Wireless Health 2012
Academic & Industry Conference

Conference Sessions:
October 23-25, 2012

Hilton La Jolla Torrey Pines
10950 North Torrey Pines Road
La Jolla, CA 92037
Tuesday, October 23, 2012
Time: 7:00am – 5:30pm
(Conference Sessions Located in the Fairway Pavilion)

7:00 AM :: Registration & Continental Breakfast

8:45 AM :: Welcome & Opening Remarks
Robert B. McCray : President & Chief Executive Officer, WLSA

9:00 AM :: KEYNOTE: From Mars to Main Street
Jay Sanders, MD : CEO of The Global Telemedicine Group; Professor of Medicine (Adjunct) at Johns Hopkins School of Medicine; Founding Board Member and President Emeritus, American Telemedicine Association

9:30 AM :: PANEL DISCUSSION: Big Data
Moderator: Roozbeh Jafari, PhD : Electrical Engineering, UT Dallas
Panelists:
- Holly Jimison, PhD – Medical Informatics & Clinical Epidemiology, OHSU
- James McClain, PhD – Physical Activity Epidemiologist, Risk Factor Monitoring & Methods Branch, National Cancer Institute (NCI)
- Lucila Ohno-Machado, MD, PhD – Associate Dean for Informatics & Technology, School of Medicine; Founding Chief, Division of Biomedical Informatics; Professor of Medicine, UC San Diego

10:15 AM :: BREAK

10:45 AM :: KEYNOTE: Everyday Health
Elizabeth Mynatt, PhD : Director, GVU Center; Professor, School of Interactive Computing; Associate Dean for Strategic Planning and Initiatives at the College of Computing, Georgia Tech

11:15 AM :: TECHNICAL SESSION #1
Geo-Spacial Assessment for Wireless Health

Session Chair: Julien Penders, MSc : Program Manager, Body Area Networks, Holst Center/Imec

*1.1 - CitiSense: Improving Geospatial Environmental Assessment of Air Quality Using a Wireless Personal Exposure Monitoring System

* Best Paper Award Nominees
1.2 - Individual Mobility Patterns and Real-Time Geo-spatial Exposure to Point-of-Sale Tobacco Marketing

1.3 - Challenges and Advances in Discovering and Modeling User Location-based Context from Smartphone Data
Edmund Seto (University of California, Berkeley), Victor Shia (University of California, Berkeley), Jenna Hua (University of California, Berkeley)

12:10 PM :: LUNCH

1:15 PM :: Announcements

1:30 PM :: TECHNICAL SESSION #2 Energy Expenditure

Session Chair: James McClain, PhD MPH: Program Director, Risk Factor Monitoring and Methods Branch Applied Research Program Division of Cancer Control and Population Sciences, National Cancer Institute

*2.1 - Energy Expenditure Estimation Using Wearable Sensors: A New Methodology for Activity-Specific Models
Marco Altini (Holst Centre/imec-nl, NL), Julien Penders (imec / Holst Centre, NL), Oliver Amft (TU Eindhoven, NL)

2.2 - Good Self-Report Measures of Physical Activity vs. Sensors: Let’s not throw the baby out with the bathwater
Donna Spruijt-Metz (University of Southern California, US), Britni Belcher (National Cancer Institute, US), Ya-Wen Hsu (Chia Nan University of Pharmacy & Science, US)

2.3 - Metrology in Metabolic Measurements
John Moon (MEI Research, US)

2:20 PM :: DEMO PRESENTATION SESSION

Session Chair: John Lach, PhD: Professor and Chair, Electrical & Computer Engineering, University of Virginia

1.1 - Wireless, non-contact driver’s ECG monitoring system
Shrijit Mukherjee (Plessey Semiconductors Ltd., UK), Robert Breakspear (Plessey Semiconductors Ltd., UK), Sean Connor (Plessey Semiconductors Ltd., UK)

* Best Paper Award Nominees
1.2 - Tracking Influence of Reflective Exercise for Persons with Epilepsy
Robert F. Dickerson (University of Virginia, US), Enamul Hoque (University of Virginia, US), John A. Stankovic (University of Virginia, US), David Gerdt (Empirical Technologies Corporation, US), Joel G. Anderson (University of Virginia, US), Ann G. Taylor (University of Virginia, US)

1.3 - Demonstration Paper: Integrating Thermoelectric Technology into Clothing for Generating Usable Energy to Power Wireless Devices
Ingo Stark (Perpetua Power Source Technologies, Inc., US)

1.4 - Demonstration Paper: Wearable Sensor for Continuously Vigilant Spatial and Depth-Resolved Perfusion Imaging
Bijan Mapar (University of California, Los Angeles, US), Yeung Lam (University of California, Los Angeles, US), Alireza Mehrnia (University of California, Los Angeles, US), Barbara Bates-Jensen (University of California, Los Angeles, US), Majid Sarrafzadeh (University of California, Los Angeles, USA), William Kaiser (University of California, Los Angeles, USA)

1.5 - Model-Based Wireless Health System Design Tool

1.6 - Confined Intra-Arm Communication for Medical Applications
Trang Thai (Georgia Institute of Technology, US), Gerald DeJean (Microsoft Research, US), Ran Gilad-Bachrach (Microsoft Research, US)

1.7 - Fall Detection and Risk of Falling Assessment with Wearable Sensors
Bor-rong Chen (BioSensics LLC, US), Joseph Gwin (BioSensics LLC, US)

3:00 PM :: BREAK

3:30 PM :: KEYNOTE: Delivering Improved Outcomes for Chronic Disease Patients
Lionel Tarassenko, CBE, FREng, DPhil: Chair in Electrical Engineering at Oxford University and Director of the Oxford Institute of Biomedical Engineering

4:45 PM :: PANEL DISCUSSION: Evidence
Moderator: Donna Spruijt-Metz, PhD: Keck School of Medicine, Dept. of Preventive Medicine, USC
Panelists:
- Bill Riley, PhD – Chief, Science of Research and Technology Branch, NCI
- Ida Sim, MD, PhD – UCSF School of Medicine
- Jack Young – Director, Qualcomm Ventures
- Noam Ziv - Chief Executive Officer & Founder, Kesembe Inc
4:45 PM :: **TECHNICAL SESSION #3**  
**System Optimization for Wireless Health**

**Session Chair:** Allen Yang, PhD : CTO, Atheer; Principal Investigator, UC Berkeley

3.1 - **Power Constrained Sensor Sample Selection for Improved Form Factor and Lifetime in Localized BANs.**  
Vishwa Goudar (University of California, Los Angeles, US), Miodrag Potkonjak (University of California at Los Angeles, US)

3.2 - **Impact of Sensor Misplacement on Dynamic Time Warping Based Human Activity Recognition Using Wearable Computers.**  
Nimish Kale (The University of Texas at Dallas, US), Jaeseong Lee (ESSP Lab, UT Dallas, US), Reza Lotfian (UT Dallas, US), Hamed Ghods (Food and Drug Administration, US), Roozbeh Jafari (UT Dallas, US)

3.3 - **A Methodology for Developing Quality of Information Metrics for Body Sensor Design.**  
Italo Armenti (University of Virginia, US), Philip Asare (University of Virginia, US), Juliana Su (University of Virginia, US), John Lach (University of Virginia, US)

5:30 - 7:00 PM **Reception, Demo & Poster Sessions**
Wednesday, October 24, 2012
Time: 7:00am – 5:35pm

(Conference Sessions Located in the Fairway Pavilion)

7:00 AM :: Registration & Continental Breakfast

8:50 AM :: Welcome & Opening Remarks
Robert B. McCray : President & Chief Executive Officer, WLSA

9:00 AM :: KEYNOTE : Health Reform Re-Frames The Market: Wireless Solutions Meet New Market Needs
Molly Coye, MD, MPH : Chief Innovation Officer of the UCLA Health System

9:30 AM :: PANEL DISCUSSION : Healthcare Delivery & Readmission
Moderator: Kathy Duckett – Director, Training & Development, Sutter Center for Integrated Care
Panelists:
• Navin Govind – CEO, Aventyn
• Nicole Orr, MD – Cardiologist, St. Francis Hospital
• Michael K. Ong, MD, PhD - Assistant Professor, Internal Medicine & Health Services Research, Department of Medicine, David Geffen School of Medicine, UC Los Angeles

10:15 AM :: BREAK

10:45 AM :: TECHNICAL SESSION #4
End-to-end Research

Session Chair: Fahd Albinali, PhD : CTO, EveryFit

4.1 - WANDA: An End-to-End Remote Health Monitoring and Analytics System for Heart Failure Patients

4.2 - BeWell+: Multi-dimensional Wellbeing Monitoring with Community-guided User Feedback and Energy Optimization
Mu Lin (Dartmouth College, US), Nicholas Lane (Microsoft Research Asia, CN), Mashfiqur Mohammod (Cornell University, US), Xiaochao Yang (Dartmouth College, US), Hong Lu (Dartmouth College, US), Giuseppe Cardone (University of Bologna, IT), Shahid Ali (Dartmouth College, US), Afsaneh Doryab (IT University of Copenhagen, DK), Ethan Berke (Dartmouth College, US), Andrew Campbell (Dartmouth College, US), Tanzeem Choudhury (Cornell University, US)

* Best Paper Award Nominees
4.3 - Experiences with an End-To-End Wireless Clinical Monitoring System
Rahav Dor (Washington University in St. Louis, US), Gregory Hackmann (Washington University in St. Louis, US), Zicheng Yang (Washington University in St. Louis, US), Chenyang Lu (Washington University in St. Louis, US), Yixin Chen (Washington University in St. Louis, US), Marin Kollef (Washington University in St. Louis, US), Thomas Bailey (Washington University in St. Louis, US)

11:35 AM :: KEYNOTE: Transforming Health Care Through Wireless and Big Data
John Mattison, MD: Chief Medical Information Officer, Kaiser Permanente

12:05 PM :: LUNCH

1:15 PM :: Overview of Health Data Safety & Security
Greg Rose: Senior Vice President of Technology, Qualcomm

1:30 PM :: PANEL DISCUSSION: Health Data Safety & Security
Moderator: Greg Rose - Senior Vice President of Technology, Qualcomm
Panelists:
- David Kotz, PhD – Department of Computer Science & Associate Dean of the Faculty for the Sciences, Dartmouth
- Kate Black, JD – Staff Council, Center for Democracy and Technology

2:15 PM :: TECHNICAL SESSION #5
Aging, Elderly and Dealing with Longevity

Session Chair: Adam Barth, PhD: Principal Engineer, BeClose
5.1 - Aiding Diagnosis of Normal Pressure Hydrocephalus with Enhanced Gait Feature Separability

5.2 - Automatic Fall Detection and Risk of Falling Assessment with Wearable Sensors
Bor-rong Chen (BioSensics LLC, US), Joseph Gwin (BioSensics LLC, US), Bijan Najafi (University of Arizona, College of Medicine, US)

5.3 - Activity Monitoring and Outcome Measurements by Remotely Sensing Daily Mobility and Exercise in Disabled Persons
Bruce H. Dobkin (University of California, Los Angeles, US), Andrew Dorsch (University of California, Los Angeles, US), William Kaiser (University of California, Los Angeles, US)
3:05 PM :: **BREAK**

3:30 PM :: **PANEL DISCUSSION: Global Health**

Panelists:
- **Chandil Kumar Gunashekara, PhD, MHA** - Consultant, Narayana Hrudayalaya Private Limited; Director, eHealth Enablers Private Limited
- **Shyam Vasudevarao, PhD** - President & CTO, Forus Health; Innovation Manager Health Care Sector, Philips Innovation Center Bangalore

4:15 PM :: **LATE BREAKING RESEARCH ABSTRACT SESSIONS**

**Session Chair: John Lach, PhD** : Professor and Chair, Electrical & Computer Engineering, University of Virginia

1.1 - Remote Activity Monitoring Quantifies Changes in Gait During Acute Inpatient Rehabilitation
Andrew Dorsch (University of California, Los Angeles, US), Seth Thomas (University of California, Los Angeles, US), Celia Xu (University of California, Los Angeles, US), William Kaiser (University of California, Los Angeles, US), Bruce Dobkin (University of California, Los Angeles, US)

1.2 - Inertial Measurement-based Speed Skater Tracking
Kanishka Jayawardene (McGill University, Canada), Jerome Carriot (McGill University, Canada), Zeljko Zilic (McGill University, Canada), Kathleen Cullen (McGill University, Canada)

1.3 - Wireless-Enabled Pedaling Exercise in Bed Lessens Neuromuscular Deconditioning in Critically Ill Patients
Andrew Dorsch (University of California, Los Angeles, US), Seth Thomas (University of California, Los Angeles, US), William Kaiser (University of California, Los Angeles, US), Bruce Dobkin (University of California, Los Angeles, US)

1.4 - Crowd-Sourced Micro-Processing of Mobile Photographs for Health-Related Field-Surveillance
Michael Tacelosky (Legacy Foundation, USA), Jennifer Pearson (Legacy Foundation, USA), Jennifer Cantrell (Legacy Foundation, USA), Ollie Ganz (Legacy Foundation, USA), Jennifer Kreslake (Legacy Foundation, USA), David Abrams (Legacy Foundation, USA), Donna Vallone (Legacy Foundation, USA), Thomas Kirchner (Legacy Foundation, USA)

1.5 - Youth-participatory Approach to Inform the Development of SMS Messages to Promote Sun Safe Behaviors in Adolescents
Melanie Hingle (University of Arizona, USA), Eden Ellison (Mel & Enid Zuckerman College of Public Health, USA), Naja McKenzie (University of Arizona Cancer Center, USA), Cynthia Thomson (Mel & Enid Zuckerman College of Public Health, USA), Robert Logan (National Library of Medicine, USA), Robin Harris (Mel & Enid Zuckerman College of Public Health, USA)
4:45 PM :: **TECHNICAL SESSION #6**

**Intervention & Wireless Health**

**Session Chair:** Andrew Raij, Ph.D. - Assistant Professor, Department of Electrical Engineering Courtesy, Assistant Professor, Department of Computer Science and Engineering, University of South Florida

6.1 - Decreasing Sedentary Behavior in Overweight Youth Using a Real-Time Mobile Intervention


6.2 - Leveraging Mobile Technology in the Delivery of Behavioral Interventions Targeting Substance Use Disorders

*Lisa A. Marsch (Center for Technology and Behavioral Health, Dartmouth College, US)*

6.3 - Facilitating Medication Adherence and Eliminating Therapeutic Inertia Using Wireless Technology: Proof of Concept Findings with Uncontrolled Hypertensives and Kidney Transplant Recipient

*John W McGillicuddy (Medical University of South Carolina, US), Mathew J Gregoski (Medical University of South Carolina, US), Brenda M Brunner-Jackson (Medical University of South Carolina, US), Ana K Weiland (Medical University of South Carolina, US), Sachin K Patel (Medical University of South Carolina, US), Rebecca A Rock (College of Charleston, US), Eveline M Treiber (College of Charleston, US), Lydia K Davidson (College of Charleston, US), Frank A Treiber (Medical University of South Carolina, US)*

5:35 - 7:00 PM **Reception, Demo & Poster Sessions**
Thursday, October 25, 2012
Time: 7:00am – 12:05pm
(Conference Sessions Located in the Fairway Pavilion)

7:00 AM :: Registration & Continental Breakfast

8:50 AM :: Welcome & Opening Remarks
Robert B. McCray : President & Chief Executive Officer, WLSA

9:00 AM :: PANEL DISCUSSION : Government Initiatives and Opportunities
Moderator: Bill Riley – Chief of the Science of Research and Technology Branch, Behavioral Research Program | Division of Cancer Control and Population Sciences at the National Cancer Institute

Panelists:
• Misha Pavel, PhD – Program Director, NSF
• Bakul Patel, MS – Policy Advisor, Office of the Center Director, CDRH, FDA

10:00 AM :: BREAK

10:30 AM :: TECHNICAL SESSION #7
Emerging Technologies for Wireless Health

Session Chair: Mike Chi, PhD – Founder & CEO, Cognionics

7.1 - Dual-Mode Tongue Drive System: Using Speech and Tongue Motion to Improve Computer Access for People with Disabilities
Xueliang Huo (Microsoft Interactive Entertainment Business), Hangue Park (GT-Bionics Lab, Georgia Institute of Technology), Maysam Ghovanloo (GT-Bionics Lab, Georgia Institute of Technology)

7.2 - Chip and system design for on-body wireless sensing
Brian Otis, PhD – Department of Electrical Engineering, University of Washington

7.3 - Physiological Sensors for Wireless Health: Challenges and New Directions
Yu M. Chi (Cognionics, Inc., USA), Gert Cauwenberghs (University of California, San Diego, USA)
11:20 AM :: **Paper Awards Presentation**

11:30 AM :: **CLOSING KEYNOTE: Engaging the Next Billion**
Nathan Eagle, PhD: CEO and Co-founder, Jana (formerly txteagle); Adjunct Assistant Professor, Harvard University; Visiting Assistant Professor, MIT Media Laboratories; Research Assistant Professor, Northeastern University

12:00 PM :: **Closing Remarks**

12:05 PM :: **LIGHT LUNCH SERVED**

* Best Paper Award Nominees