

BSN 2016 – AGENDA

WORKSHOPS AND TUTORIALS

Tuesday, 14 June

0800-0900 Registration and Continental Breakfast – *Conference Room Foyer, 2nd floor*

0900-1200 Morning Sessions

Hack-a-thon (0900+ continues all day) – *Conference Rooms 1&4, 2nd floor*

Benny Lo/Imperial College and Intel

Ice House Challenge *set up* (by invitation only; three final teams) - *Fisher Banquet Room, 1st floor*

Note: contestants begin at 0800 h, Wednesday 15 June

U.S. Special Operations Command, U.S. Coast Guard and MIT Lincoln Laboratory

Amna Greaves (MIT LL), chair

1200-1330 Lunch (provided onsite) – *Conference Room Foyer, 2nd floor*

1300-1700 Afternoon Session – *Conference Room 3, 2nd floor*

4th Annual Workshop on Automated Sensor Based Mobility Analysis for Disease Prevention and Treatment - Bjoern Eskofier and Jochen Klucken (FAU/Erlangen)

TECHNICAL PROGRAM

Wednesday, 15 June

0730-0830 Registration and Continental Breakfast – *Robertson Auditorium Foyer, 2nd floor*

ALL POSTER BOARDS AND EXHIBITOR TABLES ARE TO BE SETUP BY THIS TIME

0830-0845 – *Robertson Auditorium 1, 2nd floor*

Welcome (Technical Chair, Mark Buller)

0845-0930 (Introduction: Karl Friedl)

Keynote Speaker: **Bjoern Eskofier, Ph.D**, Digital Sports Group of the Pattern Recognition Lab, Friedrich-Alexander University, Erlangen, Germany

Smart shoes reach the clinic: wearable sensor-based instrumented gait analysis in Parkinson's Disease

0930-1030 (Session Chair: Karl Friedl)

Session 1. NOVEL SENSOR APPLICATIONS

1	Sensor systems for monitoring fluid intake indirectly and directly	JF Kreutzer, J Deist, CM Hein, TC Leuth
2	Diet eyeglasses: Recognising food chewing using EMG and smart eyeglasses	R Zhang, S Bernhart, O Amft
3	Gait Tracker Shoe for Accurate Step-by-step Determination of Gait Parameters	Y Zhuang, J Gong, DC Kerrigan, BC Bennett, J Lach

1030-1100 AM COFFEE BREAK – *Robertson Auditorium Foyer, 2nd floor*

POSTERS – *Robertson Auditorium 2 & 3, 2nd floor*

(Presenters are asked to stand by their posters at this time)

1100-1145 (Session Chair: TBD)

Session 2. NON-HUMAN BIOMONITORING AND PROTECTION

1	Using Collar-worn Sensors to Forecast Thermal Strain in Military Working Dogs	JR Williamson, AR Hess, CJ Smalt, DM Sherrill, TF Quatieri, C O'Brien
2	Real-time Monitoring of the Horse-Rider Dyad Using Body Sensor Network Technology	D Piette, T Norton, V Exadaktylos, D Berckmans
3	Towards a wearable system for continuous monitoring of sniffing and panting in dogs	R Brugarolas, T Agcayazi, S Yuschak, DL Roberts, BL Sherman, A Bozkurt

1145-1230 (Introduction: Mark Buller)

Keynote Speaker: **Doug Barton, MBA**

IBM Analytics for Performance Management, Madison, Wisconsin

What can we learn from the toughest endurance bike race on earth?

1230-1330 LUNCH (provided onsite) – Robertson Auditorium Foyer, 2nd floor

1330-1500 (Session co-chairs: Mark Buller and Hilde Teien)

Session 3. WEARABLE SENSOR APPLICATIONS IN EXTREME ENVIRONMENTS

1	Physiological monitoring in cold weather operations	H Teien
2	Tracking body core temperature in military thermal environments: an extended Kalman filter approach	K-Y Seng, Y Chen, KMA Chai, T Wang, DCY Fun, YS Teo, PMS Tan, WH Ang, JKW Lee
3	On single sensor-based inertial navigation	N Strozzi, F Parisi, G Ferrari
4	Inclined walking energetics: body mass, loaded mass, and predictability	LW Ludlow, PG Weyand
5	Monitoring thermal strain during recruit training	T Wyss, B Veenstra, S Delves, M Buller

1500-1530 PM COFFEE BREAK – Robertson Auditorium Foyer, 2nd floor

POSTERS – Robertson Auditorium 2 & 3, 2nd floor

(Presenters are asked to stand by their posters at this time)

1530-1615 (Introduction: John Hixson)

Keynote Speaker: Rosalind Picard, Sc.D

Affective Computing Research Group, MIT Media Lab, Cambridge, Massachusetts

Connecting emotions, brain and behavior with wearables

1615-1800 (Session Chair: John Hixson)

Session 4. BODY SENSOR-BASED MONITORING IN CHRONIC DISEASE APPLICATIONS

1	An integrated wearable robot for tremor suppression with context aware sensing	D Huen, J Liu, B Lo
2	Active Implantable Sensor Powered by Ultrasounds With Application in Monitoring of Physiological Parameters for Soft Tissues	BM Gil-Rosa, GZ Yang
3	On the use of wearable sensors to enhance motion intention detection for a contra laterally controlled FES system	AF Ruiz-Olaya
4	Instantaneous P- and T-wave detection: assessment of three ECG fiducial points detection algorithms	H Leutheuser, S Gradl, L Anneken, M Arnold, N Lang, S Achenback, BM Eskofier
5	Accurate gait analysis in post-stroke patients using a single inertial measurement unit	F Parisi, G Ferrari, A Baricich, M D'Innocenzo, C Cisari, A Mauro

1800-2000 SYMPOSIUM NETWORKING RECEPTION – *Fisher Atrium, 1st floor*

End of Day 1, Technical Program

TECHNICAL PROGRAM (continued)
Thursday, 16 June

0730-0830 Registration and Continental Breakfast – Robertson Auditorium Foyer, 2nd floor

0830-0900 (Introduction: Peter Weyand) – *Robertson Auditorium I, 2nd floor*
Keynote Speaker: Jim Glasheen, Ph.D
Technology Partners, Mill Valley, California
Wearables: the bridge between the consumer and healthcare industries?

0900-1000 (Session Chair: Peter Weyand)
Session 5. INDUSTRY APPLICATIONS PANEL
Applications of commercially available wearable systems will be highlighted in presentations by three industry developers
Panel Presenters:
- Anmol Sood (Equival)
- Roozbeh Ghaffari (MC10)
- Kurt Pfluger (VivaLnk)

1000-1030 AM COFFEE BREAK – Robertson Auditorium Foyer, 2nd floor
POSTERS – Robertson Auditorium 2 & 3, 2nd floor
(Presenters are asked to stand by their posters at this time)

1030-1115 (Introduction: Eric Yeatman)
Keynote Speaker: Veena Misra, Ph.D
NSF Center for Advanced Self-Powered Systems of Integrated Sensors and Technologies (ASSIST), North Carolina State University, Raleigh, North Carolina
Body-powered sensors: the next generation of wearables

1115-1200 (Session Chair: Eric Yeatman)
Session 6. DATA QUALITY ISSUES FOR WEARABLES

1	An energy-efficient and QoS-effective resource allocation scheme in WBANs	Z Liu, B Liu, C Chen, CW Chen
2	Accurate personal ultraviolet dose estimation with multiple wearable sensors	J Li, Y Liu, H Li, R Hua, CJ Xue, HG Lee, H Yang
3	Wearable alcohol monitoring device with auto-calibration ability for high chemical specificity	Y Umasankar, AH Jalal, PJ Gonzalez, M Chowdhury, A Alfonso, S Bhansali

1200-1300 LUNCH (provided onsite) – Robertson Auditorium Foyer, 2nd floor

1300-1415 (Introduction: Kong Chen) – *Robertson Auditorium 1, 2nd floor*

Keynote Speaker: David Klonoff, MD

Mills-Peninsula Health Services, Burlingame, California

Wearable sensors as game changers in chronic disease management: achieving physiological homeostasis in diabetes

1415-1530 (Session Chair and Introductory Presentation: Kong Chen)

Session 7. WEARABLE BIOMECHANICS

1	Learning approach for classification of GENEActiv accelerometer data for unique activity identification	A Dutta, O Ma, MP Buman, DW Bliss
2	A double-layer automatic orientation correction method for human activity recognition	X Wu, X Xu, W Kaiser, G Pottie
3	Impact forces during running: loaded questions, sensible outcomes	AB Udofa, LJ Ryan, PG Weyand
4	A novel flexible wearable sensor for estimating joint-angles	SI Lee, J-F Daneault, L Weydert, P Bonato

1530-1600 PM COFFEE BREAK – *Robertson Auditorium Foyer, 2nd floor*

POSTERS – *Robertson Auditorium 2 & 3, 2nd floor*

(Presenters are asked to stand by their posters at this time)

1600-1715 (Session Chair: TBD)

Session 8. NOVEL NETWORKING AND PLATFORM SOLUTIONS

1	HACMAC: A reliable Human ACTivity-based Medium Access Control for implantable body sensor networks	VRK Ramachandran, PJM Havinga, N Meratnia
2	Towards a comprehensive power consumption model for wireless sensor nodes	M Hesse, M Adams, T Hormann, U Ruckert
3	Towards an open data framework for body sensor networks supporting bluetooth low energy	NK Singh, DO Ricke
4	Profiling, modeling, and predicting energy harvesting for self-powered body sensor platforms	D Fan, LL Ruiz, J Gong, J Lach

1715-1800 RESULTS OF COMPETITIONS & AWARDS (Hack-a-thon, Ice House Challenge, Best papers)

End of Day 2/End of Technical Program

Friday, 17 June

WORKSHOPS AND TUTORIALS

0800-0900 Continental Breakfast – *Robertson Auditorium Foyer, 2nd floor*

0900-1200 Morning Sessions – *Conference Rooms, 2nd floor*

1. Workshop: Integrating Body Sensing Modalities with Augmented Reality & Virtual Reality Environments, MIT Lincoln Laboratory *Conference Room 3*

2. Workshop: BSN Student Colloquium
Presentations of BSN student posters and award session *Conference Room 1*

3. Tutorial: "Patch Development for capturing body derived data: features explored, lessons learned and optimizing the balance between the technical performance and wear comfort,"
Holst Centre (Frank Everaerts) *Conference Room 2*

4. Tutorial: "Energy-efficient design methodologies for wireless body area sensor network in healthcare applications," University of Cincinnati/University of West Florida (Suryadip Chakraborty)
Conference Room 4

1200 End of conference