

2008 First International Symposium on Applied Sciences in Biomedical and Communication Technologies

(ISABEL 2008)

**Aalborg, Denmark
25 – 28 October 2008**



**IEEE Catalog Number: CFP0879E-PRT
ISBN: 978-1-4244-2647-8**

TABLE OF CONTENTS

On the Accuracy of Firefly Synchronization with Delays	1
<i>A. Tyrrell, G. Auer, C. Bettstetter</i>	
A Four-class BCI Based on Motor Imagination of the Right and the Left Hand Wrist	6
<i>A. Vuckovic, F. Sepulveda</i>	
Brain-Computer Interfacing: How to Control Computers with Thoughts	10
<i>A. F. Cabrera, O. F. do Nascimento, D. Farina, K. Dremstrup</i>	
Pulse Coupled Oscillators' Primitives for Collision-Free Multiple Access with Application to Body Area Networks	14
<i>R. Pagliari, Y. W. P. Hong, A. Scaglione</i>	
Finding Patterned Complex-Valued Matrix Derivatives by Using Manifolds	19
<i>A. Hjørungnes, D. P. Palomar</i>	
Fuzzy and Quantum Methods of Information Retrieval to Analyse Genomic Data from Patients at Different Stages of Fibrosis	24
<i>T. Sierocinska, N. Theretb, D. Petritis</i>	
Electromagnetic Dosimetry Issues Related to Human Exposure from Body Area Networks Devices	29
<i>D. Simunic, M. Djurek</i>	
Towards Brain-Computer Music Interfaces: Progress and Challenges	34
<i>E. R. Miranda, S. Durrant, T. Anders</i>	
Graz Brain-Computer Interface: Control of Neuroprostheses for the Upper Extremity	39
<i>G. R. Muller-Putz, R. Rupp, G. Pfurtscheller</i>	
Channel Model on Various Frequency Bands for Wearable Body Area Network	41
<i>N. Katayama, K. Takizawa, T. Aoyagi, J. Takada, H. Li, R. Kohno</i>	
A Service Based Component Model for Composing and Exploring MPSoC Platforms	46
<i>A. S. Tranberg-Hansen, J. Madsen</i>	
Entropy in Communication and Chemical Systems	51
<i>J. Walrand</i>	
Biologically-inspired Path Selection Scheme for Multipath Overlay Networks	56
<i>K. Leibnitz, M. Murata, A. Nakao</i>	
Optimization of a Set of Wavelets for Classification of Imaginary Movement-Related Cortical Potentials	61
<i>M. Lucas, C. Doncarli, D. Farina, O. F. do Nascimento</i>	
Extended Fuzzy Petri Nets for Decision Support	64
<i>F. Lehocki, G. Juhás, R. Lorenz, M. Drozda</i>	
An Evaluation of Cooperation Transmission Considering Practical Energy Models and Passive Reception	69
<i>J. W. Jung, A. Kailas, M. A. Ingram, E. M. Popovici</i>	
Privacy and Security in Biomedical Applications of Wireless Sensor Networks	74
<i>E. Stuart, M. Moh, T. Moh</i>	
Biomechanical Modeling of Laryngeal Dynamics	79
<i>M. Döllinger, A. Yang, M. Stingl, U. Eysholdt, J. Lohscheller</i>	

Fast and Accurate Voxel Projection Technique in Free-form Cone-beam Geometry with Application to Algebraic Reconstruction	84
<i>M. Lilja</i>	
Self-organizing Network Architecture for Scalable, Adaptive, and Robust Networking	89
<i>N. Wakamiya, S. Arakawa, M. Murata</i>	
Model-based ECG Fiducial Points Extraction Using a Modified Extended Kalman Filter Structure	94
<i>O. Sayadi, M. B. Shamsollahi</i>	
On the Use of the MPEG-21 Framework in Medical Wireless Sensor Networks	99
<i>A. Lie, K. Grythe, I. Balasingham</i>	
A Multimodal Network Board Game System for Blind People	104
<i>N. Caporusso, L. Mkrtychyan, L. Badia</i>	
Wearable Technology for the Real-time Analysis of Sweat During Exercise	109
<i>D. Morris, B. Schazmann, Y. Wu, C. Fay, S. Beirne, C. Slater, K. T. Lau, G. Wallace, D. Diamond</i>	
Improving Feature Vectors for Iris Recognition Through Design and Implementation of New Filter Bank and Locally Compound Using of PCA and ICA	111
<i>H. Ranjzad, A. Ebrahimi, H. E. Sadigh</i>	
Dynamic EIT Image Reconstruction Using Regularization Based on Conjugate Gradients	116
<i>P. Yan, Z. Yuan</i>	
Image Information Access Using Wedgelet Filters	120
<i>J. Garcia-Alvarez, G. Castellanos-Dominguez, B. Ortiz</i>	
A Connection Selection Method for Vertical Handoff in Hybrid Wireless Environment	124
<i>M. R. HeidariNezhad, Z. A. Zukarnain, N. I. Udzir, M. Othman</i>	
OSSS Methodology - System-level Design and Synthesis of Embedded HW/SW Systems in C++	129
<i>K. Gruttner, F. Oppenheimer, W. Nebel</i>	
Unsupervised Bayesian EMG Decomposition Algorithm Using Tabu Search	134
<i>D. Ge, E. Le Carpentier, D. Farina, J. Idier</i>	
An Application of the Multilevel DG-FDTD to the Study of a Medical Implant Antenna in Different Body Models	139
<i>C. Miry, R. Gillard, R. Loison</i>	
FM-UWB for Radar and Communications in Medical Applications	144
<i>B. Gupta, D. Valente, E. Cianca, R. Prasad</i>	
Context-aware Services for Ambient Assisted Living: a Case-study	149
<i>A. Hristova, A. M. Bernardos, J. R. Casar</i>	
Statistical Characterization of the Dynamic Narrowband Body Area Channel	154
<i>D. Smith, L. Hanlen, D. Miniutti, J. Zhang, D. Rodda, B. Gilbert</i>	
SARs in a Three-year-old-child: Comparison Between an Anatomically Realistic Model and Uniform and Nonuniform Scaling Models	159
<i>T. Nagaoka, S. Watanabe</i>	
Signal Processing Techniques for Microwave Imaging of the Breast	161
<i>G. Pagana, S. Salvador, G. Vecchi</i>	
Online Analysis of Myocardial Ischemia from Medical Sensor Data Streams with Esper	166
<i>S. Støa, M. Lindeberg, V. Goebel</i>	
Low Power Microwave Systems for Heartbeat Rate Detection at 2.4, 5.8, 10 and 16 Ghz	171
<i>D. Obeid, G. Issa, S. Sadek, G. Zaharia, G. El Zein</i>	

Measurement of the Maximum SAR in a Spherical Phantom When Operating a Mobile Phone Near a Metallic Wall.....	176
<i>A. Y. Simba, S. Watanabe, T. Hikage, T. Nojima</i>	
A Decentralized MAC Layer Protocol with Periodic Channel Access for Biomedical Sensor Networks.....	180
<i>S. Støa, I. Balasingham</i>	
Experimental Respiratory Signal Analysis Based on Empirical Mode Decomposition.....	185
<i>A. Karagiannis, L. Loizou, P. Constantinou</i>	
Particle Filtering and Information Fusion of Innovative Location and Tracking Device Targeting GPS Hostile Environments.....	190
<i>R. K. A. Owusu</i>	
Anomaly Detection Using the Kullback-leibler Divergence Metric.....	197
<i>M. Afgani, S. Sinanovic, H. Haas</i>	
Overview of Progress in Smart-clothing Project for Health Monitoring and Sport Applications.....	202
<i>L. M. Borges, A. Rente, F. J. Velez, L. R. Salvado, A. S. Lebres, J. M. Oliveira, P. Araújo, J. Ferro</i>	
Characterizing Reliability in Cognitive Radio Networks.....	208
<i>R. Pal, D. Idris, K. Pasari, N. Prasad</i>	
A Circuit Method to Estimate the Bandwidth of Transducer Response with the Transition Band of a Filter and Its Application in the Measurement of Tissue Viscosity.....	214
<i>J. Liu</i>	
Estimating Forces at Multiple Degrees of Freedom from Surface Emg Using Non-negative Matrix Factorization for Myoelectric Control.....	219
<i>N. Jiang, K. Englehart, P. Parker</i>	
Long-term Stability of EMG Recordings Using a Wireless EMG Electrode.....	224
<i>G. Skov-Madsen, N. Rijkhoff, B. K. Vistisen</i>	
Functional Orderly Arrangement of the Trapezius Sud-divisions Indicated by Mutual Information of Ssemg Signals.....	226
<i>A. Samani, P. Madeleine</i>	
Ubiquitous Services for Senior Citizens.....	228
<i>P. Pulli, A. Metso, X. Zheng</i>	
An Integrated-Circuit Switched-Capacitor Model and Implementation of the Heart.....	233
<i>J. Bohorquez, W. Sanchez, L. Turicchia, R. Sarpeshkar</i>	
Vector Precoding for a Single-User MIMO Channel: Matched Filter Vs. Distributed Antenna Detection.....	238
<i>R. de Miguel, R. R. Muller</i>	
Self-sustaining Composed Service Groups for Future Internet.....	242
<i>S. Balasubramaniam, D. Botvich, J. Mineraud, M. Ó Foghlú, W. Donnelly</i>	
Non Binary LDPC Codes Over the Binary Erasure Channel: Density Evolution Analysis.....	247
<i>V. Savin</i>	
Application of Multitaper Analysis to Wireless Communications Problems.....	252
<i>S. Primak, E. Sejdic</i>	
Bionic Eyeglass: The First Prototype.....	257
<i>K. Karacs, A. Lázár, R. Wagner, B. Bálint, T. Roska, M. Szuhaj</i>	
Security Issues in Biomedical Wireless Sensor Networks.....	262
<i>T. Dimitriou, K. Ioannis</i>	

Predicting Atrial Fibrillation Termination Using ECG Features, a Comparison267
S. Saberi, V. Esmaeili, F. Towhidkhah, M. H. Moradi

An Integrated ASIP Design Flow for Digital Signal Processing Applications271
V. Guzma, S. S. Bhattacharyya, P. Kellomaki, J. Takala

A Reinforcement Learning Based Routing Protocol with QoS Support for Biomedical Sensor Networks.....276
X. Liang, I. Balasingham, S. Byun

Author Index