

BSN 2017 – Schedule

WORKSHOPS

Tuesday, 9 May, 2017

**0800-0900 Registration – *Conference Room Foyer, Philips Building # 34
High Tech Campus***

0900-1300 Morning Workshops – *Conference Rooms K-26, K-31, K-32 & Auditorium*

- 1. Workshop: “Towards a Less Intrusive Sleep Monitoring System” – Carolina Varon & Xi Long
KU Leuven and Philips Research *Philips Auditorium***
- 2. Workshop: "SPINE: Signal Processing in Node Environment" – Giancarlo Fortino & Raffaele
Gravina, University of Calabria *Conference Room K-31***
- 3. Workshop Part A: “Nutrition and Dietary Monitoring” – Benny Lo &
Oliver Amft, Imperial College and University of Passau *Conference Room K-32***

1300-1400 Lunch – *This may be purchased at the food court in the Strip Conference Center*

1400-1800 Afternoon Workshops – *Conference Rooms K-26, K-31, K-32 & Auditorium*

- 1. Workshop: “Non-Contact Monitoring Technologies” – Steffen Leonhardt & Daniel
Teichmann, RWTH Aachen *Philips Auditorium***
- 2. Workshop Part B: "Nutrition and Dietary Monitoring" – Oliver Amft,
Imperial College and University of Passau *Conference Room K-32***

1800 – *End of Day 1 Workshops*

TECHNICAL PROGRAM

Wednesday, 10 May, 2017

0800 Registration Opens – *High Tech Campus Conference Center – Einstein Auditorium Foyer*

0845-0900 – *Einstein Auditorium*

Welcome – Joerg Habetha, Philips Research

Session Chair: Marian Walter**0900-1000 Session 1 - Oral Paper Presentations – see “Technical Program” on website for further details**

31	<u>Actigraphy-Based Sleep/wake Detection for Insomniacs</u>	Long, Xi Fonseca, Pedro Haakma, Reinder Aarts, Ronald M.
34	<u>Human Activity Recognition for Emergency First Responders Via Body-Worn Inertial Sensors</u>	Scheurer, Sebastian Tedesco, Salvatore Brown, Kenneth N. O'Flynn, Brendan
53	<u>Identification of Real-Time Driver Distraction Using Optimal Subband Detection Powered by Wavelet Packet Transform</u>	Deshmukh, Shantanu Dehzangi, Omid
54	<u>Modeling and Detecting Student Attention and Interest Using Wearable Computers</u>	Zhu, Ziwei Ober, Sebastian William Jafari, Roozbeh

1000-1045 – Einstein Auditorium**Introduction: Steffen Leonhardt****Keynote Speaker: Dr. Carmen Poon, PhD, Research Assistant Professor, Department of Surgery - The Chinese University of Hong Kong, China*****“Body Sensor Networks: Past, Present and Future?”*****1045-1130 AM COFFEE BREAK & POSTERS – Einstein Auditorium Foyer****(Presenters are asked to stand by their posters at this time)****Session Chair: Benny Lo****1130-1215 Session 2 - Oral Paper Presentations– see “Technical Program” on website for further details**

9	<u>Smart Wireless Headphone for Cardiovascular and Stress Monitoring</u>	Gil Rosa, Bruno Miguel Yang, Guang-Zhong
11	<u>The Effect of Individual Stress Zones on Car-Racing Performance</u>	Joosen, Pieter Exadaktylos, Vasileios Taelman, Joachim Berckmans, Daniel
41	<u>Photoplethysmography-Based In-Ear Sensor System for Identification of Increased Stress Arousal in Everyday Life</u>	Lueken, Markus Feng, Xiaowei Venema, Boudewijn Misgeld, Berno Leonhardt, Steffen

1215-1300 – Einstein Auditorium**Introduction: Steffen Leonhardt****Keynote Speaker: Dr. Ralf Brederlow - Manager Kilby Labs, Texas Instruments Deutschland GmbH, Freising, Germany*****“Trends in Microelectronics and Resulting Opportunities for Medical Body Sensing Applications”***

1300-1400 LUNCH (provided onsite) & POSTERS – Einstein Auditorium Foyer
(Presenters are asked to stand by their posters at this time)

Session Chair: Carmen Poon
1400-1500 Session 3 - Oral Paper Presentations - see “Technical Program” on website for further details

15	<u>Systolic Time Interval Estimation at the Sternum using Continuous Wave Radar with Body-contact Antennas</u>	Buxi, Dilpreet Redouté, Jean-Michel Yuce, Mehmet
26	<u>Evaluation of an RF Wearable Device for Non-Invasive Real-Time Hydration Monitoring</u>	Wang, Junchao Zeljko, Zilic Shu, Yutian
46	<u>Reliability of a Re-Usable Wireless Epidermal Temperature Sensor in Real Conditions</u>	Miozzi, Carolina Amendola, Sara Bergamini, Alberto Marrocco, Gaetano
63	<u>Smart Healthcare: Cloud-Enabled Body Sensor Networks</u>	Yu, Ruoxi Mak, Wing Chung Tony Zhang, Ruikai Wong, Hei Sunny Zheng, Yali Lau, James Y. W. Poon, Carmen C. Y.

1500-1545 PM COFFEE BREAK & POSTERS – Einstein Auditorium Foyer
(Presenters are asked to stand by their posters at this time)

1545-1630 – Einstein Auditorium
Introduction: Steffen Leonhardt
Keynote Speaker: Prof. h.c. Dr. med. Thomas Lenarz
Chairman and Clinical Director, Department of Otorhinolaryngology, Hannover Medical School; Germany
“History and Future of Cochlear Implants”

Session Chair: Karl Friedl
1630-1745 Session 4 - Oral Paper Presentations- see “Technical Program” on website for further details

47	<u>Estimating Human Metabolic Energy Expenditure Using a Bootstrap Particle Filter</u>	Welles, Alexander Looney, David Rumpler, William Buller, Mark
49	<u>Wearable Oximetry for Harsh Environments</u>	Telfer, Brian Hoyt, Reed Lacirignola, Joseph Patel, Tejash Siegel, Andrew Swiston, Albert

		Singh, Ninoshka Trebicka, Ray Weston, Christine Williamson, James
59	<u>A Personalized Air Quality Sensing System – a Preliminary Study on Assessing the Air Quality of London Underground Stations</u>	Zhang, Ruizhe Ravi, Daniele Lo, Benny Yang, Guang-Zhong
61	<u>Preliminary Study for Hemodynamics Monitoring using a Wearable Device Network</u>	Berthelot, Melissa Yang, Guang-Zhong Lo, Benny
65	<u>Instrumented Footwear Inserts: A New Tool for Measuring Forces and Biomechanical State Changes During Dynamic Movements</u>	Lacirignola, Joseph Weston, Christine Byrd, M. Kate Metzger, Erik Singh, Ninoshka Davis, Shakti Maurer, David Young, Whitney Collins, Paula Balcius, James Richter, Mark Palmer, Jeffrey

1800-2000 SYMPOSIUM NETWORKING RECEPTION – *Einstein Auditorium Foyer*

End of Day 1, Technical Program

TECHNICAL PROGRAM (continued)

Thursday, 11 May, 2017

0800 Registration Opens – *Einstein Auditorium Foyer*

Session Chair: Joerg Habetha, Co-chair: Alberto Bonomi

0845-0930 Session 5 - Oral Paper Presentations- see “Technical Program” on website for further details

12	<u>Wearable Sensing and Haptic Feedback Research Platform for Gait Retraining</u>	Xu, Junkai Lee, Ung Hee Bao, Tian Huang, Yangjian Sienko, Kathleen H. Shull, Peter B.
16	<u>Quantifying Postural Instability in Parkinsonian Gait from Inertial Sensor Data During Standardised Clinical Gait Tests</u>	Hannink, Julius Kluge, Felix Gaßner, Heiko Klucken, Jochen Eskofier, Bjoern M

58	<u>Demonstrating the Real-World Significance of the Mid-Swing to Heel Strike Part of the Gait Cycle Using Spectral Features</u>	Qureshi, Asma Engelhard, Matthew Brandt-Pearce, Maite Goldman, Myla D.
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0930-1015 Einstein Auditorium

Introduction: Steffen Leonhardt

Keynote Speaker: Dr. Ravi Kuppuraj, PhD MBA - Philips Boston, USA

“Advances in Sensing Technologies and the Increasingly Complex Needs of our Healthcare System - How are they Influencing Each Other?”

1015-1100 AM COFFEE BREAK & POSTERS – Einstein Auditorium Foyer

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

Session Chair: Marian Walter, Co-chair: Daniel Teichmann

1100-1145 Session 6 - Oral Paper Presentations- see “Technical Program” on website for further details

40	<u>Personalized gait detection using a wrist-worn accelerometer</u>	Cola, Guglielmo Avvenuti, Marco Musso, Fabio Vecchio, Alessio
43	<u>Automatic Noise Estimation and Context-Enhanced Data Fusion of IMU and Kinect for Human Motion Measurement</u>	Akbari, Ali Thomas, Xien Jafari, Roozbeh
57	<u>Unsupervised Deep Representation Learning to Remove Motion Artifacts in Free-Mode Body Sensor Networks</u>	Mohammed, Shoaib Tashev, Ivan

1145-1230 – Einstein Auditorium

Introduction: Steffen Leonhardt

Keynote Speaker: Prof. Dr. Pim van der Jagt - Executive Technical Leader, Ford Research & Advanced Engineering, Ford Research & Innovation Center, Aachen, Germany

“Opportunities for in-car Health and Wellness Features”

1230-1330 LUNCH (provided onsite) & POSTERS – Einstein Auditorium Foyer

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

Session Chair: Jeffrey Palmer

1330-1415 Session 7 - Oral Paper Presentations- see “Technical Program” on website for further details

10	<u>A Laboratory Study on Trunk Angle in Patients with Lumbar Disc Herniation During Bending Exercises Based on Motion Sensors</u>	Du, Wenjing Li, Huihui Wenmin, Chen Xiangjun, Sun Wang, Lei
20	<u>Binary Classification of Running Fatigue Using a Single Inertial Measurement Unit</u>	Buckley, Cillian O'Reilly, Martin

		Whelan, Darragh Valley Farrell, Adam Clarke, Lauren Longo, Vanessa Gilchrist, Michael Caulfield, Brian
19	<u>The Influence of Feature Selection Methods on Exercise Classification with Inertial Measurement Units</u>	O'Reilly, Martin Johnston, William Buckley, Cillian Whelan, Darragh Caulfield, Brian

1415-1500 – Einstein Auditorium

Introduction: Steffen Leonhardt

Keynote Speaker: Prof. Dr. med. Jochen Klucken

Department of Molecular Neurology, University Hospital Erlangen, Friedrich Alexander-University, Erlangen-Nürnberg, Germany

“Wearables for Patients with Parkinson’s Disease”

1500-1600 PM COFFEE BREAK & POSTERS – Einstein Auditorium Foyer

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

Session Chair: Bjoern Eskofier

1600-1645 Session 8 - Oral Paper Presentations- see “Technical Program” on website for further details

17	<u>Optimization of EMG Movement Recognition for Use in an Upper Limb Wearable Robot</u>	Freer, Daniel Liu, Jindong Yang, Guang-Zhong
60	<u>Secure Key Generation Using Gait Features for Body Sensor Networks</u>	Sun, Yingnan Wong, Charence Yang, Guang-Zhong Lo, Benny

1645-1730 – Einstein Auditorium

Introduction: Steffen Leonhardt

Keynote Speaker: Prof. Felip Burgos PhD, MsC, RPFT, RN - Associate Professor at University of Barcelona Respiratory Diagnostic Center, Hospital Clínic, Villarroel, Barcelona, Spain

“Wearables for COPD Patients”

1730-1800 RESULTS OF COMPETITIONS (Best paper) & AWARDS

Presentation: Steffen Leonhardt

CLOSING REMARKS

End of Day 2, Technical Program

Friday, 12 May, 2017

WORKSHOPS

**0800-0900 Registration – Conference Room Foyer, Philips Building # 34
High Tech Campus**

0900-1300 Morning Workshops – Conference Rooms K-26, K-31, K-32 & Auditorium

**1. Workshop: “Human Hydration Monitoring Technologies” – Karl Friedl & Matthias Ring,
UCSF and Friedrich Alexander University Erlangen-Nurnberg *Philips Auditorium***

**2. Workshop: BSN Student Colloquium – Steffen Leonhardt, RWTH Aachen
*Conference Room K-31***

1300 End of conference