Message from the General Co-Chairs

On behalf of the organizing committee, it is our great pleasure to welcome you to the 13th International Conference on Ubiquitous Computing. This is the first time the UbiComp conference series comes to China. UbiComp is a conference that truly captures the wide variety of research activities in the diverse field of ubiquitous computing, encompassing research from, e.g., Human-Computer Interaction, Mobile Computing, Location and Sensing Technology, Machine Learning, Middleware and Systems, and Programming Models and Tools.

September 2011 also marks a historic date in UbiComp. It is exactly 20 years from when Dr. Mark Weiser’s landmark article, “The Computer for the Twenty-First Century,” appeared in Scientific American. This article is acclaimed for widely publicizing the idea of UbiComp in the research community and setting the goals for the early years of the field. We will mark this historic occasion with a special panel in tribute to the late Dr. Weiser. Our panel of luminaries, including those who worked with Dr. Weiser at Xerox PARC, as well as his contemporaries who were influenced by his work at the time, will reminisce on Mark’s predictions as well as present their view of where the field should move forward.

Putting together UbiComp 2011 has been a team effort and we would like to thank a series of people. First, we’d like to thank the Program Chairs, Don Patterson, Yvonne Rogers, and Xing Xie, who recruited a strong program committee that has selected an exciting set of papers for the conference. The local organizers, Yu Chen, Silvia M. Lindtner and Yu Zheng, have been working hard to put it all together in Beijing. At ACM, Ashley Cozzi provided efficient and prompt support. As chair of the steering committee, James Scott has been supportive in answering our questions about the conference history. We are also thankful to those helping organize the practical matters required to pull off such an important event, including the student volunteer chairs Sidhant Gupta and Jia Jia, the access chairs Jennifer A. Rode and Qiong Wu, the industrial exhibition chair Yuan Dong, the treasurer Pin Tao, the web masters Guoliang Li and Yue Suo, and the publicity chairs Jiannong Cao and Henriette Cramer.

We also want to thank the technical program committee, including the workshop chairs Katie Siek and Zhiwen Yu, the posters chairs Mike Chen and Tim Sohn, the demos chairs Darren Edge and Yongqiang Lu, the doctoral colloquium chairs Anind Dey and Cho-li Wang, the video chairs Jiming Guo, Julie Maitland and Gang Pan, the tutorials chairs Cecilia Mascolo and Daqing Zhang, the panel chair Beth Mynatt, and the film festival chairs Ian Li and Jun Fei. Finally, a special thanks to our publication chairs Beihong Jin and Sian Lindley, assisted by Lisa Tolles from Sheridan Printing Company, all of whom have processed the papers in a timely manner.

Finally, we wish to thank all the UbiComp 2011 attendees for supporting the conference and making it one of the most prestigious events in this field. We hope that you will find this program interesting and thought provoking and that the conference will provide you with a valuable opportunity to share ideas with other researchers and practitioners from institutions around the world.

James Landay and Yuanchun Shi
UbiComp 2011 General Co-Chairs
Program at a Glance

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<th>Sep. 17 Saturday</th>
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### Detailed Papers / Video Program

#### Session 1 - Being Human

**Monday, September 19, 10:30-12:00**

Chair: A.J. Brush, Microsoft Research

**Smiling Makes Us Happier: Enhancing Positive Mood and Communication with Smile-Encouraging Digital Appliances**
Hitomi Tsujita, Jun Rekimoto

**How to Nudge In Situ: Designing Lambent Devices to Deliver Salience Information in Supermarkets**
Vaiva Kalnikaitė, Yvonne Rogers, Jon Bird, Nicolas Villar, Khaled Bachour, Stephen Payne, Peter M. Todd, Johannes Schöning, Antonio Krüger, Stefan Kreitmayer

**CoDine: An Interactive Multi-sensory System for Remote Dining**
Jun Wei, Xuan Wang, Roshan Lalintha Peiris, Yongsoon Choi, Xavier Roman Martinez, Remi Tache, Jeffrey Tzu Kwan Valino Kohn, Veronica Halupka, Adrian David Cheok

**Promoting Intergenerational Communication Through Location-Based Asynchronous Video Communication**
Frank Bentley, Santosh Basapur, Sujoy Kumar Chowdhury

**Living in a Glass House: A Survey of Private Moments in the Home**
Eun Kyoung Choe, Sunny Consolvo, Jaeyeon Jung, Beverly Harrison, Julie A. Kientz

**FlyingBuddy: Augment Human Mobility and Perceptibility**
Dan He, Haoyi Ren, Weidong Hua, Gang Pan, Shijian Li, Zhaohui Wu

**Ready-To-Live: Wearable Computing Meets Fashion**
Mirco Rossi, Burcu Cinaz, Gerhard Tröster

#### Session 2 - Novel Ubiquitous Technologies

**Monday, September 19, 14:00-15:30**

Chair: Yu Zheng, Microsoft Research Asia

**Leveraging Conductive Inkjet Technology to Build a Scalable and Versatile Surface for Ubiquitous Sensing**
Nan-Wei Gong, Steve Hodges, Joseph A. Paradiso

**HeatProbe: A Thermal-based Power Meter for Accounting Disaggregated Electricity Usage**
Bo-Jhang Ho, Hsin-Liu (Cindy) Kao, Nan-Chen Chen, Chuang-Wen You, Hao-Hua Chu, Ming-Syan Chen

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*There will be a 15 minutes break between Session 5 and Session 6. Session 6 starts at 15:45 pm.*
LightWave: Using Compact Fluorescent Lights as Sensors
Sidhant Gupta, Ke-Yu Chen, Matthew S. Reynolds, Shwetak N. Patel

Interactive 3D Modeling of Indoor Environments with a Consumer Depth Camera
Hao Du, Peter Henry, Xiaofeng Ren, Marvin Cheng, Dan B Goldman, Steven M. Seitz, Dieter Fox

Tactile Feedback without a Big Fuss: Simple Actuators for High-Resolution Phantom Sensations
Hendrik Richter, Benedikt Bihle, Alexander Wiethoff, Dominikus Baur, Andreas Blutz

Lighting Choreographer: an LED Control System for Dance Performances
Minoru Fujimoto, Naotaka Fujita, Tsiutomu Tera, Masahiko Tsukamoto

Quiz: Visualizer of Ramen Queues
Kazuma Oshima, Nisut Thepvilajisapnaph, Yuta Iwasawa, Tatuya Manta, Yoshito Tohe

Session 4 - Near and Far
Tuesday, September 20, 8:30-10:00
Chair: Patrick L. Olivier, Newcastle University

Reflections on the Long-term Use of an Experimental Digital Signage System
Sarah Clinch, Nigel Davies, Adrian Friday, Christos Efstratianou

Session 5 - How Close?
Tuesday, September 20, 14:00-15:30
Chair: Adrian Friday, Lancaster University

Who’s your best friend? Targeted privacy attacks in location-sharing social networks
Vassilis Kostakos, Jayant Venkatanathan, Bernardo Reynolds, Norman Sadeh, Eran Toch, Siraj A. Shaikh, Simon Jones

On the Limitations of Query Obfuscation Techniques for Location Privacy
Sai Teja Peddinti, Nitesh Saxena

Are you close with me? Are you nearby? Investigating social groups, closeness, and willingness to share
Jason Wiese, Patrick Gage Kelley, Lorrie Faith Cranor, Laura Dabbish, Jason I. Hong, John Zimmerman

Understanding How Visual Representations of Location Feeds Affect End-User Privacy Concerns
Karen P. Tang, Jason I. Hong, Daniel P. Siewiorek

Employing User Feedback for Semantic Location Services
Donnie H. Kim, Kyungsik Han, Deborah Estrin

Session 6 - DIY and Design
Tuesday, September 20, 15:45-17:15
Chair: Scott Saponas, Microsoft Research

Nurturing natural sensors
Stacey Kuznetsov, William Odom, James Pierce, Eric Paulos

Red Balloon, Green Balloon, Sensors in the Sky
Stacey Kuznetsov, George Noel Davis, Eric Paulos, Mark Gross, Jian Chiu Cheung
Session 7 - Home and Away
Wednesday, September 21, 8:30-10:00
Chair: Hao-hua Chu, Taiwan University

MAQS: A Personalized Mobile Sensing System for Indoor Air Quality Monitoring
Yifei Jiang, Kun Li, Lei Tian, Ricardo Piedrahita, Xiang Yun, Omkar Mansata, Qin Lu, Robert P. Dick, Michael Hannigan, Li Shang

PreHeat: Controlling Home Heating Using Occupancy Prediction
James Scott, A.J. Bernheim Bruh, John Krumm, Brian Meyers, Mike Hazas, Steve Hodges, Nicolas Villar

How Smart is Your Smartcard? Measuring Travel Behaviours, Perceptions, and Incentives
Neal Latha, Lica Capra

Mediated Tabletop Interaction in the Biology Lab — Exploring the Design Space of The Rabbit
Juan David Hincapié Ramos, Aurélien Tabard, Jakob E. Bardram

Hand Shape Classification with a Wrist Contour Sensor: Development of a Prototype Device
Rui Fukui, Masahiko Watanabe, Masamichi Shimosaka, Tomomasa Sato, Tomoaki Gyota

IteMinder: Finding items in a room using passive RFID and an autonomous robot
Mizuho Komatsu-Baski, Koji Tsukada, Itiro Siso, Periti Vemonen, Mika Lumula, Sakari Pieska

Qooqle: Search with Speech, Gesture, and Social Media
Li Bai, Henry Holtzman

Session 8 - Energy and Networking
Wednesday, September 21, 10:30-12:00
Chair: Anthony LaMarca, Intel

Deliberation for Intuition: A Framework for Energy-Efficient Trip Detection on Cellular Phones
Yifei Jiang, Du Lu, Guang Yang, Qin Lu, Zhigang Liu

SIFi: Exploiting VoIP Silence for WiFi Energy Savings in Smart Phones
Andrew J. Pyles, Zhen Ren, Gang Zhou, Xue Liu

LEAP: A Low Energy Assisted GPS for Trajectory-Based Services
Hector S. Ramos, Tao Zhang, Jie Liu, Nissanka B. Priyantha, Aman Kansal

An Empirical Approach to Smartphone Energy Level Prediction
Earl Oliver, Sinsavas Kavish

Enabling Large-scale Human Activity Inference on Smartphones using Community Similarity Networks (CSN)
Nicholas D. Lane, Ye Xu, Hong Lu, Shaohan Hu, Tanzeem Choudhury, Andrew T. Campbell, Feng Zhao

Session 9 - How Healthy?
Wednesday, September 21, 14:00-15:30
Chair: Julie Kientz, University of Washington

Sundroid: Solar Radiation Awareness with Smartphones
Thomas Fahimi, Michael Kuhn, Philipp Sommer, Roger Wattenhofer, Samuel Weiten

Accurate and Privacy Preserving Cough Sensing using a Low-Cost Microphone
Eric C. Larson, Tien Jui Lee, Sean Liu, Margaret Rosenfeld, Shwetak N. Patel

Passive and In-situ Assessment of Mental and Physical Well-being using Mobile Sensors
Mashfiqur Rahi, Shahad Ali, Tanzeem Choudhury, Ethan Berke

The Place for Ubiquitous Computing in Schools: Lessons Learned from a School-Based Intervention for Youth Physical Activity
Enira Shehan Poole, Andrew D. Miller, Yan Xu, Elsa Eiriksdottir, Richard Catrambone, Elizabeth D. Mynatt

Understanding My Data, Myself: Supporting Self-Reflection with Ubicomp Technologies
Ian Li, Anind K. Dey, Jodi Forlizzi

Session 10 - Measuring and Understanding
Wednesday, September 21, 16:00-17:30
Chair: Tanzeem Choudhury, Cornell University

Investigating Intelligibility for Uncertain Context-Aware Applications
Brian Y. Lim, Anind K. Dey

PANDAA: Physical Arrangement Detection of Networked Devices through Ambient-Sound Awareness
Zheng Sun, Aveek Purohit, Kaiwei Chen, Shijia Pan, Trevor Pering, Pei Zhang

Exploring Micro-Incentive Strategies for Participant Compensation in High-Burden Studies
Mohamed Musthag, Andrew Raj, Deepak Ganesan, Santosh Kumar, Saul Shiffman
Uberrima Fides
Jan Chipchase, Executive Creative Director of Global Insights at frog

Abstract
You are the designers, the thinkers, the starters and doers - that can both imagine technologies of the future and know how to build them. However - as the world and the technology within it becomes increasingly connected, integrated, smart, pervasive, our ability to understand the consequences of our creations has diminished. From grassroots innovation to happy accidents, drawing on field research from Afghanistan to the Americas - Jan will explore the impact of technologies past, present and future and outline the skills required to build the next.

Bio
As Executive Creative Director of Global Insights Jan’s role is to bring real world insights into frog, and to use this to inform & inspire the design process. In a journey that has taken him to the four corners of the globe – from understanding the media consumption patterns of teens in Tokyo, the communications patterns of bankers in New York all the way through to redesigning the holistic mobile experience of illiterate farmers on the outskirts of New Delhi.

His industry experience includes ~10 years and multiple roles in Nokia including Design Strategist in the Advanced Design Studio Los Angeles, and Principal Scientist in the Tokyo Research Laboratory. He has submitted over 26 patents in the telecoms and user experience space, his work is widely covered in the media including the New York Times, The Economist, Nikkei and Business Week, and he is a frequent keynote speaker on design and design strategy events ranging from design conferences, governmental & C-level events through to TED. In 2010 Fortune named Jan one of the 50 smartest people in tech.
Posters

Monday, September 19, 12:00-14:00

Posters in Adjunct Proceedings

MixPad: Augmenting Interactive Paper with Mice & Keyboards for Fine-grained Cross-media Interaction with Documents
Chunyuan Liao, Qiong Liu

Qooqle: Search with Speech, Gesture, and Social Media
Li Bui, Henry Holtzman

AHHChI: Use Input and Output of Eyes to Interact with Things
Fanglin Chen, Xiang Fei, Xinmin Chen, Guohua Liu

Considerations of Applying Surface-Based Phone Gestures to Natural Context
Xu Jia, Kun-Pyo Lee, Hyeon-Jeong Suk

Ubira: A Mobile Platform for an Integrated Online/Offline Shopping Experience
Uljana Bandara, James Chen

A New Input Device Putting Together Merits of Shortcut Key and Toolbar: Fast Keypad System
Sungwook Baek, Soohyun Je, Haekwang Lee, Seoyoung Kim

An Effective Tracking Technique of Public Transportation toward Passenger Generated Vehicle Location System
Masaki Ito, Toshihiko Sasama, Takao Kawamura, Kazunori Sugahara

Proposal of Collaborative Navigation for Multi Users from Different Departure Points to the Same Goal
Masato Soga, Kazuyoshi Kadomoto

Toward Delegated Observation of Kindergarten Children’s Exploratory Behaviors in Field Trips
Inseok Hwang, Hyukjae Jang, Taewoo Park, Aram Choi, Chanyou Hawng, Yanggai Choi, Lama Nachman, Junehwa Song

Demonstrating Generation Y Interactions through Interactive Prototyping
Wen Liu, Pieter Jan Stappers, Gert Pasman, Aadjan van der Helm

A Rotation Based Method for Detecting On-body Positions of Mobile Devices
Yue Shi, Yuanchun Shi, Je Liu

Electronic Taste Stimulation
Nimesha Ranasinghe, Adrian David Cheok, Owen Noel, Newton Fernanda, Hideaki Niu, Gopalakrishnakone Pornnamplam

Jamming Attack in WSN: A Spatial Perspective
Yanqiang Sun, Xiaodong Wang, Xingming Zhou

Colocation Networks: Exploring the Use of Social and Geographical Patterns in Context-Aware Services
Shin’ichi Konomi

Polite Ringer II: A Ringtone Interaction System Using Sensor Fusion
Ming-Chang Tsai, Fu-Chiang Chou, Yi-Heng Kuo, Kai-Cheng Yang, Mike Chen

You Stopped by There? I Recommend This: Changing Customer Behaviors with Robots
Hiroyuki Kidokoro, Koji Kamei, Kazuhiko Shinozawa, Takahiro Miyashita, Nonhiro Hagita

HASC2011corpus: Towards the Common Ground of Human Activity Recognition
Nobuo Kawaguchi, Ying-Yang, Tianhui Yang, Nobuhiro Ojowae, Yoshe Iwasaki, Katsuhiro Kaji, Tsutomu Terada, Kazuya Muras, Soa Inoue, Yoshihiro Kawahara, Yasuyuki Sumi, Nobuhiko Nishio

Easy Picker: Picking Objects Aided by Passive RFID
Weifeng Zhang, Yingliang Li, Yao Meng, Hao Yu

NFC+: NFC-assisted Media Sharing for Mobile Devices
Kuang-Ming Chen, Liu Yu-Cheng, Mike Chen

User Grouping Method for Ad-hoc Conversations based on Proximity of Users and Speaking Volumes acquired from Portable Sensors
Yutaka Kanatsu, Jin Nakazawa, Hideyuki Todaka

Detecting Water Waste Activities for Water-Efficient Living
Tang Thuy Vu, Akifumi Sokan, Hironori Nakajo, Kaori Fujinami, Jaakko Suutala, Peikka Sihota, Tuomo Alasalmi, Ari Pitkanen, Juha Röning

CoolMag: A Tangible Interaction Tool to Customize Instruments for Children in Music Education
Cheng Zhang, Li Shen, Daiyi Wang, Feng Tian, Hongan Wang

Application of Dimensionality Reduction Techniques for Mobile Social Context
Andreas Komninos, Athanasios Plessas, Vasillios Stefanis, John Gavrilakakis

ContextCapture: Using Context-based Awareness Cues to Create Narrative Events for Status Updates
Ville Antila, Jussi Polet

Towards Qualitative Assessment of Weight Lifting Exercises Using Body-Worn Sensors
Eduardo Veillosa, Andreas Bulling, Hans Gellersen

Response Time Improvement in Accelerometer-based Activity Recognition by Activity Change Detection
Ren Ohmura, Wataru Takasaki

Activity and Device Position Recognition In Mobile Devices
Lenny Gokap, Anthony Sarah, Chris Brunner, Vidya Narayanan, Sanjiv Nanda

Location-based Information Fusion for Mobile Navigation
Anna Wu, Xiaolong (Luke) Zhang

Multi-granular Demand Forecasting in SmarterWater
Jing Dai, Ming Li, Sambit Sahi, Milind Naphade, Feng Chen
Ubiquitous Augmented Reality: Expanding Augmented Reality Environment with Wireless tags and Visible Light Communication Projector
Atsushi Hyama, Hiroshi Fujino, Go Kashiwagi, Michitaka Hrose

IteMinder: Finding items in a room using passive RFID and an autonomous robot [VIDEO]
Mazuho Komatsuzaki, Koji Tsukada, Itiro Sia, Peritti Vernonen, Mika Luumula, Sakari Peska

DrawerBrowser: Practical picture browser for finding items in drawers [DEMO]
Kenuke Kambara, Koji Tsukada

Distributed Human Activity Data Processing using HASC Tool
Nobuo Kawaguchi, Nobuhiro Ogawa, Yohei Iwasaki, Katsuhiko Kaji

**Posters Accompanying Full Papers/Notes**

LightWave: Using Compact Fluorescent Lights as Sensors
Sidhant Gupta, Ke-Yu Chen, Matthew S. Reynolds, Shwetak N. Patel

The Social IMR: Measuring, Understanding and Designing Social Mechanisms in the Real World
Nadav Aharony, Wei Pan, Cory Ip, Inas Khayat, Alex Pentland

Reflections on the Long-term Use of an Experimental Digital Signage System
Sarah Clinch, Nigel Davies, Adrian Friday, Christos Efstratius

Interactive 3D Modeling of Indoor Environments with a Consumer Depth Camera
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Leveraging Conductive Inkjet Technology to Build a Scalable and Versatile Surface for Ubiquitous Sensing
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Jun Wei, Xuan Wang, Roshan Lalitha Peris, Yongsoon Choi, Xavier Raman Martinez, Remi Tacche, Jeffrey Tau
Kwan Valma Koh, Veronika Halupka, Adrian David Cheok

Are you close with me? Are you nearby? Investigating social groups, closeness, and willingness to share
Jason Wiese, Patrick Gage Kelley, Lanne Faith Cranson, Laura Dabbish, Jason J. Hong, John Zimmerman

Demos

**Demo Session 1, Tuesday, September 20, 12:00-14:00**

**Demos in Adjunct Proceedings**

Qooqle: Search with Speech, Gesture, and Social Media [POSTER VIDEO]
Li Bian, Henry Holtzman

Lupe: Information Access Method based on Distance between User and Sensor Nodes using AR technology
Takuya Takimoto, Yutaka Karatsu, Takuro Yonezawa, Jin Nakazawa, Kazunori Takahashi, Hideyuki Tokuda

Smart Home on Smart Phone
Yu Zhong, Yue Suo, Wenchang Xu, Chun Yu, Xinwei Guo, Yuhang Zhao, Yuanchun Shi

A Stabilization Method of Projected Images for Wearable Projector Applications
Satoshi Murata, Kaoru Fujinami

Tilt & Touch: mobile phone for 3D interaction
Yuan Du, Haoyi Ren, Gang Pan, Shijian Li

Demonstrating Generation Y Interactions through Interactive Prototyping [POSTER]
Wei Liu, Pieter Jan Stappers, Gert Pasman, Aadjan van der Helm

Connecting People through Physical Resources in an Office Environment
Alvin Chin, Hao Wang, Liun Zhu, Bin Xu, Hao Wang

Near Ultrasonic Directional Data Transfer for Modern Smartphones
Will Archer Arentz, Udana Bandara

ContextCapture: Using Context-based Awareness Cues to Create Narrative Events for Status Updates [POSTER]
Ville Antila, Jussi Polet

Smart Makeup System: Supporting Makeup using Lifelog Sharing
Maki Nakagawa, Koji Tsukada, Itiro Sia

CAMPUS: Context Aware Mobile Platform for Uniformed Security
Hossein Rahnama, Sina Jamshidi, Stephen John, Alan Shepard

Harmonicare: A Novel Wind Instrument Easy to Learn and Play
Pin Tao, Xuan Zhang, Lin Yang, Yinqiao Wang

[POSTER or VIDEO] demo also has an accompanying poster or video presentation.
Demos Accompanying Full Papers/Notes

How to Nudge In Situ: Designing Lambert Devices to Deliver Salience Information in Supermarkets
Vaiva Kalviškaite, Yvonne Rogers, Jon Bird, Nicolas Villar, Khaled Bachhou, Stephen Payne, Peter M. Todd, Johannes Schöning, Antonio Krüger, Stefan Kreitmayer

Mediated Tabletop Interaction in the Biology Lab – Exploring the Design Space of The Rabbit
Juan David Hincapié Ramos, Aurélien Tabard, Jakob E. Bardram

PreHeat: Controlling Home Heating Using Occupancy Prediction
James Scott, A.J. Bernheim Bruhi, John Krumm, Brian Meyers, Mike Hazas, Steve Hodges, Nicolas Villar

Sifi: Exploiting VoIP Silence for WiFi Energy Savings in Smart Phones
Andrew J. Pyles, Zhen Ren, Gang Zhou, Xue Liu

Where to Find My Next Passenger?
Jing Yuan, Yu Zheng, Lixinang Zhang, Xing Xie, Guangzhong Sun

Urban Computing with Taxicabs
Yu Zheng, Yanchi Liu, Jing Yuan, Xing Xie

Demo Session 2, Wednesday, September 21, 12:00-14:00

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Ubira: A Mobile Platform for an Integrated Online/Offline Shopping Experience
Udana Bandara, James Chen

Emoti-bots: A Line of Emotional Products for Automated Future Homes
Katie Koepfinger, Burcum Turkmen

A Ring-shaped Interactive Device for Large Remote Display and Mobile Device Control
Bonning Zhang, Yiqi Chen, Yuefeng Qian, Xiangdong Wang

Sharing Availability Information with InterruptMe
Juan David Hincapié Ramos, Stephen Voids, Gloria Mark

Transferring Information from Mobile Devices to Personal Computers by Using Vibration and Accelerometer
Takuro Yonezawa, Tomotaka Ito, Hideyuki Tokuda

Self-Adaptive Middleware for the Design of Context-Aware Software Applications in Public Transit Systems
Hassain Rahnama, Petar Kramaric, Alireza Sadeghian, Alan Shepard

MAQS: A Mobile Sensing System for Indoor Air Quality
Yifei Jiang, Kun Li, Lei Tian, Ricardo Piedrahita, Xiang Yun, Omkar Mansata, Qin Lu, Robert P. Dick, Michael Hannigan, Li Shang

DrawerBrowser: Practical Picture Browser for Finding Items in Drawers
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Air Finger: Enabling Multi-scale Navigation by Finger Height above the Surface
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Zheng Sun, Areek Purohit, Kaifei Chen, Shijia Pan, Trevor Pering, Pei Zhang

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Interactive 3D Modeling of Indoor Environments with a Consumer Depth Camera
Hao Dui, Peter Henry, Xiaofeng Ren, Marvin Cheng, Dan B Goldman, Steven M. Seitz, Dieter Fox

iBAT: Detecting Anomalous Taxi Trajectories from GPS Traces
Daping Zhang, Nan Li, Zhu-Hua Zhou, Chao Chen, Lin Sun, Shijian Li

Hand Shape Classification with a Wrist Contour Sensor: Development of a Prototype Device
Rui Fukui, Masahiko Watanabe, Masumichi Shimosaka, Tomomasa Sato, Tomaoki Gyota

GoDine: An Interactive Multi-sensory System for Remote Dining
Jun Wei, Xuan Wang, Rashaal Laintha Peiris, Youngsoo Choi, Xavier Roman Martinez, Remi Tache, Jeffrey Tau Kwan, Valino Koh, Veronica Halupka, Adrian David Cheok

Loc: a service for managing my personal places and paths
Donnie H. Kim, Kyungsik Han, Deborah Estrin

Smiling Makes Us Happier: Enhancing Positive Mood and Communication with Smile-Encouraging Digital Appliances
Hitomi Tsujita, Jun Rekimoto

How to Nudge In Situ: Designing Lambert Devices to Deliver Salience Information in Supermarkets
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Jing Yuan, Yu Zheng, Lixinang Zhang, Xing Xie, Guangzhong Sun

Urban Computing with Taxicabs
Yu Zheng, Yanchi Liu, Jing Yuan, Xing Xie
**Doctoral Consortium**

The purpose of the Consortium is to provide doctoral students with a forum, in which to discuss their PhD thesis proposal with experienced UbiComp researchers and other doctoral students.

Panelists: Julie Kientz, University of Washington; Hao-Hua Chu, National Taiwan University; Anind Dey, CMU; Cho-li Wang, the University of Hong Kong

**The schedule is:**

8:30  Overview of the Doctoral Consortium
9:00  A Data-Rich Approach for Investigating Social Mechanisms in the Wild, Nadav Aharony, MIT, USA
9:35  Design of Persuasive Technologies for Healthy Sleep Behavior, Eun Kyoung Choe, University of Washington, USA
10:10 Coffee break
10:40 A User’s Perspective of Design for Context-Awareness, Xiaohui Zhang, Sheffield Hallam University, UK
11:15 Enriching Location Information: An Energy-efficient Approach, Sourav Bhattacharya, University of Helsinki, Finland
11:50 Communication around Home-Energy Monitoring Devices: Connecting Stakeholders in Low-Income Communities, Tawanna Dillahunt, CMU, USA
12:25 Lunch
14:00 A Framework for User Controlled Remembering and Forgetting in Long Term User Models, Debjee Barua, University of Sydney, Australia
14:35 Research on User Activity and Context Model Based Mobile Context-aware Interaction Design Method, Yuanyuan Chen, Dalian Maritime University, China
15:10 Don’t Let Me Down: Using Contextual Information to Aid Diabetics, Tom Owen, Swansea University, UK
15:45 Coffee break
16:15 A Dependable Middleware for the Development of Applications for Wireless Sensor and Actor Networks, Jaime Chen, University of Malaga, Spain
16:50 Facilitating the Consumption of Content on Social Networking Services with Mobile Devices, Yanqing Gao, Nokia Research Center, Finland
17:25 Wrap-up
Sensor-equipped mobile devices are rapidly becoming a powerful platform for activity and context recognition. The ability to recognize user activities in everyday environments is driving innovations in healthcare, entertainment, social networking, gaming, transportation and citizen science. Although mobile sensing enables a wide range of applications, the different usage scenarios are unified by a set of common technical challenges related to: i) efficient and reliable sensing of people’s activities and environment; ii) accurate interpretation and classification of mobile sensor data; and iii) development and effective deployment of user applications based on sensing. Experts in machine learning, human-computer interaction and mobile systems have been addressing these challenges but typically approach the problem from only one perspective.

In this tutorial we will provide an interdisciplinary audience with the holistic view of the issues involved in the development and deployment of mobile systems for activity recognition. We will give an overview of the key ideas and approaches that have been proven successful in sensing, learning, and real-world deployments, as well as discuss some of the common pitfalls. The tutorial will be organized into a series of interactive sessions based around common usage scenarios that engage the audience via hand-on exercises that examine specific aspects of mobile activity recognition systems.

Speakers

Tanzeem Choudhury is an Associate Professor in the Information Science department at Cornell University. She directs the People-Aware Computing group that develops systems that can reason about human activities, interactions, and social networks in everyday environments. Tanzeem received her PhD from the Media Laboratory at MIT. Tanzeem’s research was the first to demonstrate the feasibility of using wearable sensors to capture and model social networks automatically, on the basis of face-to-face conversations. MIT Technology Review recognized her as one of the top 35 innovators under the age of 35 (2008 TR35) for her work in this area. Tanzeem has also been selected as a TED Fellow (2009), PopTech Science and Public Leadership Fellow (2010), and is a recipient of the NSF CAREER award (2008). More information can be found at Tanzeem’s web-page: http://www.cs.cornell.edu/~tanzeem/

Pedja Klasnja is a research scientist at the Information School at the University of Washington. His research is in the areas of Health Informatics and Human-Computer Interaction and it focuses on investigating how technology can help individuals to manage their health more effectively. Pedja has studied how mobile technology can help cancer patients to manage care-related information, individuals’ privacy concerns related to the use of on-body sensors and wireless networks, use of mobile technology to encourage physical activity, and use of mobile phones and sensing to improve recall of low salience activities. His current research is on the use of mobile technology for risk modification in heart disease.

Nicholas Lane is a researcher at Microsoft Research Asia, where he is a member of the Mobile and Sensing Systems Group (MASS). His research interests revolve around mobile sensing systems that incorporate robust and scalable sensor-based computational models of human behavior and context. Lane has extensive experience building and deploying mobile sensing systems using a variety of sensing platforms (e.g., mote-class sensors, mobile phones and wearable devices). His PhD thesis proposed community-guided learning techniques for mobile sensing systems; and demonstrated by effectively leveraging both individuals and their communities, these systems can cope with the diverse large-scale user populations found in the real world.
evaluation, with special attention paid to the role of ubicomp technology to facilitate evaluation. This tutorial will be aimed at ubicomp researchers (both students and faculty) who may be very familiar with ubicomp research topics but not familiar with human-computer interaction, interaction design or evaluation techniques. Simple group exercises will help to establish some confidence in conducting some of the techniques described. Notes and references will be provided, but those interested in preparing for this tutorial should get a copy of the book, Ubiquitous Computing Fundamentals, edited by John Krumm, and focus on the field studies chapter written by A.J. Brush.

**Speaker**

Gregory Abowd is a Distinguished Professor in the School of Interactive Computing at the Georgia Inst. of Technology and has been an active ubicomp researcher since 1995. He has developed and evaluated a number of seminal ubicomp systems, including Classroom 2000, Cyberguide, the Personal Audio Loop, and a number of systems for use in the home and health spaces. Dr. Abowd is a co-author of a leading textbook in Human-Computer Interaction (with Alan Dix, Janet Finlay and Russell Beale) and has taught courses on HCI since 1994.

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**T05: Urban sensing using mobile phone network data [half day]**

Room: A434

Francesco Calabrese

Over the past decade the development of digital networks and operations has produced an unprecedented wealth of information reflecting various aspects of urban life. In this framework, telecom operators gather massive amount of data about how their users interact or occupy the city’s infrastructure. During the tutorial I aim to outline some examples of data that can be collected from telecommunication networks, and consider their strengths and weaknesses in terms of accuracy, level of details, and applications. Moreover, I aim at introducing techniques for dealing with limitations in granularity in both space and time, and pre-processing of mobile phone network data to infer patterns related to human activities in the city. Each of these techniques will be described in terms of assumptions and limitations, and will be illustrated with examples using real telecommunication datasets. Finally, I aim to provide an overview of the challenges currently being faced in this field.

**Speaker**

Francesco Calabrese is an Advisory Research Staff Member at the IBM Smarter Cities Technology Centre, Dublin, Ireland, where he leads research in urban dynamics. He is also a Research Affiliate at the SENSEable City Laboratory of the Massachusetts Institute of Technology, Cambridge, MA, USA. He received the Laurea (BS and MS) degree in Computer Engineering, cum laude, in 2004 and the Ph.D. in Computer and System Engineering from the University of Naples Federico II, Italy, in 2007. He was research scientist and postdoctoral associate at the Massachusetts Institute of Technology from 2007 to 2010, where he led the Network & Society group. His research interests include ubiquitous computing, intelligent transportation systems, urban network analysis and the design of distributed control systems. He has co-authored over 50 scientific publications. His work has been exhibited in leading museums worldwide, including the Venice Biennale and MoMA, NY. Francesco Calabrese is a member of the IEEE and the Control Systems Society. He is chairing a workshop on pervasive urban applications (PURBA, http://purba.mit.edu/) at the International Conference on Pervasive Computing (Pervasive 2011), which received over 30 submissions. A recent workshop he organized on the analysis of mobile phone networks (NETMOB, http://www.inma.ucl.ac.be/~blondel/netmob/) held in conjunction with the International Conference on Network Science attracted over 100 participants and 50 submissions.
Panel Chair, Elizabeth D. Mynatt

Elizabeth D. Mynatt is the Executive Director of the GT Institute for People and Technology, and Professor in the School of Interactive Computing in the College of Computing at the Georgia Institute of Technology. Her research program Everyday Computing examines the human-computer interface implications of having computation continuously present in many aspects of everyday life. Her research contributes to ongoing work in personal health informatics, computer-supported collaborative work and human-computer interface design. Named Top Woman Innovator in Technology by Atlanta Woman Magazine in 2005, Mynatt has created new technologies that support the independence and quality of life of older adults “aging in place,” that help people manage diabetes, and that increase creative collaboration in workplaces.

From 2005 - 2010, Mynatt directed the GVU Center at Georgia Tech. This internationally recognized interdisciplinary research organization brings together over 70 faculty at Georgia Tech with the mission to “unlock human potential through technical innovation.” By working with a broad range of industry partners, GVU researchers engage difficult societal challenges and marketplace uncertainties with leadership and expertise in computing, engineering, design, science, art, and the humanities. Mynatt is a member of the SIGCHI Academy, a Sloan and Kavli research fellow, and serves on Microsoft Research's Technical Advisory Board. Mynatt is also a member of the Computing Community Consortium, an interdisciplinary research organization brings together over 70 faculty at Georgia Tech with the mission to “unlock human potential through technical innovation.”

Panelists

John Seely Brown

John Seely Brown is the Independent Co-Chairman of the Deloitte’s Center for the Edge and a visiting scholar and advisor to the Provost at University of Southern California (USC). Prior to that he was the Chief Scientist of Xerox Corporation and the director of its Palo Alto Research Center (PARC)—a position he held for nearly two decades. While head of PARC, Brown expanded the role of corporate research to include such topics as the management of radical innovation, organizational learning, complex adaptive systems, and nano technologies. He was a cofounder of the Institute for Research on Learning (IRL). His personal research interests include digital youth culture, digital media and institutional innovation.

John, or as he is often called—JSB—is a member of the American Academy of Arts and Sciences, the National Academy of Education, a Fellow of the American Association for Artificial Intelligence and of AAAS and a Trustee of the MacArthur Foundation. He serves on numerous public boards (Amazon, Corning, and Varian Medical Systems) and private boards of directors. He has published over 100 papers in scientific journals.

Paul Dourish

Paul Dourish is a Professor of Informatics in the Donald Bren School of Information and Computer Sciences at UC Irvine, with courtesy appointments in Computer Science and Anthropology. His research focuses primarily on understanding information technology as a site of social and cultural production; his work combines topics in human–computer interaction, ubiquitous computing, and science and technology studies. In 2008, he was elected to the CHI Academy in recognition of his contributions to Human–Computer Interaction. He is the author of “Where the Action Is: The Foundations of Embodied Interaction” (MIT Press, 2001), which explores how phenomenological accounts of action can provide an alternative to traditional cognitive analysis for understanding the embodied experience of interactive and computational systems. With Genevieve Bell, he is the author of “Divining a Digital Future: Mess and Mythology in Ubiquitous Computing” (MIT Press, 2011), which examines the social and cultural aspects of the ubiquitous computing research program.

Gregory Abowd

Gregory Abowd is a Distinguished Professor in the School of Interactive Computing at Georgia Tech. Since 1994, when he arrived at Georgia Tech and was influenced by Weiser’s article, he has been exploring topics in ubiquitous computing, ranging from very technology-centered inventions to software infrastructure to applications in classrooms, the workplace and homes. Gregory was the General Chair of UbiComp 2001, when the conference took on its current name and first appeared in North America. He is most proud of his advancement of a generation of UbiComp researchers whose work and influence far surpasses his own work.

Jun Rekimoto

Jun Rekimoto received his B.A.Sc., M.Sc., and Ph.D. in Information Science from Tokyo Institute of Technology in 1984, 1986, and 1996, respectively. From 1986 to 1994, he worked for the Software Laboratory of NEC. During 1992-1993, he worked in the Computer Graphics Laboratory at the University of Alberta, Canada, as a visiting scientist. Since 1994 he has worked for Sony Computer Science Laboratories (Sony CSL). In 1999 he formed, and has since directed, the Interaction Laboratory within Sony CSL. At Sony CSL, Rekimoto initiated and has led the “Real-World User Interfaces” project since 1994. This project produced several notable research accomplishments, including NaviCam (a situationally-aware mobile assistant), Pick-and-Drop (a direct-manipulation technique for inter-appliance computing), Multiple-Device Digital Whiteboard, Augmented Surfaces, and TimeScape (a time-machine user interface environment). Some of these are being commercialized in Sony’s VAIO personal computer series.

Rekimoto’s research interests include computer augmented environments, mobile/ wearable computing,
Visions of UbiComp Film Contest

The goal of the contest is to showcase our community’s vision for the future of UbiComp technologies using the medium and language of film. Contestants will show their short films at the conference. Some award categories will be chosen by an expert panel of judges and others will be chosen via voting by UbiComp attendees. Winners will be announced at the conference.

Touch Live Connect
Chelsea Wanta, Asim Kadav, Kyung Lee, Nai wen Claire Yu, Enid Montague
University of Wisconsin

Reach Out to Me
Ina Xi and Sean Chung
Art Center College of Design

WiscFit
Daniel Nicolalde
University of Wisconsin

rideShare
Weipeng Wang, Qizhou Zhou, Sicong Huang, Wenxuan Cong
China Central Academy of Fine Arts

Future Meeting Spaces
Edward Tse, Jill Roberts, Jesse Nagle, Gerald Morrison, David Martin, Linda Thomas
SMART Technologies

A Day in the Life of Vernon Lee and Becca
Kevin Tassini and the UbiComp Lab
Carnegie Mellon University

Beijing Wall
Qiang Li, Mengchao Zhou, Xinhao Liu
China Central Academy of Fine Arts

Life Fingerprint
Jessica Beltran and the Mobile and Ubiquitous Computing Healthcare Laboratory
CICESE
Social Program

Sunday, September 18, 18:30-21:00, Opening Reception (Sponsored by Google)
Venue: Academy of Arts & Design, Tsinghua University

Google sponsors Tsinghua University in hosting the UbiComp Opening Reception, with light dinner, in the evening of September 18th. The reception is a platform for the conference attendees to exchange research ideas and share results. The research team at Google Beijing is working on advancing technologies in three areas: Mobile, Chinese NLP, and Large-Scale Data Mining. Furthermore, Google awards university grants through Google Faculty Research Awards program and Google Focused Awards program. The current Google Focused Awards program in China is Mobile 2014, which sponsors seven institutions to develop next-generation mobile cyber-infrastructure and killer applications to service users.

Monday, September 19, 19:30-21:00, MSRA Open House
Venue: Microsoft Building, No. 5, Danling Street

Microsoft Research Asia (MSRA) is hosting an Open House event, which includes a light dinner, to UbiComp 2011 participants. Microsoft Research Asia, Microsoft's fundamental research arm in the Asia Pacific region, conducts fundamental, curiosity-driven research with the goal of realizing Microsoft's vision of future computing. By harnessing the best talent from across Asia and the world, Microsoft Research Asia has grown from its nascent beginnings in 1998 into a world-class research lab that is constantly pushing the state-of-the-art forward and improving the computing experience for information technology users.

Tuesday, September 20, 18:00-21:00, Banquet
Venue: Tingli Hall Restaurant, Summer Palace

This event will feature a pre-dinner cruise on the Kunming Lake, a royal court cuisine dinner, and a selected classical Chinese opera/dance performance in the Summer Palace, named a World Cultural Heritage site by UNESCO. Buses will start to leave the conference venue from 17:15pm.

Thursday, September 22, Tours

The suggested travel dates are Sept 22 and 23 (the two days right after the conference) which are workdays without heavy traffic in the tourist attractions. Please make a (on-site) reservation by Sept. 20 at the travel agency booth in the conference room. The travel fare for these tours is on your own and not included in the registration fee. The tours are operated by a domestic travel agency instead of UbiComp, although the UbiComp committee has checked the quality of this travel agency.

Map

Hotels
1. JinChun Garden Hotel 近春园
2. JiaSuo Hotel 甲所
3. Unisplendour International Hotel 紫光国际交流中心
4. Wenjin Hotel 文津国际酒店
5. Holiday Inn 红杉假日酒店
6. Jade Palace 翠宫饭店
7. Friendship Hotel 友谊宾馆
8. Xijiao Hotel 西郊宾馆
9. RunZeJiaYe Hotel 润泽嘉业大酒店
10. Crown Plaza 皇冠酒店

Restaurants
11. Yan Restaurant 宴铭园
12. QuanJuDe (Beijing Roast Duck) 全聚德, 北京烤鸭
13. Zui Ai Vogue Restaurant 醉爱时尚餐厅
14. Tianchu Vegetarian Restaurant 天厨妙香素食
15. Starbucks Coffee 星巴克
16. Syllable BBQ 赛乐堡
17. The Avocado Tree (Burritos) 油梨树

Social Activity Venues
18. Summer Palace 颐和园
19. MSRA 微软亚洲研究院

Conference Venues
20. The Main Building 主楼
21. Academy of Arts & Design 美术学院
22. The Main Gate/East Gate of Tsinghua University 清华大学主校门/东门

Tsinghua University: The Main Gate/East Gate is at the north end of Zhongguancun East Rd
General Information

Registration Desk Hours

- Sep. 17, Saturday, 8:00-17:30
- Sep. 18, Sunday, 8:00-17:30
- Sep. 19, Monday, 7:30-19:00
- Sep. 20, Tuesday, 8:00-17:00
- Sep. 21, Wednesday, 8:00-17:00

Find & Connect

Find & Connect is an exciting application being provided to attendees at the UbiComp 2011 conference developed by Tsinghua University –Nokia Joint Laboratory for Mobile Computing Innovation Technology (LMCIT), a partnership between Tsinghua University and Nokia Research Center in Beijing, China. Find & Connect helps UbiComp attendees find where people are at the conference, where sessions are held, and to connect with new people. All that is needed is just your phone, your passion, and we will provide you with the rest. If you are interested in participating in this, please come to the Find & Connect registration desk to register and obtain your username and password. To access Find & Connect on your phone, go to http://bit.ly/ubi-compfc.

Network Access

UbiComp 2011 provides Free WiFi access to the Internet.
SSID = UbiComp2011
Password = ubicomp11

Restaurants

There are many restaurants with different Chinese regional cuisines nearby the conference venue. Refer to the list on page 27 for some good Chinese and international restaurants near the Tsinghua University Main / East Gate.