Humanoid
Ian Walker (Clemson University)
• Making with Robunculi
Michael Philetus Weller (Carnegie Mellon University)

Workshop 6
8:30-17:00
Cape Cod C

Workshop on Pervasive Computing Education (PerEd 2009)
Location: Cape Cod C
Organizers: William G. Griswold (UC San Diego, USA)
Scot F. Midkiff (Virginia Tech, USA)
Gregory Abowd (Georgia Institute of Technology, USA)
• A Contextual Learning Game for Toddlers Installed on an Interactive Display Attached to a Shopping Cart
Gerrit Kahl (DFKI GmbH), Karin Leichtenstern (University of Augsburg), Johannes Schöning, Lübomira Spassova, Antonio Krüger (DFKI GmbH)
• Ubibot - Prototyping Infrastructure for Mobile Context-Aware Computing
Erwin Vedar, W. Brian Evans, William G. Griswold (UC San Diego)
• Teaching Smart Environments and Co-operative Ensembles
Sebastian Bader, Thomas Kirste, Christoph Burghardt (University of Rostock)
• Introducing TU100 "My Digital Life": Ubiquitous computing in a distance learning environment
Mike Richards, John Woodthorpe (The Open University)
• Public Digital Note-Taking in Lectures
Roshni Malani, William G. Griswold, Beth Simon (UC San Diego)
# Thursday, October 1, 2009

## Conference Opening

**Chairs:** Sumi Helal (University of Florida, USA)  
Hans Gellersen (Lancaster University, UK)  
Sunny Consolvo, Intel Research, USA

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<td><strong>Poor Man's Ubicomp</strong></td>
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<td>10:45-12:30</td>
<td><strong>Paper Session 1</strong> – Places &amp; Location</td>
<td>Salons 1-3</td>
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## Keynote1

**Chair:** Sumi Helal (University of Florida, USA)

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## Papers & Notes

**Chairs:** Hans Gellersen (Lancaster University, UK)  
Sunny Consolvo (Intel Research, USA)

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### Paper Session 1 – Places & Location

**Session Chair:** Anind Dey (Carnegie Mellon University, USA)

- **From Spaces to Places: Emerging Contexts in Mobile Privacy**  
  Clara Mancini (The Open University), Keerthi Thomas (The Open University), Yvonne Rogers (The Open University), Blaine A. Price (The Open University), Lukasz Jedrzejczyk (The Open University), Arosha K. Bandara (The Open University), Adam N. Joinson (University of Bath), Bashar Nuseibeh (The Open University)
- **The Commodification of Location: Dynamics of Power in Location-Based Systems**  
  Irina Shklovskii (IT University of Copenhagen), Janet Vertesi, Emily Troshynski, Paul Dourish (University of California, Irvine)
- **Discovering Semantically Meaningful Places from Pervasive RF-Beacons**  
  Donnie H. Kim (University of California, Los Angeles), Jeffrey Hightower (Intel Labs Seattle), Ramesh Govindan (University of Southern California), Deborah Estrin (University of California, Los Angeles)
- **Privately Querying Location-based Services with SybilQuery**  
  Pravin Shankar, Vinod Ganapathy, Liviu Iftode (Rutgers University)
**Paper Session 2 – Activity Recognition**

**Location:** Salons 1-3  
**Session Chair:** Paul Lukowicz (University of Passau, Germany)

- **Eye Movement Analysis for Activity Recognition**
  Andreas Bulling (ETH Zurich), Jamie A. Ward (Lancaster University), Hans Gellersen (Lancaster University), Gerhard Tröster (ETH Zurich)

- **Recognizing Daily Activities with RFID-Based Sensors**
  Michael Buettner, Richa Prasad (University of Washington), Matthai Philipose (Intel Labs Seattle), David Wetherall (Intel Labs Seattle and University of Washington)

- **Cross-Domain Activity Recognition**
  Vincent Wenchen Zheng, Derek Hao Hu, Qiang Yang (Hong Kong University of Science and Technology)

- **Recognizing Stereotypical Motor Movements in the Laboratory and Classroom: A Case Study with Children on the Autism Spectrum**
  Fahd Albinali (Massachusetts Institute of Technology), Matthew S. Goodwin (Massachusetts Institute of Technology and The Groden Center), Stephen S. Intille (Massachusetts Institute of Technology)

**Coffee Break**

**Location:** Cape Cod Lobby

**One-Minute Madness**

**Chair:** Pei Zhang (Carnegie Mellon University, USA)

16:00-17:00  
**Location:** Salons 1-3

**Demos**

**Chairs:** Pei Zhang (Carnegie Mellon University, USA)  
Tsutomu Terada (Kobe University, Japan)

17:00-18:45  
**Location:** Cape Cod B and C  

- **Firefly: Towards Emergent Technology for Blended Public Displays**
  Angie Chandler, Carl Lewis, Joe Finney, Alan Dix (Lancaster University)

- **Mobile projector-camera system based interaction technique for annotating physical information resources**
  Robert Brauer, Lars Mëller, Ilhan Aslan (Fraunhofer Einrichtung fër Systeme der Kommunikationstechnik)

- **A Demonstration of Sonar-based User Presence Detection**
  Stephen Tarzia (Northwestern University), Robert Dick (University of Michigan), Peter Dinda, Gokhan Memik (Northwestern University)

- **SmartPlug: Creating Self-Sensing Spaces using Atlas Middleware**
  Jung Wook Park (Ajou University), Chao Chen, Hicham Elzabadani, Sumi Helal (University of Florida)

- **Exploring the Application of Smart Objects in the Workplace**
  Daniel Fitton, Gerd Kortuem, Fahim Kawsar (Lancaster University)

- **CHEERON++: Interactive Toy for the Better Health**
  Ya-han Lin, Nancy Lan-Ian Ma, Yuichiro Kage, Mitsuhiro Shimooki, Masahiko Inami, Masahiko Inakage, Naohito Okude, Adrian David Cheok,
Maki Sugimoto, Charith Lasantha Fernando (Keio University Graduate School of Media Design)
- Sense Information (SenseI)  
Hsiuping Lin, Alejandro Rivera, Eisha Kher, Pei Zhang (Carnegie Mellon University)
- Dining Presenter: Augmented Reality system for a dining tabletop  
Maki Mori (Ochanomizu University) Kazutaka Kurihara (AIST) Koji Tsukada Itiro Siio (Ochanomizu University)
- Wearable, Miniature Magnetic Resonant Coupling based Motion Tracking System  
Gerald Pirkl Paul Lukowicz, (University of Passau)
- Open Data Kit  
Yaw Anokwa, Waylon Brunette, Carl Hartung (University of Washington), Adam Lerer (Massachusetts Institute of Technology), Gaetano Borriello (University of Washington)
- Gestural Interfaces for Micro Projector-based Mobile Phone Applications  
Matthias Baldauf, Peter Fröhlich, Peter Reichl (Telecommunications Research Center Vienna ftw.)
- Context-Aware Resource Control for Improved User Experience  
Kazuhisa Ishizaka, Kosuke Nishihara, Junji Sakai, Takashi Miyazaki (NEC)
- Painting in Public Doodle Space with Cam-Phone Brush  
Yuanchun Shi, Mingming Fan, Chun Yu, Yu Zhong, Xin Li, Yue Suo, Chenjun Wu, Xin Yang (Tsinghua University)
- eMeter: An interactive energy monitor  
Markus Weiss, Dominique Guinand, Thorsten Staake, Wolf Roediger (ETH Zurich)
- Interactivity of an Affective Puppet  
Celine Coutrix, Prayag Narula, Matti Helin, Giulio Jacucci (Helsinki Institute for Information Technology) Stefano Roveda (Studio Azzurro)

Posters
Chairs: Kristof Van Laerhoven (TU Darmstadt, Germany)  
Hani Hagras (University of Essex, UK)

17:00-18:45 Location: Salon 4
Salon 4
- SmoothCurtain: privacy controlling video communication device  
Tomoko Handa, Keisuke Kambara, Koji Tsukada, Itiro Siio (Ochanomizu University)
- Last-Minute Coordinator: Fashion coordination system using logs  
Hitomi Tsujita, Keisuke Kambara, Koji Tsukada, Itiro Siio (Ochanomizu University)
- Capacitance Sensing in Smart Toys: Aiding the Detection of Play Behaviors  
Tracy Westeyn, Peter Presti, Scott Gilliland, Jaisheng He, David Quigley, Jeremy Johnson, Thad Starner (Georgia Institute of Technology)
- Real-time sound synthesis and interaction with footsteps: recreating the illusion of walking on different surfaces  
Stefania Serafin, Rolf Nordahl (Aalborg University Copenhagen, AUK)
- Dead Reckoning from the Pocket  
Ulrich Steinhoff, Bernt Schiele (TU Darmstadt)
- TouchView: Cognitive Assistance for MPS Children  
Jung Wook Park (Ajou University), Sumi Helal (University of Florida)
- MEW: Coping with Pediatric Transplants
CoupleVibe: supporting connectedness in long distance couples with location-based vibrotactile cues
Elizabeth Bales (University of California San Diego), Kevin Li (ATT Labs - Research Florham Park, New Jersey / University of California San Diego), William Griswold (University of California San Diego)

On the Importance of Spatial Configuration of Displayed Information
Hamed S. Alavi, Pierre Dillenbourg, Frederic Kaplan (Swiss Federal Institute of Technology, EPFL)

Towards Storytelling with Geotagged Photos on a Multitouch Display
Oskar Palinko (University of New Hampshire) Ankit Singh, Michael A. Farrar, Michael Litchfield, Andrew L. Kun (University of New Hampshire)

Answering Why and Why Not Questions in Ubiquitous Computing
Jo Vermeulen, Geert Vanderhulst, Kris Luyten, Karin Coninx, (Hasselt University)

The Biometric Daemon: A Public Perspective
James Nicholson, Pam Briggs, Patrick Olivier (Newcastle University)

Exploring In-Car Augmented Reality Navigation Aids: A Pilot Study
Zeljko Medenica, Oskar Palinko, Andrew L. Kun (University of New Hampshire), Tim Paek (Microsoft Research)

Mobile Lens: The Design of Energy Feedback Interface
Tae-Jung Yun (Samsung Electronics / Georgia Institute of Technology) Hee Young Jeong, Gregory D. Abowd (Georgia Institute of Technology)

Daily Talks: Short Message Service for Pediatric Asthma Management
Tae-Jung Yun (Samsung Electronics / Georgia Institute of Technology) Hee Young Jeong, Rosa I. Arriaga, Gregory D. Abowd (Georgia Institute of Technology)

The Natural Ubiquitous Call-out
Julien Robinson, Adrien Joly (Alcatel-Lucent Bell Labs France)

GeoInformationRouter - Localization in WLAN Environments Via Infrastructure
Stefan Below, Thorsten Diekhof, Jörg Possin (Institute for Geoinformatics, University of Münster, Germany), Johannes Schöning (German Research Center for Artificial Intelligence, DFKI), Mareike Kritzler (Institute for Geoinformatics, University of Münster, Germany), Antonio Krüger (German Research Center for Artificial Intelligence, DFKI)

Detecting Social Contexts from Bluetooth Device Logs
Ryo Nishide, Tatsuya Ushikoshi (Kwansei Gakuin University), Satoshi Nakamura (Kyoto University), Yasuyuki Kono (Kwansei Gakuin University)

Automatic Assessment of Cognitive Impairments
Mark Hodges, Ned Kirsch, Mark Newman, Martha Pollack (University of Michigan)

Enhancing Security and Emergency Functionalities in Mobile Phones by Audio and Movement Analysis
Hamed Ketabdar, Tim Polzehl (Deutsche Telekom Laboratories)
Videos
Chairs: Achilles Kameas (Hellenic Open University, Greece)
Christian Kray (University of Newcastle, UK)
Matthias Kranz (Ludwig-Maximilians-University Munich, Germany)

17:00-18:45 Location: Cape Cod A

- **Bucking Bronco: Adaptive Ride Experiment No. 1**
  Brendan Walker (Aerial UK/University of Nottingham, UK) Joe Marshall,
  Duncan Rowland, Stefan Rennick Egglestone (University of Nottingham,
  UK), Revital Cohen, Tuur Van Balen, Steve Ounanian (Aerial UK, UK)
- **Swing, Snap and Stamp It!: Device Interaction with Fun**
  Katsuya Hashizume, Kazuhiro Imura, Kyohei Kawada, Naoya Namatame,
  Tomotaka Ito, Masaki Ito, Jin Nakazawa, Kazunori Takashio, Hideyuki
  Tokuda(Keio University, Japan)
- **An Interactive Table Supporting Mobile Phone Interaction and 3D Content**
  Fadi Chehimi (Lancaster University, UK), Niels Nijdam (University of
  Geneva, Switzerland), Dominik Schmidt, Enrico Rukzio (Lancaster
  University, UK), Nadia Magnenat-Thalmann (University of Geneva,
  Switzerland)
- **Exertainer: An Interactive Entertainment System for Pervasive Running**
  Applications
  Miru Ahn, Kyungmin Cho, Peter Choe Sungwon, Sooho Cho, Inseok
  Hwang, Hyukjae Jang, Sungjun Kwon, Byunglim Park, Taiwoo Park
  (KAIST, South Korea), Jaesang Park (R1Solution Co. Ltd, South Korea),
  Yunseok Rhee (HUFS, South Korea), Junehwa Song (KAIST, South
  Korea)

Reception

19:00-20:30 Location: Grand Harbor North

- Reception Special Performance

  *Interactive Digital Media in the Arts & Sciences*
  
  James Oliverio (Prof. & Director, Digital Worlds Institute, U. of Florida, USA)
Friday, October 2, 2009

Papers & Notes

8.30-10.15  Paper Session 3 – Notes
Salons 1-3
Session Chair: John Krumm (Microsoft Research, USA)
Location: Salons 1-3
- inAir: Measuring and Visualizing Indoor Air Quality
  Sunyoung Kim, Eric Paulos (Carnegie Mellon University)
- Wearable Therapist: Sensing Garments for Supporting Children Improve Posture
  Holger Harms, Oliver Amft, Mirjam Appert, Roland Müller, Gerhard Tröster (ETH Zurich), Andreas Meyer-Heim (Rehabilitation Centre Affoltern a. A., University Children’s Hospital Zurich)
- Sonar-based Measurement of User Presence and Attention
  Stephen P. Tarzia (Northwestern University), Robert P. Dick (University of Michigan), Peter A. Dinda (Northwestern University), Gokhan Memik (Northwestern University)
- Simultaneous Localization and Mapping for Pedestrians using only Foot-Mounted Inertial Sensors
  Patrick Robertson, Michael Angermann, Bernhard Krach (German Aerospace Center)
- BlueTone: A Framework for Interacting with Public Displays Using Dual-Tone Multi-Frequency through Bluetooth
  David Dearman, Khai N. Truong (University of Toronto)
- Toward Emergent Technology for Blended Public Displays
  Angie Chandler, Joe Finney, Carl Lewis, Alan Dix (Lancaster University)

10:15-10:45  Coffee Break
Cape Cod Lobby

10.45-12.30  Paper Session 4 – Security & Access
Salons 1-3
Session Chair: Urs Hengartner (University of Waterloo, Canada)
Location: Salons 1-3
- A Spotlight on Security and Privacy Risks with Future Household Robots: Attacks and Lessons
  Tamara Denning, Cynthia Matuszek, Karl Koscher, Joshua R. Smith, Tadayoshi Kohno (University of Washington)
- Authenticating Ubiquitous Services: A Study of Wireless Hotspot Access
  Tim Kindberg (HP Labs), Chris Bevan, Eamonn O’Neill, James Mitchell, Jim Grimmett, Dawn Woodgate (University of Bath)
- SessionMagnifier: A Simple Approach to Secure and Convenient Kiosk Browsing
  Chuan Yue, Haining Wang (The College of William and Mary)
- Understanding File Access Mechanisms for Embedded Ubicomp Collaboration Interfaces
  Anthony Collins (University of Sydney), Anastasia Bezerianos (National ICT Australia and École Centrale Paris), Gregor McEwan (National ICT Australia), Markus Rittenbruch (National ICT Australia and University of Sydney), Rainer Wasinger, Judy Kay (University of Sydney)
12:30-13:45  Lunch  
Grand Harbor North  
Location: Grand Harbor North

13:45-15.00  Paper Session 5 – UbiComp Worldwide  
Salons 1-3  
Location: Salons 1-3  
Session Chair: Richard Beckwith (Intel, USA)  
• Broadening UbiComp’s Vision: An Exploratory Study of Charismatic Pentecostals and Technology Use in Brazil  
  Susan P. Wyche (Georgia Institute of Technology), Camila M. Magnus (University of Barcelona), Rebecca E. Grinter (Georgia Institute of Technology)  
• Ubicomp4D: Infrastructure and Interaction for International Development—the Case of Urban Indian Slums  
  Nithya Sambasivan (University of California, Irvine), Nimmi Rangaswamy (Microsoft Research India), Ed Cutrell (Microsoft Research), Bonnie Nardi (University of California, Irvine)  
• Encountering SenseCam: Personal Recording Technologies in Everyday Life  
  David H. Nguyen, Gabriela Marcu, Gillian R. Hayes (University of California, Irvine), Khai N. Truong (University of Toronto), James Scott (Microsoft Research Cambridge), Marc Langheinrich, Christof Roduner (ETH Zurich)

15:00-15:30  Coffee Break  
Cape Cod Lobby  
Location: Cape Cod Lobby

15:30-16.20  Paper Session 6 – Behavior Change  
Salons 1-3  
Location: Salons 1-3  
Session Chair: Khai Truong (University of Toronto, Canada)  
• Applying Pervasive Technologies to Create Economic Incentives that Alter Consumer Behavior  
  Tetsuo Yamabe (Waseda University), Vili Lehdonvirta (Helsinki Institute for Information Technology), Hitoshi Ito, Hayuru Soma, Hiroaki Kimura, Tatsuo Nakajima (Waseda University)  
• Playful Bottle: a Mobile Social Persuasion System to Motivate Healthy Water Intake  
  Meng-Chieh Chiu, Shih-Ping Chang, Yu-Chen Chang, Hao-Hua Chu, Cheryl Chia-Hui Chen, Fei-Hsiu Hsiao, Ju-Chun Ko (National Taiwan University)

Panel  
Chair: Michael Weber (University of Ulm, Germany)

16:20-17:20  Achievements, challenges, obstacles, and perspectives – where shall we be in another decade of Ubicomp research  
Location: Salons 1-3  
Panelists: Jeffrey Hightower, Intel research, US  
  Tim Kindberg, HP labs, UK  
  Shwetak Patel, University of Washington  
  James Scott, Microsoft research, UK  
  Michael Weber (Chair), University of Ulm, Germany
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<th>Town Hall Meeting</th>
<th>Chair: Joe McCarthy (Interrelativity, Inc., USA)</th>
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<td>17:30-18:15</td>
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<tr>
<th>Banquet</th>
<th>Location: Grand Harbor North</th>
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<td>19:00-22:00</td>
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<tr>
<td>Grand Harbor North</td>
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<td><strong>Best Paper Award Announcement</strong></td>
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<td><strong>Ubicomp 2010 Invitation</strong></td>
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<td><strong>Banquet Special Presentation</strong></td>
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<tr>
<td><em>Brain Machines: Domestic Robots, Free Will and Science Fiction Prototypes</em></td>
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<td>Brian David Johnson (Intel Digital Home Group, USA)</td>
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### Papers & Notes

**Saturday, October 3, 2009**

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<th>Time</th>
<th>Event</th>
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<tr>
<td>8.30-10.15</td>
<td><strong>Paper Session 7 – Context-Aware &amp; Wearable Systems</strong></td>
<td><strong>Session Chair:</strong> Jadwiga Indulska (University of Queensland, Australia)</td>
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<td></td>
<td><strong>Location:</strong> Salons 1-3</td>
<td><strong>Assessing Demand for Intelligibility in Context-Aware Applications</strong></td>
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<td></td>
<td><strong>Brian Y. Lim, Anind K. Dey (Carnegie Mellon University)</strong></td>
<td><strong>Interactive Dirt: Increasing Mobile Work Performance with a Wearable Projector-Camera System</strong></td>
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<td>**Daniel C. McFarlane, Steven M. Wilder (Lockheed Martin Advanced</td>
<td><strong>SwimMaster: A Wearable Assistant for Swimmer</strong></td>
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<td>Technology Laboratories)**</td>
<td><strong>Validated Caloric Expenditure Estimation using a Single Body-Worn Sensor</strong></td>
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<td><strong>Marc Bächlin, Kilian Förster, Gerhard Tröster (ETH Zurich)</strong></td>
<td><strong>Jonathan Lester, Carl Hartung, Laura Pina, Ryan Libby, Gaetano Borriello, Glen Duncan</strong></td>
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<tr>
<td>10.15-10.45</td>
<td><strong>Coffee Break</strong></td>
<td><strong>Location:</strong> Cape Cod Lobby</td>
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<tr>
<td>10.45-12.30</td>
<td><strong>Paper Session 8 – Sensing &amp; Sustainability</strong></td>
<td><strong>Session Chair:</strong> Hao-Hua Chu (National Taiwan University, Taiwan)</td>
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<td><strong>Location:</strong> Salons 1-3</td>
<td><strong>HydroSense: Infrastructure-Mediated Single-Point Sensing of Whole-Home Water Activity</strong></td>
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<td>**Jon Froehlich, Eric Larson, Tim Campbell, Conor Haggerty, James</td>
<td><strong>ViridiScope: Design and Implementation of a Fine Grained Power Monitoring System for Homes</strong></td>
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<td>Fogarty, Shwetak N. Patel (University of Washington)**</td>
<td><strong>Younghun Kim, Thomas Schmid, Zainul M. Charbiwala, Mani B. Srivastava</strong></td>
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<td><strong>It's Not All About “Green”: Energy Use in Low-Income Communities</strong></td>
<td><strong>University of California, Los Angeles)</strong></td>
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<td>**Tawanna Dillahunt, Jennifer Mankoff, Eric Paulos (Carnegie Mellon</td>
<td><strong>Experiences of Participatory Sensing in the Wild</strong></td>
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<td>University), Susan Fussell (Cornell University)**</td>
<td><strong>Mark Paxton, Steve Benford (University of Nottingham)</strong></td>
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<td>12.30-13.45</td>
<td><strong>Lunch (on your own)</strong></td>
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### Closing Panel

**Chairs:** Michael Weber (University of Ulm, Germany)  
Jakob Bardram (IT University of Copenhagen, Denmark)

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<td>13.45-15.00</td>
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<td>15:00-15:35</td>
<td>Break (no coffee / refreshments)</td>
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| 15:30-17:00| Keynote II  
Chair: John Krumm (Microsoft Research, USA)  
Honest Signals from Reality Mining  
Prof. Alex (Sandy) Pentland (Massachusetts Institute of Technology, USA) |
| 17:00-17:05| Closing Remarks                            |