

CIMED2005

Programme* of the 2nd International
Conference on Computational Intelligence in
Medicine and Healthcare

*This programme is provisional and it might be changed if necessary

29th June - 1st July 2005
Costa da Caparica
Lisbon, Portugal



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- 11.20-11.40 **Node-negative breast cancer prognosis based on a bayesian neural network approach with censored data**
C. T. C. Arsene, P. J. G. Lisboa (UK)
- 11.40-12.00 **Survival Analysis Using a Multi-Objective Evolutionary Algorithm**
C. Setzkorn, A. F. Taktak, B. Damato (UK)
- 12.00-12.20 **Detection of acute coronary syndromes in chest pain patients using neural network ensembles**
M. Green, J. Björk, J. Lundhager, U. Ekelund, L. Edenbrandt, M. Ohlsson (Sweden)
- 12.20-12.40 **Discrimination of three mental states using ann and three different EEG signal representations**
M. Vourkas, G. Papadourakis, P. Y. Ktonas, S. Micheloyannis (Greece)
- 12.40-13.00 **fMRI Decision Support**
J. G. Sumrall, C. Tan, S. Ramachandra (USA)

Friday 1 July 2005 – 14.00-15.20

Session 7

Biodata Analysis 3 – Image and natural language processing

Chair: Michalis Zervakis, Greece

- 14.00-14.20 **Fluorescent in situ hybridization images**
F. Raimondo, M. A. Gavrielides, G. Karayannopoulou, I. Kostopoulos, K. Lyroutdia, I. Pitas (Greece)
- 14.20-14.40 **Comparison of Different Image Reconstruction Strategies in Clear-PEM**
N. Matela, A. Trindade, N. C. Ferreira, M. V. Martins, P. Rodrigues, N. Oliveira, J. Varela, P. D. Almeida (Portugal)
- 14.40-15.00 **Modelling of drusen deposits based on retina image tridimensional information**
A. D. Mora, P. Vieira, J. M. Fonseca (Portugal)
- 15.00-15.20 **Natural language processing for nursing documentation**
H. J. Suominen, T. Lehtikunnas, M. Hiissa, B. Back, H. Karsten, T. Salakoski, S. Salanterä (Finland)

END

Day 3

Friday 1 July 2005 – 9.00-9.40

Invited talk

9.00-9.40 **Biopattern, Infobiomed and eTumor**
by Emmanuel Ifeachor (UK), Eva Molero Romén (Spain) and Bernardo Celda (Italy)

9.50-10.00 **ideal-IST - The IST Partner Search Network**
by Mário Rui Vilar (Portugal)

Friday 1 July 2005 – 10.00-11.00

Poster Session 3

Image processing and visualization techniques

Chair: Azzam Taktak

Generation of gait patterns with competitive learning

I. López, F. J. Veredas, F. J. Vico, G. García-Herrera, J. Farfán, S. Cabello (Spain)

An intelligent system for diagnosis of capsule endoscopic images

V. Kodogiannis, E. Wadge, M. Boulougoura (UK)

A genetic algorithm approach to detect eye fundus vessel bifurcation points

V. Bevilacqua, F. Introna, G. Mastronardi, L. Cariello (Italy)

Multipurpose 3D modelling for virtual clinical interventions

A. Hajdu, A. Lukács, Á. Pányik, C. Szabó, J. Kormos, P. Veres (Hungary)

Classification of microscopic images using radial basis function neural networks

I. Maglogiannis, C. Kiranoudis, H. Sarimveis (Greece)

Medical imaging demonstrator on a distributed virtual organisation

S. Di Bona, D. Guerri, M. Demi, O. Salvetti, R. Baraglia, R. Fontanelli (Italy)

Classifying pigmented skin lesions utilizing non-parametric and artificial intelligence techniques

M. Metz, E. Ifeachor, J. Curnow, P. Kersey, W. D. Groch (UK, Germany)

Efficient motion estimation schemes for medical video coding

J. P. Dubois, H. Priddle (Lebanon, Australia)

Pattern recognition using multi-layered perceptron (MLP) networks in breast magnetic resonance imaging (MRI) lesions

M. Sreenivas, L. W. Turnbull, P. Gibbs (UK)

Unsupervised pattern recognition of 1h-mrs prostate data: tumour prognosis via improved data visualisation

S. A. Dodds, G. J. Postma, L. M. C. Buydens, T. Scheenen, T. Roelofs, A. Heerschap (The Netherlands)

Friday 1 July 2005 – 11.00-13.00

Session 6

Neural networks and clinical decision support systems

Chair: Paulo Lisboa, UK

11.00-11.20 **Modeling survival of intraocular melanoma using a partial logistic artificial neural network with automatic relevance determination and orthogonal search based rule extraction**

M. S. H. Aung, P. J. G. Lisboa, A. F. G. Taktak, B. E. Damato (UK)

Schedule

Wednesday 29 June 2005

9.00-9.10	Welcome address by Jose Manuel Fonseca (Conference Chair, UNINOVA, Portugal)
9.10 – 9.40	Invited Talk 1: ““Neural networks in biomedicine – where are we now?” by Paulo Lisboa (Liverpool John Moores University, UK)
9.40 – 10.10	Invited Talk 2: by Ignacio Blanquer (Spain)
10.10-10.30	Coffee break
10.30-12.30	Session 1 Biomedical informatics and computational intelligence in cancer
12.30-13.30	Lunch
13.30-15.30	Session 2 Bioinformatics - Machine learning and visualization
15.30-16.30	Coffee break Poster session 1 Healthcare information technologies and Bioinformatics
16.30-18.30	Session 3 Emerging eDelivery technologies for healthcare
20.00	Dinner

Thursday 30 June 2005

9.00-9.40	Invited talk "Distributed sources of EEG rhythms in Mild Cognitive Impairment: integrating genotype and phenotype data" by Claudio Babiloni
9.40-10.00	Coffee break
10.00-12.00	Session 4 Biodata analysis 1 – Independent component analysis and blind source separation
12.00-13.00	Lunch
13.00-15.00	Session 5 Biodata analysis 2 - Brain diseases and fetal monitoring
15.00-16.00	Coffee break Poster session 2 Intelligent Methods for Medical Signal Analysis
17.00-23.00	Tour and Conference Banquet

Friday 1 July 2005

9.00-10.00	Invited talks - Biopattern + Infobiomed + eTumor + ideal-IST
10.00-11.00	Coffee break Poster session 3 Image processing and visualization techniques
11.00-13.00	Session 6 Neural networks and clinical decision support systems
13.00-14.00	Lunch
14.00-15.20	Session 7 Biodata analysis 3 - Image and natural language processing
15.20	Closing session and next year conference presentation

- E. Huupponen, G. Herrero, K. Eguiazarian, A. Värrä, B. Vanrumste, A. Vergult, W. De Clercq, S. Van Huffel, W. Van Paesschen (Finland, Belgium)
- 13.40-14.00 **Evaluation of electroencephalographic activity involved in mathematical thinking using wavelet analysis and significance-based features**
V. Sakkalis, M. Zervakis, S. Erimaki, S. Micheloyannis (Greece)
- 14.00-14.20 **Spectral estimation of the very low frequency components of the fetal heart rate during labor determined by continuous wavelet transform and matching pursuit**
G. Vasios A. Prentza E. Sifakis D. Koutsouris (Greece)
- 14.20-14.40 **Sensor array for foetal ECG. Part 1: Simulations**
V. Vigneron, A. Azancot, C. Hérail, M. Schmidt, O. Sibony, C. Jutten (France)
- 14.40-15.00 **Prediction of pregnancy of unknown location outcome: The difficult yet important case of ectopic pregnancy**
B. Van Calster, G. Condous, S. Van Huffel, T. Bourne, D. Timmerman (Belgium, UK)

Thursday 30 June 2005 – 15.00-16.00

Poster Session 2

Intelligent Methods for Medical Signal Analysis

Chair: Christopher James, Malta

Suitability of fractal dimension analysis of foetal heart rate as an indicator for asphyxia

P. A. Hopkins, N. J. Outram, E. C. Ifeachor, K. Rosen (UK, Sweden)

Polygonal approximation of holter registers: a comparative study for electrographic signals time compression

P. Micó, D. Cuesta, D. Novák (Spain, Czech Rep.)

Dictionaries of waveforms for frequency analysis of simulated spindles

E. Huupponen, A. Saastamoinen, A. Värrä, B. Vanrumste, G. Herrero, J. Hasan, K. Eguiazarian, S. L. Himanen (Finland, Belgium)

Localization of epileptic focal activity by analyzing MEG data

G. Papadourakis, A. Adamopoulos, A. Ware, F. Moraitis (Greece, UK)

Independent component separation methods for specific EEG source identification

C. Bigan, M. Woolfson (Romanian, UK)

A modified EMD algorithm for application in biomedical signal processing

R. T. Rato, M. D. Ortigueira (Portugal)

ECG Wave detector and delineation with wavelets

I. V. Pinto, A. G. Batista, L. B. Alves, M. D. Ortigueira (Portugal)

Sensor array for foetal ECG. Part 2: Sensor selection

V. Vigneron, A. Azancot, C. Hérail, C. Jutten, M. Schmidt, O. Sibony (France)

Quantitative analysis of human liver needle biopsies HR-MAS spectra

B. Celda, A. Fernández, B. Martínez-Granados, D. Monleón, J. del Olmo, J. M. Rodrigo, M. C. Martínez-Bisbal, P. Lluch (Spain)

Prediction of Paroxysmal Atrial Fibrillation

D. J. Woodcock, I. T. Nabney (UK)

K. Cerbioni, E. Palanca, A. Starita, F. Costa, P. Frasconi (Italy)

17.30-17.50 **Healthcare data mining based on a personal dynamic healthcare system**
H. Takeuchi, N. Kodama (Japan)

17.50-18.10 **Wireless personal monitoring of patient movement and vital signs**
J. Boyle, T. Wark, M. Karunanithi (Australia)

18.10-18.30 **Watermarking of medical signals**
B. Toch, D. Lowe (UK)

Day 2

Thursday 30 June 2005 – 9.00-9.40

Invited talk

9.00-9.40 **Distributed sources of EEG rhythms in Mild Cognitive Impairment: integrating genotype and phenotype data**
by Claudio Babiloni (Italy)

Thursday 30 June 2005 – 10.00-12.00

Session 4

Biodata Analysis 1 – Independent component analysis and blind source separation

Chair: Barrie Jervies, UK

10.00-10.20 **The applications of independent components analysis (ICA) on contingent negative variation (CNV)**
B. W. Jervis, S. Y. Belal, L. Jeanpierre (UK, France)

10.20-10.40 **Independent component analysis of single trial evoked brain responses: is it reliable?**
G. Gómez Herrero, E. Huupponen, B. Vanrumste, A. Vergult, W. De Clercq, A. Värrä, K. Egiazarian, S. Van Huffel, W. Van Paesschen (Finland, Belgium)

10.40-11.00 **Automated Clustering of ICA Results for fMRI Data Analysis**
I. R. Keck, F. J. Theis, P. Gruber, E. W. Lang; K. Specht, G. Fink; A. M. Tomé; C. G. Puntonet (Germany, Portugal, Spain)

11.00-11.20 **A spatiotemporal second-order algorithm for fMRI data analysis**
F. J. Theis, P. Gruber, I. R. Keck, A. M. Tomé, E. W. Lang (Germany, Portugal)

11.20-11.40 **Removal of Ocular Artifacts from Electroencephalogram Using Singular Spectrum Analysis**
A. R. Teixeira, A. M. Tomé, E.W. Lang, P. Gruber, A. Martins da Silva (Portugal, Germany)

11.40-12.00 **Computational Intelligence Techniques in Tracking and Decomposing Recordings of Normal and Abnormal Heart Sounds**
C.J. James, P.R. White (UK)

Thursday 30 June 2005 – 13.00-15.00

Session 5

Biodata Analysis 2 – Brain diseases and fetal monitoring

Chair: Kaj Lindercratz, Sweden

13.00-13.20 **The potential role of biomedical informatics in individualized care for dementia**
P. Zhao, C. Goh, N. Outram, E. C. Ifeachor (UK)

13.20-13.40 **Bioprofile of sleep**

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Conference Programme

Day 1

Wednesday 29 June 2005 – 9.00-10.10

Opening session and invited talk

- 9.00-9.10 Welcome addresses by:
- José Manuel Fonseca (Conference Chairman, UNINOVA, Portugal)
- 9.10-9.40 Invited Talk 1: “Neural networks in biomedicine – where are we now?” by Paulo Lisboa (Liverpool John Moores University, UK)
- 9.40 – 10.10 Invited Talk 2: by Ignacio Blanquer (Spain)

Wednesday 29 June 2005 – 10.30-12.30

Session 1

Biomedical informatics and computational intelligence in cancer

Chair: Sabine Van Huffel, Belgium

- 10.30-10.50 **Molecular subtyping of breast carcinoma profiles from traditional tumor markers**
F. Ambrogi, E. Biganzoli, P. Querzoli, S. Ferretti, P. Boracchi, E. Marubini, I. Nenci (Italy)
- 10.50-11.10 **A comparison of fuzzy and non-fuzzy clustering techniques in cancer diagnosis**
X. Y. Wang, J. M. Garibaldi (UK)
- 10.10-11.30 **Unsupervised tissue segmentation of MRSI data using canonical correlation analysis**
T. Laudadio, P. Pels, L. De Lathauwer, P. Van Hecke, S. Van Huffel (Belgium, France)
- 11.30-11.50 **The non-linear effect of a PLANN-ARD prognostic model when compared with a linear model for breast cancer patients**
I. Jarman, P. J. G. Lisboa (UK)
- 11.50-12.10 **Survival analysis of ocular melanoma using partial logistic artificial neural network model (PLANN)**
A. F. G. Taktak, C. Setzkorn, B. E. Damato (UK)
- 12.10-12.30 **The effect of imputing missing data for variables used in an accepted prognostic model for breast cancer**
I. H. Jarman, P. J. G. Lisboa (UK)

Wednesday 29 June 2005 – 13.30-15.30

Session 2

Bioinformatics - Machine learning and visualisation

Chair: Jon Garibaldi, UK

- 13.30-13.50 **A compression algorithm based on global sequence alignments for proteome sequence analysis**
A. Hategan, I. Tabus (Finland)
- 13.50-14.10 **A novel efficient protein similarity measure based on n-gram modeling**
A. Bogan-Marta, M. A. Gavrielides, N. Laskaris, I. Pitas, K. Lyroudia (Greece)
- 14.10-14.30 **Inferring a gene subnetwork from non-uniformly sampled data**

C. D. Giurcaneanu I. Tabus, J. Astola (Finland)

- 14.30-14.50 **A genetics-based system for genetic and general data classification**
A. F. Tulai, F. Oppacher, G. Carmody (Canada)
- 14.50-15.10 **Latent representation of gene expression dynamics**
D. D'Alimonte, D. Lowe, I. T. Nabney (UK)
- 15.10-15.30 **Visualisation in the analysis of gene expression data: A survey** Viktoriya, E. Ifeachor (UK)

Wednesday 29 June 2005 – 15.30-16.30

Poster Session 1

Healthcare information technologies and Bioinformatics

Chair: Antonina Starita, Italy

A document management tool based on the HL7-CDA standard for interoperating clinical systems
S. Di Bona, D. Di Napoli, D. Guerri, M. Mugnaini, R. Fontanelli, S. La Manna (Italy)

HL7 Message handling for intra-hospital information systems

L. Kolovou, A. Darras, D. Lymberopoulos (Greece)

Challenges of mobile ad-hoc grids and their applications in e-Healthcare

Z. Li, L. Sun and E. C. Ifeachor (UK)

Runtime estimation of parallel applications in computational grids

P. Hu, Z. Qiao, L. F. Sun and E. C. Ifeachor (UK)

Comparative study of support vector machine and compound covariant predictor based classification for Microarray gene-expression data of hereditary breast cancer

M. Raza, D. Green, I. Gondal, R. L. Coppel (Australia)

Alignment and gridding of Microarray data using fast Fourier transform and wavelet filter banks

Sabaresan V. Mothi, Nirmal Kumar G., Saritha D., Kandaswamy A. (India)

Identification of functionally essential proteins from protein interaction networks

O. C. Idowu, P. Andras (UK)

Comparison of fractal dimension algorithms for the computation of EEG biomarkers for dementia

C. Goh, B. Hamadicharef, G. T. Henderson, N. Hudson, S. Himalaratna, E. Ifeachor (UK)

Prediction of clinical response to treatment in Crohn's disease

I. Grabec, D. Grošelj, I. Ferkoj (Slovenia)

Wednesday 29 June 2005 – 16.30-18.30

Session 3

Emerging eDelivery technologies for healthcare

Chair: José Fonseca, Portugal

- 16.30-16.50 **A multi-agent medical information system for Bioprofile collection**
J. M. Fonseca, A. D. Mora, A. C. Marques (Portugal)
- 16.50-17.10 **The impact of grid on healthcare**
L. Sun, E. Ifeachor (UK)
- 17.10-17.30 **A grid focused community crawling architecture for medical information retrieval services**