



MEDSIP 2012

5th INTERNATIONAL CONFERENCE ON
MEDICAL SIGNAL & INFORMATION PROCESSING

5 – 6th July 2012

Liverpool, UK

PROGRAM

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Thursday 5 July 2012

9:00 – 10:00	Registration with Tea/Coffee
10:00 – 10:15	Welcome and Introduction – Dr. Azzam Taktak, Conference Chair
Oral Session 1 – Chair I. Jarman	
10:15 – 10:30	<p>Detection of simple motor seizures in epileptic paediatric patients by means of accelerometers</p> <p>M. Milosevic¹, K. Cuppens^{1,2}, A. Van de Vel³, B. Bonroy², B. Ceulemans^{3,4}, L. Lagae^{4,5}, B. Vanrumste^{1,2}, S. Van Huffel¹</p> <p>¹KU Leuven, Department of Electrical Engineering-ESAT, SCD-SISTA, IBBT Future Health Department, Leuven, Belgium</p> <p>²K.H.Kempen University College - Mobilab, Geel, Belgium</p> <p>³Department of Paediatrics, University Hospitals of Antwerp, Antwerp, Belgium</p> <p>⁴Epilepsy Centre for children and youth Pulderbos, Pulderbos, Belgium</p> <p>⁵Department of Child Neurology, University Hospitals Leuven, Leuven, Belgium</p>
10:30 – 10:45	<p>A strategy for selecting the optimum artefact rejection level during electrophysiological hearing testing of babies</p> <p>G. Lightfoot Dept. Medical Physics and Clinical Engineering, Royal Liverpool University Hospital, Liverpool, UK</p>
10:45 – 11:00	Tea/Coffee
Oral Session 2 – Chair C. James	
11:00 – 11:45	<p>Keynote Lecture</p> <p>Cyclostationarity and Blind Source Separation Methods for Biomedical Signals Analysis</p> <p>A.K. Nandi¹, M. Haritopoulos², C. Capdessus²</p> <p>¹Signal Processing and Communications Group, Department of Electrical Engineering and Electronics, The University of Liverpool, Liverpool, UK</p> <p>²Institut PRISME, Axe Signal, 21 rue de Loigny La Bataille, 28000 Chartres, France</p>
11:45 – 12:00	<p>The Observer Effect when Monitoring Acutely-ill Patients</p> <p>M. A. F. Pimentel¹, D. A. Clifton¹, L. Clifton¹, P. J. Watkinson², L. Tarassenko¹</p> <p>¹Institute of Biomedical Engineering, Dept. of Engineering Science, University of Oxford, Oxford, UK</p> <p>²Nuffield Dept. of Anaesthetics, University of Oxford, Oxford, UK</p>
12:00 – 12:15	<p>Respiratory Rate Estimation during Initial Assessment of Children in Hospitals</p> <p>S. A. Shah¹, S. Fleming², M. Thompson², L. Tarassenko¹</p> <p>¹Institute of Biomedical Engineering, Dept. of Engineering Science, University of Oxford, Oxford, UK</p> <p>²Dept of Primary Health Care, University of Oxford, Oxford, UK</p>
12:15 – 12:30	<p>Implementation of a Real Time Early Warning System in the Paediatric Intensive Care Unit</p> <p>B.R.Matam¹, Heather Duncan¹, Peter van Manen², Paul Taylor²</p> <p>¹BCH, Birmingham, UK.</p> <p>²McLaren Electronic Systems, Woking, UK</p>
12:30 – 14:00	Lunch
Oral Session 3 – Chair A. Eleuteri	
14:00 – 14:15	<p>A Framework Approach to K-Means Clustering</p> <p>S.J. Chambers, I.H. Jarman, T.A. Etchells, P.J.G. Lisboa Dept Mathematics and Computer Sciences, Liverpool John Moores University, Liverpool, UK</p>
14:15 – 14:30	<p>Medical dataset representation using Fisher networks</p> <p>H. Ruiz¹, P.J.G. Lisboa¹, I.H. Jarman¹, J.D. Martín-Guerrero²</p> <p>¹School of Computing and Mathematical Sciences – Department of Mathematics and Statistics, Liverpool John Moores University, Liverpool, UK</p> <p>²Escuela Técnica Superior de Ingeniería – Departamento de Ingeniería Electrónica, Universidad de Valencia, Burjassot (Valencia), Spain</p>
14:30 – 14:45	<p>Segmentation and tracking of Escherichia coli expressing tsr-venus proteins from combined DIC/Fluorescence images</p> <p>C. Queimadelas¹, J. Rodrigues¹, A-B. Muthukrishnan², A. Mora¹, A.S. Ribeiro², J.M. Fonseca¹</p> <p>¹Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Lisboa, Portugal</p> <p>²Laboratory of Biosystem Dynamics, Tampere University of Technology, Finland</p>
14:45 - 15:00	The PRICONA Algorithm for NMR Spectra Normalization
14:45 - 15:00	R. Romano ¹ , R. Canonico ¹ , F. Acerneze ¹ , P.L. Indovina ² , F. Barone ¹

	<p>¹Dept. Scienze Farmaceutiche e Biomediche, Università di Salerno, Fisciano, Italy ²Dept. Scienze Fisiche, Università di Napoli Federico II, Napoli, Italy</p>
15:00 – 15:15	<p>Automatic Segmentation of Anterior Segment Optical Coherence Tomography Images D. Williams¹, Y. Zheng², A. Elsheikh¹ ¹Dept. Civil Engineering, University of Liverpool, Liverpool, UK ²Dept. Eye and Vision Sciences, University of Liverpool, Liverpool, UK</p>
15:15 – 15:30	Tea/Coffee
Poster Session 1 – Chair F. Barone	
15:30 – 15:45	<p>Detecting abnormal ventricular heart beats in ECG signal using cross-correlation based technique J. Sledzik¹, A. Matonia², D. Roj², T. Kupka², M. Bernys² ¹Dept. Computational Methods Application, Institute of Medical Technology and Equipment ITAM, Zabrze, Poland ²Dept. Biomedical Signal Processing, Institute of Medical Technology and Equipment ITAM, Zabrze, Poland</p>
15:45 – 16:00	<p>Telemonitoring of high-risk pregnancy with quality–driven adaptation of bioelectrical signal processing J. Jezewski¹, T. Kupka¹, D. Roj¹, T. Pander², R. Czabanski², M. Jezewski² ¹Dept. Biomedical Signal Processing, Institute of Medical Technology and Equipment, Zabrze, Poland ²Institute of Electronics, Silesian University of Technology, Gliwice, Poland</p>
16:00 – 16:15	<p>Biological interaction networks based on non-parametric estimation K.D. Kalantzaki, E.S. Bei, M. Garofalakis, M. Zervakis Department of Electronic and Computer Engineering, TUC, University Campus, Chania, Crete, Greece</p>
16:15 – 16:30	<p>Biological evaluation of the influence of algorithmic parameters on marker selection in genomic datasets T. Vigdidieli, E.S. Bei, M. Zervakis Department of Electronic and Computer Engineering, TUC, University Campus, Chania, Crete, Greece</p>
16:30 – 16:45	<p>Mathematical Modeling of Insulin Continuous Infusion Pump using Bond Graph V.G. Carvalho¹, P. H. G. Inazawa¹, S. S. R. F. Rosa¹, J. F. Silva¹ ¹Engineering & Innovation Laboratory, Electrical and Biomedical Engineering Department, University of Brasília, Brasília, DF, BRAZIL</p>
16:45 – 17:00	<p>The good, the bad and the ugly: Applying MatSOAP in the real world R. Teymour, S.P. Lake, A.F.G. Taktak, A.C. Fisher Dept. Medical Physics & Clinical Engineering, Royal Liverpool University Hospital, Liverpool, UK</p>
19:00	Coach departs to the Liver Building for the conference banquet

Friday 6 July 2012

9:00 – 9:30	Registration with Tea/Coffee
Oral Session 4 – Chair A. Taktak	
9:30 – 9:45	A Heart Rate Variability Based Approach to Analyse Frailty in Older Adults J.P.V. Madeiro ^{1,2} , P.C. Cortez ¹ , J.A.L. Marques ^{2,3} , J.L.Salinet Jr. ² , A.A.P. Junior ⁴ , F.S. Schlindwein ² ¹ Department of Teleinformatics Engineering, Federal University of Ceará, Fortaleza, Brazil ² Department of Engineering, University of Leicester, Leicester LE1 7RH, United Kingdom ³ Department of Informatics, University Lusíada of Angola, Angola ⁴ Department of Physiology and Pharmacology, Federal University of Ceará, Fortaleza, Brazil
9:45 – 10:00	Detection and Analysis of Pattern Readjustment in Fetal Heart Rate Signal L. Xu ^{1,3} , A. Georgieva ² , S.J. Payne ³ , Mary Moulden ² , C.W.G. Redman ^{2,4} ¹ Doctoral Training Centre, University of Oxford, Oxford, UK; ² Nuffield Department of Obstetrics & Gynaecology, University of Oxford, Oxford, UK ; ³ Department of Engineering Science, University of Oxford, Oxford, UK, ⁴ Oxford Biomedical Research Centre, University of Oxford, UK
10:00 – 10:15	Spectrogram Analysis to Interpret Long Term Variability of Fetal Heart Rate J.A.L. Marques ^{1,2} , J.P.V. Madeiro ^{2,3} , P.C. Cortez ³ , J.L.Salinet Jr. ² , F.S. Schlindwein ² ¹ Department of Informatics, University Lusíada of Angola, Angola ² Department of Engineering, University of Leicester, Leicester LE1 7RH, United Kingdom ³ Department of Teleinformatics Engineering, Federal University of Ceará, Fortaleza, Brazil
10:15 – 10:30	Respiratory pattern in infants with West syndrome C. Varon ¹ , K. Jansen ² , L. Lagae ² , S. Van Huffel ¹ ¹ Dept. Electrical Engineering (ESAT,SCD-SITA), IBBT Future Health Department, KULeuven, Leuven, Belgium ² Dept. Pediatrics, University Hospitals Leuven, Leuven, Belgium
10:30 – 10:45	Cardiopulmonary Coupling in Sleep Apnea Assessed by Means of Orthogonal Subspace Projection A. Caicedo ^{1,2} , C. Varon ^{1,2} , S. Van Huffel ^{1,2} ¹ Dept. of Electrical Engineering (ESAT,SCD-SITA), Katholieke Universiteit Leuven, Leuven, Belgium ² IBBT Future Health Department, Katholieke Universiteit Leuven, Leuven, Belgium
10:45 – 11:00	Tea/Coffee
Oral Session 5 – Chair P. Lisboa	
11:00 – 11:45	Keynote Lecture Personalised Ambient Monitoring for Mental Health C. James Institute of Digital Healthcare, University of Warwick, Coventry, UK
11:45 – 12:00	Quadratic Sample Entropy and Multiscale Quadratic Sample Entropy of the Electroencephalogram in Alzheimer's Disease Samantha Simons ¹ , Daniel Abásolo ¹ and Javier Escudero ² ¹ Centre for Biomedical Engineering, Division of Mechanical, Medical and Aerospace Engineering, Faculty of Engineering and Physical Sciences, University of Surrey, United Kingdom ² Signal Processing and Multimedia Communications Research Group, School of Computing and Mathematics, Plymouth University, United Kingdom
12:00 – 12:15	Characterisation of Intracranial Pressure in Infusion Studies with Sample Entropy Daniel Abásolo ¹ , Nuria Gómez ² , David Santamaría ³ , María García ⁴ and Roberto Hornero ⁴ ¹ Centre for Biomedical Engineering, Division of Mechanical, Medical and Aerospace Engineering, Faculty of Engineering and Physical Sciences, University of Surrey, United Kingdom ² Laboratory of Image Processing, ETSIT, University of Valladolid, Spain ³ Department of Neurosurgery, Hospital Universitario de León, Spain ⁴ Biomedical Engineering Group, ETSIT, University of Valladolid, Spain
12:15 – 13:45	Lunch
Poster Session 2 – Chair D. Abásolo	
13:45 – 14:00	Medical Identifying toxicity pathways of apomyoglobin amyloid prefibrillar oligomers using a combined proteomic and 1H-NMR metabonomic approach R. Romano, R. Canonico, F. Acernece, S. Vilasi, F. Barone Dept. Scienze Farmaceutiche e Biomediche, Università di Salerno, Fisciano (Salerno), Italy
14:00 – 14:15	An application of the myriad filter for FHR baseline estimation T. Pander ¹ , A. Matonia ² , J. Wrobel ² , D. Roj ² , J.Jezewski ² ¹ Institute of Electronics, Silesian University of Technology, Gliwice, Poland ² Dept. Biomedical Signal Processing, Institute of Medical Technology and Equipment, Zabrze, Poland

14:15 – 14:30	Scale Invariant Image Registration for Focal Treatment of Prostate Cancer by Radiotherapy Y. Feng ¹ , K. Cheng ¹ , Y. Tian ¹ , D.B. McLaren ¹ , S. McLaughlin ² , D.J. Argyle ³ , W.H. Nailon ¹ ¹ Edinburgh Cancer Centre, Western General Hospital, Edinburgh, UK ² School of Engineering and Physical Sciences, Heriot Watt University, Edinburgh, UK ³ The Royal (Dick) School of Veterinary Studies, Edinburgh, UK
14:30 – 14:45	LEVEL SET IDENTIFICATION OF RADIOTHERAPY TUMOUR VOLUMES ON MAGNETIC RESONANCE IMAGES K. Cheng ¹ , Y.Feng ¹ , R.Steel ² , D.B. McLaren ¹ , S.Erridge ¹ , S. McLaughlin ³ , W.H. Nailon ¹ ¹ Edinburgh Cancer Centre, Western General Hospital, Edinburgh, UK ² Toshiba Medical Systems Corporation, Edinburgh, UK ³ School of Engineering and Physical Science, Heriot-Watt University, Edinburgh, UK
14:45 – 15:00	Using Subject-Specific Muscle Parameters to Compare Muscle Forces between an EMG-Driven and OpenSim Musculoskeletal Model C.Kaya ¹ , M.J.Chappell ¹ , N.D.Evans ¹ ¹ School of Engineering, University of Warwick, Coventry, UK
15:00 – 15:15	Estimation of bioelectrical uterine contractile activity versus mechanical activity basing on contractions inconsistency measures J. Jezewski ¹ , T. Kupka ¹ , J. Sikora ² , A. Matonia ¹ , K. Horoba ¹ ¹ Dept. Biomedical Signal Processing, Institute of Medical Technology and Equipment, Zabrze, Poland ² Medical University of Silesia, Department of Obstetrics and Gynecology, Katowice, Poland
15:15 – 15:30	Tea/Coffee
Oral Session 6 – Chair J. Fonseca	
15:30 – 15:45	Breast Cancer Data Classification using Semi-supervised Fuzzy c-Means D.T.C. Lai, J.M. Garibaldi School of Computer Science, University of Nottingham, Nottingham, UK
15:45 – 16:00	A multi-state approach to model the risk of secondary enucleation and local recurrence in ocular melanoma patients A. Eleuteri ¹ , B.E. Damato ² , S.E. Coupland ³ , A.F.G. Taktak ¹ ¹ Dept. Medical Physics & Clinical Engineering, Royal Liverpool University Hospital, Liverpool, UK ² Liverpool Ocular Oncology Service, Royal Liverpool University Hospital ³ Dept Molecular and Translational Cancer Medicine, University of Liverpool
16:00-16:15	Personalised Prognostication of Uveal Melanoma Using Clinical, Histological and Cytogenetic Data A.F.G. Taktak ¹ , A. Eleuteri ¹ , S.E. Coupland ² , B.E. Damato ³ ¹ Dept. Medical Physics & Clinical Engineering, Royal Liverpool University Hospital, Liverpool, UK ² Dept Molecular and Translational Cancer Medicine, University of Liverpool ³ Liverpool Ocular Oncology Service, Royal Liverpool University Hospital
16:15	Best Paper Presentation Award
16:30	Close
17:00	Wine and Cheese at the Liverpool Medical Institute