

7th International Conference on Body Area Networks (BODYNETS 2012)

**Oslo, Norway
24-26 September 2012**

Editor:

Ilangko Balasingham

ISBN: 978-1-63439-570-0

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2012) by The Institute for Computer Sciences,
Social Informatics and Telecommunications Engineering (ICST)
All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact European Alliance for Innovation (EAI)
at the address below.

European Alliance for Innovation (EAI)
c/o Volha Shaparava , Dr
Publications
Via alla Cascata 56/D - 38123 Povo,
Trento - Italy

publications@eai.eu

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

250132: Activity Classification using 3-axis Accelerometer and Pulse Oximeter Wearing on Wrist for the Elderly	1
<i>Dong Ik Shin, Se Kyeong Joo, Soo Jin Huh</i>	
249951: Error Concealment and Post Processing for the Capsule Endoscope	2
<i>Anna Kim, Eirik Daling, Tor Ramstad, Ilangko Balasingham</i>	
249930: Efficient Acoustic Communication Techniques for Nanobots	6
<i>Valeria Loscri, Valentina Mannara, Enrico Natalizio, Gianluca Aloï</i>	
250342: Performance Evaluation of Time Synchronization and Clock Drift Compensation in Wireless Personal Area Networks	10
<i>Thomas Lindh, Jonas Wåhslén, Ibrahim Orhan, Dennis Sturm</i>	
249968: Does Loose Fitting Matter? Predicting Sensor Performance in Smart Garments	16
<i>Holger Harms, Oliver Amft, Gerhard Troester</i>	
250004: A Data-driven Functional PCA Filter for Compensating the Effect of Sensor Position Changes in Motion Data	20
<i>Roya Haratian, Chris Phillips, Tijana Timotijevic</i>	
250037: Multiobjective TDMA Optimization for Neuron-based Molecular Communication	24
<i>Junichi Suzuki, Sasitharan Balasubramaniam, Adriele Prina-Mello</i>	
249935: Design of Energy Efficient and Dependable Health Monitoring Systems under Unreliable Nanometer Technologies	32
<i>Mohamed Sabry, Georgios Karakonstantis, David Atienza, Andreas Burg</i>	
249948: On the Use of a Dielectric Matching Layer for Ultra Wideband Medical Applications	39
<i>Ali Khaleghi, Raul Chavez Santiago, Ilangko Balasingham</i>	
249917: SonicSeat: A Seat Position Tracker based on Ultrasonic Sound Measurements for Rowing Technique Analysis	46
<i>Franz Gravenhorst, Christoph Thiem, Bernd Tessendorf, Rolf Adelsberger, Bert Arnrich, Gerhard Tröster</i>	
250133: Radiation Properties of the Planar UWB Dipole Antenna in the Proximity of Dispersive Body Models	52
<i>Tommi Tuovinen, Markus Berg, Kanya Yazdandoost, Erkki Salonen, Jari Iinatti</i>	
249969: Communication using Ultra Wide-band Pulse Position Modulation for In-body Sensors	59
<i>Anna Kim, Pål Floor, Tor Ramstad, Ilangko Balasingham</i>	
249938: Cognitive Radio Test Bed for Optimized Channel Selection in IEEE 802.11-based Networks	66
<i>Tomas Cuzanauskas, Arturas Medeisis</i>	
250014: On the Use of a Controlling Database for Cognitive Radio in Wireless Body Area Networks	73
<i>Gintare Sukareviciene, Dainius Jankunas, Vladislav Fomin</i>	
249947: Body Sensor Networks in Fetal Monitoring with NFC Enabled Android Devices	77
<i>Michael Korostelev, Li Bai, Jie Wu, Chiu Tan, Dimitrios Mastrogiannis</i>	
249972: Modelling Correlations for Body Sensor Network Information	81
<i>Pedro Brandão</i>	
250129: Disruption-Tolerant Wireless Sensor Networking for Biomedical Monitoring in Outdoor Conditions	88
<i>Benferhat Djamel, Guidec Frederic, Quinton Patrice</i>	
249931: Health Monitoring and Wellness for All, a Multichannel Approach Through Innovative Interfaces and Systems	95
<i>Alessandro Pozzebon, Giuliano Benelli, Giovanni Daino, Roberto Sesto, Riccardo Zambon</i>	
249933: Nodes Updates Censoring and Scheduling in Constrained Decentralized Positioning for Large-Scale Motion Capture based on Wireless Body Area Networks	99
<i>Jihad Hamie, Benoît Denis, Cedric Richard</i>	
249929: A Modified Dijkstra's Routing Algorithm for Increasing Network Lifetime in Wireless Body Area Networks	105
<i>Gill Tsouri, Alvaro Prieto, Nikhil Argade</i>	
249785: Evaluation of Algorithms for Chew Event Detection	109
<i>Sebastian Päßler, Wolf-Joachim Fischer</i>	
250008: Cognitive Sensor Networks Implementation in Medical Environmental Surveillance	116
<i>Liljana Gavrilovska, Aleksandra Mateska, Konstantin Chomu</i>	
249974: Optimizing Battery Lifetime-Fidelity Tradeoffs in BSNs using Personal Activity Profiles	121
<i>Jeff Brantley, Adam Barth, John Lach</i>	
250036: Modeling Capacitive Coupling Systems for Body Coupled Communications	128
<i>Ricardo Matias, Rui Escadas, Manuel Cunha, Alexandre Mota</i>	

249932: Directional Analysis of the On-Body Propagation Channels considering Human's Anatomical Variations	135
<i>Rohit Chandra, Taimoor Abbas, Anders Johansson</i>	
250091: Will You Have a Good Sleep Tonight? Sleep Quality Prediction with Mobile Phone	139
<i>Yin Bai, Bin Xu, Yuanchao Ma, Guodong Sun, Yu Zhao</i>	
249967: Energy Harvesting Enabled Wireless Sensor Networks: Energy Model and Battery Dimensioning	146
<i>Raul Gomez Cid Fuentes, Albert Cabellos, Eduard Alarcon</i>	
249950: Design Recommendations for a Reliable Body-Worn Patient Monitoring and Alarming Service	150
<i>Yohanes Baptista Dafferianto Trinugroho, Rune Fensli, Frank Reichert</i>	
249934: Empirical Modeling of Intra-BAN Ranging Errors Based on IR-UWB TOA Estimation	154
<i>Jihad Hamie, Benoit Denis, Raffaele D'Errico, Cedric Richard</i>	
250176: Robust Access for Wireless Body Area Networks in Public m-Health	160
<i>Narjes Torabi, Victor Leung</i>	
249839: SAR Reduction in Implant Body Area Networks with Spatial Diversity Reception	167
<i>Daisuke Anzai, Sho Aoyama, Masafumi Yamanaka, Jianqing Wang</i>	
249940: MHz-Band Near-field Coupling Communication Technology	173
<i>Kohei Nagata, Tomoaki Yanagawa, Tatsuya Kusunoki, Ryuki Shimoda, Hitoshi Shimasaki, Yuichi Kado</i>	
249937: Temporal Diversity Coding for Improving the Performance of Wireless Body Area Networks	177
<i>Gabriel Arrobo, Zygmunt Haas, Richard Gitlin</i>	
249844: Experimental Characterisation of Data Aggregation in BANs with a Walking Subject	181
<i>Riccardo Cavallari, Eugenio Guidotti, Chiara Buratti, Roberto Verdone</i>	
249971: Adaptive Time Synchronization Protocol for BANs	185
<i>Paulo Vilares, Pedro Brandão</i>	
249939: An Energy Efficient Model for Monitoring and Detecting Atrial Fibrillation in Wearable Computing	186
<i>Redjem Bouhenguel, Imad Mahgoub, Mohammad Ilyas</i>	
249945: Authenticated Health Monitoring Scheme for Wireless Body Sensor Networks	193
<i>Chunming Rong, Hongbing Cheng</i>	
249961: An Ant Colony Biological Inspired Way For Statistical Shortest Paths In Complex Brain Networks	198
<i>Fei Gao, Feng-xia Fei, Ilanko Balasingham</i>	
249965: Link Budget Analysis of In-body to On-body UWB Low Band Communications for Capsule Endoscope	202
<i>Jingjing Shi, Anzai Daisuke, Jianqing Wang</i>	
249975: Sum-Rate Distortion Bound for Suboptimal Multiterminal Source Coding Applied in Medical Wireless Sensor Networks	207
<i>Hieu Nguyen, Tor Ramstad, Ilanko Balasingham</i>	
249941: Radio Wave Propagation in an HBC Device Including a Transceiver	211
<i>Roslina Abdul Razak, Takehiro Sugo, Toshiyuki Maeyama</i>	
249946: Electrically Isolated System for Measuring Signals in MHz-Band Human-Area Networks	216
<i>Tomonori Nakamura, Mami Nozawa, Taku Kobase, Hitoshi Simasaki, Yuichi Kado</i>	
249925: Radiation Pattern of an UWB Wearable Antenna: A Preliminary Study	220
<i>Wen-Bin Yang, Kamran Sayrafiyan-Pour</i>	
249942: Fuzzy feature for Traditional Chinese Medical Pulse Data	224
<i>Jian Cui</i>	
249921: A Small, Wearable, Stretchable Electrocardiogram and Physical Activity Monitoring System	228
<i>Chun Kit, Alex Chan, Hiroyuki Hamada, Hiroki Fujiwara, Sayaka Okochi, Kohei Higuchi, Atsushi Kajiya, Takayuki Fujita, Kazusuke Maenaka</i>	
Author Index	