



CONFERENCE PROGRAM

**The Ninth IASTED International Conference on
Biomedical Engineering (BioMed 2012)**

&

**The IASTED International Symposium on Telehealth
(Telehealth 2012)**

&

**The IASTED International Symposium on Assistive
Technology**

(AT 2012)

February 15 – 17, 2012

Innsbruck, Austria

LOCATION

Grand Hotel Europe
Südtiroler Platz 2
A-6020 Innsbruck



BIOMEDICAL ENGINEERING (BioMed 2012)

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The International Association of Science and Technology
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IEEE Engineering in Medicine and Biology Society



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Prof. Heinz Redl – Ludwig Boltzmann Institute for
Experimental and Clinical Traumatology, Austria

INVITED SPEAKER

Prof. Thomas Webster – Brown University, USA

TUTORIAL PRESENTER

Dr. Hesham Ali – UNO Bioinformatics Core Facility,
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TELEHEALTH (TELEHEALTH 2012)

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ASSISTIVE TECHNOLOGIES (AT 2012)

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Prof. Dusan Simsik – Technical University of Kosice, Slovakia

KEYNOTE SPEAKER

Prof. Gunnar Fagerberg – SIAT Swedish Institute on Assistive Technology, Sweden

SPECIAL SESSION ORGANIZER

Dr. Anirban Dutta – University Hospitals, Germany

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L. McBain – First Nations University of Canada, Canada
K. Miesenberger – Johannes Kepler University of Linz, Austria
L. Moniz Pereira – Technical University of Lisbon,

Portugal

M.D. Mulvenna – University of Ulster, UK
L. Normie – GeronTech - Israeli Center for Assistive Technology and Aging, Israel
G. Nussbaum – KI-I, Austria
H. Pain – University of Edinburgh, UK
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PLEASE NOTE

- ❖ Paper presentations are 15 minutes in length with an additional 5 minutes for questions.
- ❖ Report to your Session Chair 15 minutes before the session is scheduled to begin.
- ❖ Presentations should be loaded onto the presentation laptop in the appropriate room prior to your session.
- ❖ End times of sessions vary depending on the number of papers scheduled.

PROGRAM OVERVIEW

Wednesday, February 15th, 2012

- 07:30 – Registration
(TBA)
- 08:30 – BioMed, AT and Telehealth Welcome Address
09:00 (Baroque Hall)
- 09:00 – BioMed Session 1 – Physiology and Control I
(Meinhard Hall)
- 09:00 – BioMed Session 2 – Devices and Instrumentation I
(Baroque Hall)
- 10:30 – Coffee Break
11:00 (TBA)
- 11:00 – Biomed Session 1 Continued
(Meinhard Hall)
- 11:00 – Biomed Session 2 Continued
(Baroque Hall)
- 13:00 – Lunch Break
(Self-Catered)
- 14:00 – AT Keynote Speaker – “Whither Assistive
Technology?”- Prof. Gunnar Fagerbeg
(Baroque Hall)
- 15:00 – Coffee Break
15:30 (TBA)
- 15:30 – BioMed Tutorial Session – “Data Analysis and
Integration Tools in Biomedical Informatics: A
Case Study in Aging Research” – Dr. Hesham Ali
(Baroque Hall)
- 15:30 – AT Session 1 – Assistive Technology and HCI
(Meinhard Hall)

Thursday, February 16th, 2012

- 08:30 – BioMed Session 3 – Physiology and Control II
(Meinhard Hall)
- 08:30 – BioMed Session 4 – Imaging and Visualization I
(Theresiensalon)
- 08:30 – BioMed Session 5 – Devices and Instrumentation
II
(Baroque Hall)

- 08:30 – BioMed Session 6 – Biomedical Engineering
Topics
(Wedding Hall)
- 10:30 – Coffee Break
11:00 (TBA)
- 11:00 – BioMed Session 3 Continued
(Meinhard Hall)
- 11:00 – BioMed Session 4 Continued
(Theresiensalon)
- 11:00 – BioMed Session 5 Continued
(Baroque Hall)
- 11:00 – BioMed Session 6 Continued
(Wedding Hall)
- 12:30 – Lunch Break
(Self Catered)
- 14:00 – BioMed Keynote Speaker – “Human Derived
Biomaterials and Cells for Tissue
Regenerating/Engineering” – Dr. Heinz Redl
(Baroque Hall)
- 15:00 – Coffee Break
15:30 (TBA)
- 15:30 – Telehealth Session 1 – Telehealth Applications
(Baroque Hall)
- 15:30 – AT Session 2 – Assistive Rehabilitation and
Robotics
(Meinhard Hall)
- 15:30 – BioMed Special Session A – Multiscale
Biomechanics and Mechanobiology
(Theresiensalon)
- 15:30 – BioMed 7– Devices and Instrumentation III
(Wedding Hall)
- 19:00 – Dinner Banquet
(Baroque Hall)

Friday, February 17th, 2012

08:30 – AT Session 3 – Ambient Assisted Living
(*Wedding Hall*)

08:30 – Biomed Special Session B - Multiscale
Biomechanics and Mechanobiology
(*Baroque Hall*)

08:30 – AT Session 4 – Special Session: Rehabilitation
Methods and Tools
(*Meinhard Hall*)

08:30 – BioMed Session 8 – Genetics and Cell Biology
(*Theresiensalon*)

11:00 – Coffee Break

11:30 (*TBA*)

11:30 – BioMed Invited Speaker – “Bacteria Killing and
Tissue Growing Nanostructures” –
Prof. Thomas Webster
(*Baroque Hall*)

12:30 – Lunch Break
(*Self-Catered*)

14:00 – TeleHealth Session 2 – Telehealth and Decision
Support Systems
(*Theresiensalon*)

14:00 – BioMed Session 9 – Physiology and Control III
(*Baroque Hall*)

14:00 – BioMed Session 10 – Imaging and Visualization II
(*Meinhard Hall*)

14:00 – BioMed Session 11 – Devices and Instrumentation
IV
(*Wedding Hall*)

15:00 – Coffee Break

15:30 (*TBA*)

15:30 – Telehealth Session 2 Continued
(*Theresiensalon*)

15:30 – BioMed Session 9 Continued
(*BaroqueHall*)

15:30 – BioMed Session 10 Continued
(*Meinhard Hall*)

15:30 – BioMed Session 11 Continued
(*Wedding Hall*)

Wednesday, February 15th, 2012

07:30 – REGISTRATION

Location: TBA

08:30 – 09:00 BIOMED, AT & TELEHEALTH WELCOME ADDRESS

Location: Baroque Hall

09:00 – BIOMED SESSION 1 –PHYSIOLOGY AND CONTROL I

Chair: Dr. Daniel Abasolo (UK)

Location: Meinhard Hall

764-034

Evolutionary and Spatial Evolutionary Games and
Radiation Induced Bystander Effect

Andrzej Swierniak and Michal Krzeslak (Poland)

764-074

Comparison of the ANN based Classification Accuracy
for Real Time Sleep Apnea Detection Methods

Cafér Avcı and Ahmet Akbaş (Turkey)

764-036

Lempel-Ziv Complexity Dynamics in Early Detection
of Cardiac Autonomic Neuropathy in Diabetes

Daniel Abásolo (UK) and Herbert F. Jelinek (Australia)

764-037

Analysis of Time Evolution of Couplings in the Repetitive
EEG

*Jiri Janecek, Jan Chladek, Josef Halamek, Pavel Jurak,
and Milan Brazdil (Czech Republic)*

764-039

Establishing a Reference Range for Oligodendroglioma
Classification using Higuchi Dimension Analysis

*Herbert F. Jelinek (Australia), Helmut Ahammer (Austria),
Slade Matthews, Peter Succar, Craig S. McLachlan, and
Michael Buckland (Australia)*

764-051

Automatic Determination of Stopping Time of Training
Phase in SSVEP-based Brain-Machine Interface with
Bayesian Sequential Learning

*Yumi Dobashi, Atsushi Takemoto, Shu Shigezumi,
Takumi Shiraki, Katsuki Nakamura, and Takashi
Matsumoto (Japan)*

764-071

A P300-based Quantitative Comparison between the
Emotiv Epoc Headset and a Medical EEG Device

Mathieu Duvinage, Thierry Castermans, Thierry Dutoit,

*Mathieu Petieau, Thomas Hoellinger, Caty De Saedeleer
(Belgium), Karthik Seetharaman (India), and Guy Cheron
(Belgium)*

764-072

Kullback-Leibler Entropy Analysis of the
Electroencephalogram Background Activity in Alzheimer's
Disease Patients

*Daniel Abásolo (UK), Dionisio Muñoz, and Pedro Espino
(Spain)*

764-073

Dysmorphic Syndromes Classification and Recognition
with Computer Assisted System

*Merve Erkinay, Ziya Telatar, Osman Eroğul, and Yusuf
Tunca (Turkey)*

764-116

Emotion Recognition based on Utilizing Occurrence
Sequence of Heart Rate's Phase Space Points

*Nader Jafarnia Dabanloo, Gholamreza Attarodi,
Sadaf Moharreri, Saman Parvaneh, and Ali Motie
Nasrabadi (Iran)*

09:00 – BIOMED SESSION 2 – DEVICES AND INSTRUMENTATION I

Chairs: Prof. Julian Gardner (UK), Prof. Tudor
Deaconescu (Romania)

Location: Baroque Hall

764-014

Rehabilitation of the Ankle Joint by Means of Equipment
Actuated by Pneumatic Muscles

*Tudor I. Deaconescu and Andrea C. Deaconescu
(Romania)*

764-017

Potential of Electrospun Collagen/PVA Hybrid Nanofiber
Scaffold without Cell Seeded in Cartilage Tissue
Engineering

*Amir Sotoudeh, Gholam Reza Abedi, Masoud Soleimani,
Mohammad Reza Aflatoonian, Amirali Jahanshahi, and
Mohammad Ashrafzadeh (Iran)*

764-032

Classification of Field Asymmetric Ion Mobility
Spectrometry Data for Detection of Bowel Bacteria

*Julian W. Gardner, James McIntosh, Natalie Ouaret,
Peter Gold, Chuka Nwokolo, Karna Bardhan,
Ramesh Arasaradnam, and James Covington (UK)*

764-045

A Microcontrolled Constant Current Source for Wideband
Bioimpedance Measurements

*Daniela Loi, Claudia Palla, Gianfranco Marongiu,
Michele Gallamini, and Gianmarco Angius (Italy)*

764-053
Fabrication of Metal Microheater over Non-Planar PDMS Elastomer for Flexible Sensor Application
Debashis Maji and Soumen Das (India)

764-054
A Novel Bone Conduction Implant - Analog Radio Frequency Data and Power Link Design
Hamidreza Taghavi, Bo Håkansson, and Sabine Reinfeldt (Sweden)

764-058
Real-Time Microcontroller based Brain Computer Interface for Mental Task Classifications using Wireless EEG Signals from Two Channels
Rifai Chai, Gregory P. Hunter, Sai H. Ling, and Hung T. Nguyen (Australia)

764-059
A New Capacitive EMG Sensor for Control of the Active Orthosis Orthojacket
Bastian Schmitz, Roland Wiegand, Alexander von Lühmann, and Stefan Schulz (Germany)

764-060
A Brainwave Stimulator with Low Level Laser Array
Jih-Huah Wu, Joe-Air Jiang, Chia-Hao Chang, Chuan-Tsung Su, and Yang-Chyuan Chang (Taiwan)

764-162
Modular Hyperpolarized Helium-3 Gas Production by MEOP Technique for Medical Applications
Onofrio Losito, Vincenzo Dimiccoli, Fabio Pagliara, and Raffaele Prisco (Italy)

10:30 – 11:00 COFFEE BREAK

Location: TBA

11:00 – BIOMED SESSION 1 CONTINUED

Location: Meinhard Hall

11:00 – BIOMED SESSION 2 CONTINUED

Location: Baroque Hall

13:00 – LUNCH BREAK

Self-Catered

14:00 – AT KEYNOTE SPEAKER – “WHITHER ASSISTIVE TECHNOLOGY?”

Presenter: Prof. Gunnar Fagerberg (Sweden)

Location: Baroque Hall

Assistive technology is now an established field of science, industry and policy. Assistive technology products play an essential role in the daily lives and activities of a significant

part of the population, people with defined disabilities or other physical or mental limitations, yielding substantial societal and economic benefits.

Assistive technology is located in the crossroads between several important fields undergoing rapid change. This presentation will describe current trends and possible implications for the future of assistive technology, in particular related to the following domains:

-Technology: New hardware, software and networks provide continuously new developments affecting many aspects of human life. The challenge is to reap the potential benefits of these developments and put them to good use in assistive technology products and services, but also to ensure that new developments do not raise obstacles in the accessibility and usability for people with disabilities of general technology applications.

-Policies: The United Nations Convention on the Rights of Disabled Persons went into force in 2008 as a new global framework and driving force for the development of disability policies, including assistive technology and accessibility. Pushed by lobbying from such organisations as Association for the Advancement of Assistive Technology in Europe (AAATE) and European Disability Forum (EDF), European and national policies have been moving in a direction of stronger support for assistive technology and accessibility but practical results are difficult to assess.

-Markets: The markets for assistive technology devices and services are still fragmented and national systems for service delivery are not transparent. The industry is still dominated by small and medium-sized enterprises with little consolidation and collaboration. Market developments are affected by the general financial crisis and the demographic change, especially the ageing of the population.

-Research and development: Research and development programmes are strong drivers of developments at European and national levels, not only in technologies and applications but also in related fields such as training, information dissemination and networking. In Europe, preparations are under way for the Eighth Framework Programme, which will be important for the future of assistive technology at a higher, long-term level. In some countries, including the Nordic countries of Europe, more practical, needs-oriented national programmes have been established.

Prof. Gunnar Fagerberg has a degree in electrical engineering from Chalmers Institute of Technology, Gothenburg, Sweden. For many years, he has led research

and development work on assistive technology and accessibility at the Swedish Handicap Institute, The University of Western Ontario, Canada and the Royal Institute of Technology in Sweden.

During 2001-2004, Fagerberg was Principal Scientific Officer in the eInclusion unit in the Information Society Directorate-General of the European Commission. He is past president of the International Society for Augmentative and Alternative Communication (ISAAC) and the Association for the Advancement of Assistive Technology in Europe (AAATE).

Fagerberg was the project coordinator for the large study HEART (Horizontal European Activities in Rehabilitation Technology) with 21 partners and the R&D project TASC (Telematics Applications Supporting Cognition), both funded by the European Commission. He has participated as a project partner in several other European and international projects. During 1996-2001, he was chairman of the Technical Committees on assistive technology in the standardisation organisations CEN and ISO.

During the 1980's and 90's, Fagerberg had a number of political assignments in the city of Stockholm. During 2005-2006 he also held a post as Research Coordinator at the Linnaeus Centre for Bioinformatics at Uppsala University.

Between 2006 and 2011, he as coordinated the Integrated Project MonAMI (Mainstreaming on Ambient Intelligence) funded by the EU Sixth Framework Programme, developing and evaluating a wide range of services to the homes of elderly people with disabilities delivered on an open source, flexible technology platform.

Prof. Fagerberg is currently active at the Department of Computer and Systems Sciences at Stockholm University.

15:00 – 15:30 COFFEE BREAK

Location: TBA

15:30 – BIOMED TUTORIAL SESSION – “DATA ANALYSIS AND INTEGRATION TOOLS IN BIOMEDICAL INFORMATICS: A CASE STUDY IN AGING RESEARCH”

Presenter: Dr. Hesham Ali (USA)

Location: Baroque Hall

The last few years have witnessed significant developments in various aspects of Biomedical Informatics, including Bioinformatics, Medical Informatics, Public Health Informatics, and The last few years have witnessed significant developments in various aspects of Biomedical Informatics, including Bioinformatics, Medical

Informatics, Public Health Informatics, and Biomedical Imaging. The explosion of medical and biological data requires an associated increase in the scale and sophistication of the automated systems and intelligent tools to enable the researchers to take full advantage of the available databases. This ranges from the effective storage of data and their associated data models, to the design of efficient algorithms to automate the data mining procedures, and also to the development of advanced software systems to support data integration. With more researchers taking on Bioinformatics projects that integrate theoretical and applied concepts from both Bioscience as well as Computational Sciences, Biomedical informatics is quickly emerging as the most exciting field of research in this century. In this tutorial, we present an overview of the state of discipline for Biomedical Informatics with a focus on the nature and diverse of the available data as well as data collection tools. We make a case for the need for smarter and more advanced data integration and data analysis tools. Such tools are desperately needed to connect the datasets and obtain useful information that can be used for better medical discoveries and patient care. We present examples of recently developed intelligent tools and expert systems that produced exciting results that could not have been obtained without such innovative integration. We then focus on a case study in aging research to illustrate the proposed integration and analysis tools.

The massive size of the current available biological and medical databases and its high rate of growth have a great influence on the types of research currently conducted and researchers are focusing more than ever to maximize the use of these databases. Hence, it would be of great advantage for researchers to utilize the information stored in the available databases to extract new information as well as to understand various biological and medical phenomena.

In addition, the problem of efficiently collecting, sharing, mining and analyzing the wealth of information available in a growing set of the biological and clinical data has common roots in many IT applications. This is particularly critical in managing biological and clinical data since relevant data is available in different shapes and forms, and hence, employing all available data to extract meaningful properties is an enormous task. Heterogeneous data, obtained from microarrays, high throughput sequencers, mass spectrometry experiments and clinical records, can all be used to find potential correlations between genes/proteins and the susceptibility to have a particular disease. The tutorial will address these issues with a particular focus on the following objectives:

- 1) Provide an overview of the exciting disciplines of Biomedical Informatics, including medical, public health

and bio informatics with a focus on the interdisciplinary nature of these fields of study.

2) Introduce the main computational problems in biomedical research with a focus on data collecting and analysis related problems, then survey the current available algorithmic tools and address the advantages and the shortcoming of each tool.

3) Introduce the audience to the concept of intelligent data integrating and analysis tools. Such tools are critical to leverage data collected from different resources to produce useful information that can further advance biomedical research and has the potential lead to new discoveries directly related to patient care.

The tutorial is intended for bio-scientists and computational scientists who are interested in Biomedical Research and how to develop or use computational tools to solve data mining related problems. Although some basic background in biomedical sciences would be helpful, it is not necessary since the tutorial will provide a basic background of the needed concepts. Similarly, some basic background in algorithms would be useful but it is not necessary.

Hesham H. Ali is a Professor of Computer Science and the Lee D. and Wilma Seaman Distinguished Dean of the college of Information Science and Technology (IS&T), at the University of Nebraska at Omaha (UNO). He is also the director of the UNO Bioinformatics Core Facility and the deputy director for computational sciences of the Nebraska Informatics Center for Life Center (NICLS). He has published numerous articles in various areas of Computer Science including scheduling, distributed systems, wireless networks, and Bioinformatics. He has also published two books in scheduling and graph algorithms and several chapters in Bioinformatics texts. He is currently serving as the PI or Co-PI of several projects funded by NSF, NIH and Nebraska Research Initiative (NRI) in the areas of wireless networks and Bioinformatics. He has been leading a Bioinformatics Research Group at UNO that focuses on aging research through mobility studies and mining data from temporal biological networks. The group is also developing computational approaches to identify and classify biological organisms, with the goal of complementing the current experimental approaches in addressing a wide range of Biomedical Informatics problems. He has also been leading an NSF funded project with the goal of developing secure wireless infrastructure for medical environments.

15:30 – AT SESSION 1 – ASSISTIVE TECHNOLOGY AND HCI

Chair: Prof. Nikola Serbedzija (Germany)

Location: Meinhard Hall

766-002

Predictive Scanning Keyboard Operated by Hissing
Ondřej Poláček, Zdeněk Mikovec, and Pavel Slavík (Czech Republic)

766-013

Optimal Edge Detection for a Real-Time Head Mounted Display Providing Low Vision Aid
Ryan M. Gibson, Scott G. McMeekin, Ali Ahmadinia, Niall C. Strang, and Gordon Morison (UK)

766-018

Using Temporal Tracking Measures to Characterize Speech of Children with Childhood Apraxia of Speech
Beena Ahmed, Fatima A. Raja, Ernesto D. Nuguid, and Shatha Al-Shmary (Qatar)

766-019

Autonomous and Awareness-Rich Assistive Systems
Nikola Serbedzija (Germany)

Thursday, February 16th, 2012

08:30 – BIOMED SESSION 3 – PHYSIOLOGY AND CONTROL II

Chairs: Dr. Jaroslaw Smieja (Poland), Dr. Herbert Jelinek (Australia)

Location: Meinhard Hall

764-035

Biologically Inspired Algorithms Applied to Prosthetic Control
Max Ortiz-Catalan, Rickard Brånemark, and Bo Håkansson (Sweden)

764-084

Weka Machine Learning Classification in Identifying Autonomic Dysfunction Parameters Associated with Ace Insertion/Deletion Genotypes
Ethan Ng, Brett Hambly, Slade Matthews, Craig S. McLachlan, and Herbert F. Jelinek (Australia)

764-089

Developing an Acoustic MRE Breast Actuator to Facilitate MRE Applications in Breast Cancer Detection
Quazi T.A. Linda, Andrii Petrov, and Elijah V. Houten (New Zealand)

764-090

A Robust Multiple-Model Adaptive Control System for Automatic Delivery of a Vasoactive Drug
Nicolò Malagutti, Arvin Dehghani, and Rodney A. Kennedy (Australia)

764-093
Automatic Detection of Readiness Potential
Pouya Ahmadian (Italy), Saeid Sanei (UK), Luca Mussi, Luca Ascari, and Maria Alessandra Umiltá (Italy)

764-094
An Automatic Emboli Detection from Artifact using Fuzzy Multiagent System
Ayyoob Jafari and Bitá Minaee (Iran)

764-063
Segmentation of Sleep EEG Signal by Optimal Thresholds
Daria Migotina and Agostinho Rosa (Portugal)

764-114
Onset and Offset Exercise Response Model in Electronic Terms
Yi Zhang, Azzam Haddad, Steven W. Su, Branko G. Celler, and Hung T. Nguyen (Australia)

764-103
Comparison of Models of Glucose Uptake
Jaroslav Smieja (Poland)

764-118
Detection and Localization of Myocardial Infarction using Body Surface Potential Map Data
Gholamreza Attarodi, Nader Jafarnia Dabanloo, Naser Safdarian, and Seyed Ali Matini (Iran)

08:30 – BIOMED SESSION 4 – IMAGING AND VISUALIZATION I

Chairs: Dr. Gobert Lee (Australia) and Dr. Thomas Lotz (New Zealand)

Location: Theresiensalon

764-005
A Novel 3D Reconstruction Method for Hepatic Tumor Visualization
Haiming Ai, Shuicai Wu, Harbin Ai, Hongjian Gao, Chunlan Yang, and Yi Zeng (PR China)

764-033
Dynamic Assessment of Tissue Blood Content using Microwave Tomography and Contrast Agent: Feasibility Study
Serguei Semenov (UK), James Kellam, Thomas Williams, Michael Quinn, and Brian Nicholson (USA)

764-043
Performance Analysis of Variable Density Sampling in Compressed Sensing MRI
Jaganathan Vellagoundar and Ramasubba Reddy Machireddy (India)

764-049
Assessing the Surface Integrity of Hydrogels using Confocal Microscopy
Jelle Verhoeven, Peter Verbrugghe (Belgium), Anika Embrechts, Eduardo Mendes (The Netherlands), Bart Meuris, and Paul Herijgers (Belgium)

764-052
Multi-Organ Segmentation of CT Images using Statistical Region Merging
Gobert Lee, Mariusz Bajger, and Martin Caon (Australia)

764-061
Compatibility Test on Lower-Extremity Motion and Sensory Simulator to fMRI
Takahiro Ikeda, Akira Matsushita, Kosaku Saotome, Yasuhisa Hasegawa, and Yoshiyuki Sankai (Japan)

764-070
X-Ray Io Monitor Measuring Device for X-Ray Intensity for Industrial Testing Applications
Rafay Mehmood Siddiqui, Inam Ul Ahad (Pakistan), Bassim Aklan (Germany), Anurag Anurag (India), Zeeshan Islam (Germany), Syedah Sadaf Zehra (Pakistan), and Horacio S. Jiménez Soto (Mexico)

764-080
Elastographic Tissue Characterisation by Separate Modal Analysis with a Digital Image Elastography (DIET) Breast Cancer Screening System
Thomas Lotz (New Zealand), Adrianus M.W. Heeren (The Netherlands), Amer Kashif, and J Geoffrey Chase (New Zealand)

764-044
Forward-Backward Minimum Variance Beamforming Combined with Coherence Weighting Applied to Ultrasound Imaging
Ting Zhou, Qiao-liang Li, Xin Chen, Tian-fu Wang, and Si-ping Chen (PR China)

08:30 – BIOMED SESSION 5 – DEVICES AND INSTRUMENTATION II

Chairs: Dr. Nathan Jackson (Ireland), Dr. Rita Kiss (Hungary)

Location: Baroque Hall

764-100
The Cellular Membrane Simulation using Dual Semiconductor-Insulator-Semiconductor Structures
Cristian Ravariu (Romania)

764-101
Large Area MOS Capacitive Skin Electrodes Designated for Variable Electrophysiological Signal Recording
Cristian Ravariu (Romania)

764-102
Reliability Testing of Implantable Polyacrylamide
Electroactive Hydrogels
*Nathan Jackson (Ireland), Peter Verbrugghe (Belgium),
Anika Embrechts (The Netherlands), Paul Herijgers
(Belgium), Eduardo Mendes (The Netherlands), and Frank
Stam (Ireland)*

764-104
Improvement of the Actimetry Agreement among Sites by
Proper Choice of Signal Processing Stages
*Miguel A. García-González, Giuseppe Giovinazzo,
Rafael Gómez-Bule, Francesca Landi, Juan Ramos-Castro,
and Javier Rosell-Ferrer (Spain)*

764-105
Kinematic and Kinetic Analysis of Human Motion as
Design Input for an Upper Extremity Bracing System
*Jakob Karner, Werner Reichenfölsner, and Margit Gfoehler
(Austria)*

764-107
Gender Differences in the Variability of Gait in Healthy
Subjects
Rita M. Kiss (Hungary)

764-115
Sinusoidal Stimulation of Retinal Bipolar Cells: A
Modelling Study
*Tatiana Kameneva, David B. Grayden, Anthony N. Burkitt,
and Hamish Meffin (Australia)*

764-119
A Wireless Under-Mattress Sensor System for Sleep
Monitoring in People with Major Depression
*Hadiseh Mahdavi, Juan Ramos-Castro, Giuseppe
Giovinazzo, Miguel A. García-González, and Javier Rosell-
Ferrer (Spain)*

764-120
A Novel Activity Monitoring Device for Home
Rehabilitation Applications
*Thomas Minarik, Christopher Hofer, and Andreas
Schrempf (Austria)*

764-030
Size-by-size Comparison of Particle Counting and
Microbiological Sampling Methods in the Operating Room
Yekta Ulgen (Turkey) and Emir Kavak (Turkey)

764-158
Virtual Navigator Registration Procedure for Transcranial
Application
*Leonardo Forzoni, Sara D'Onofrio, Stefano De Beni,
Maria M. Laganà (Italy), David Skoloudik (Czech*

Republic), Giuseppe Baselli, and Pietro Cecconi (Italy)

08:30 – BIOMED SESSION 6 – BIOMEDICAL ENGINEERING TOPICS

Chair: Dr. Concetto Spampinato (Italy)
Location: Wedding Hall

764-018
Allocation of Human Resources in Medical Cooperatives
using a Constraint Satisfaction Problem
Approach
*Cicero F.F. Costa Filho, Marly G.F. Costa, and
Dayse R. Rocha (Brazil)*

764-021
Periodic Solutions of a Generalized SVEIR Epidemic
Model under Impulsive Periodic Vaccination
*Raul Nistal, Manuel de la Sen, and Santiago Alonso-
Quesada (Spain)*

764-078
PatientSIM - Development of an Augmented Reality
Simulator for Surgical Training of Vertebroplasty and
Kyphoplasty
David Fürst and Andreas Schrempf (Austria)

764-079
Mathematical Modeling and Simulation of Light
Propagation in Multi-Layers Earlobe for Non-Invasive
Hemoglobin Measurements
*Ahmad Al Nabulsi, Lutz Angermann, Omar Abdallah, and
Armin Bolz (Germany)*

764-121
Detecting Algorithm for AF and SAS Precaution System
via Separation Biosignals
*Kenji Hashiodani, Shinichi Takada, Yohei Fukumizu,
Hironori Yamauchi, Yoshimasa Kurumi, and Tohru Tani
(Japan)*

764-142
Knowledge Discovery from Text on a Cloud Architecture
and its Application to Bioinformatics
*Francesco Maiorana (Italy) and Giacomo Fazio
(Switzerland)*

764-143
The Feature Extraction and Classification of Maternal
Cigarette-Smoking Signatures by Euclidean Distance
Method and Alternative Neural Networks
*Tuğba Saatçı-Ayten, Umut E. Ayten, Oğuzhan Yavuz, and
Lale Özyılmaz (Turkey)*

764-153
Wireless Health Monitoring of Multiple Patients on
Android Phone with Embedded Computation

Ozgun Pinarer, Ali Parmaksiz, Ibrahim Avci, Burak Arslan, and Atay Ozgovde (Turkey)

764-156

FLDA and PCA Classification Supported by an Adapted Block Matching Algorithm to Diagnose Vocal Folds Paralysis

Amaia Méndez Zorrilla, Eneko Lopetegui Alba, and Begoña García Zapirain (Spain)

10:30 – 11:00 COFFEE BREAK

Location: TBA

11:00 – BIOMED SESSION 3 CONTINUED

Location: Meinhard Hall

11:00 – BIOMED SESSION 4 CONTINUED

Location: Theresiensalon

11:00 – BIOMED SESSION 5 CONTINUED

Location: Baroque Hall

11:00 – BIOMED SESSION 6 CONTINUED

Location: Wedding Hall

12:30 – LUNCH BREAK

Self-Catered

14:00 – BIOMED KEYNOTE SPEAKER – “HUMAN DERIVED BIOMATERIALS AND CELLS FOR TISSUE REGENERATING/ENGINEERING”

Presenter: Dr. Heinz Redl (Austria)

Location: Baroque Hall

Plasma derived fibrin matrix is one of the most versatile biomaterials for tissue engineering and regenerative medicine. Being involved in a > 30 year development we can demonstrate advantages and limitations, application techniques and its special use for growth factor and cell delivery as well as a gene activated matrix.

Another goal in our group is to use „medical garbage“ for regenerative purposes. Therefore we use cells from liposuction, from umbilical cord and placenta derived (PD) – substances (e.g. collagen) and PD structures (e.g. amnion) as well as PD cells (e.g. amnion MSC). “Living” Amnion is used either directly (cryopreserved) using a clinically approved process, e.g. for wound healing and antifibrosis or in a new process that the stem cells residing on and in amnion (“sessile” cells) are differentiated in toto (osteo, chondrogenic direction).

Isolated stem cells are cultured with platelet derived factors (from outdated platelets) to avoid animal products and used

directly or pre-differentiated, in autologous or allogeneic fashion. Allogeneic is possible, because the mesenchymal stem cells have minor antigenicity and in addition immunosuppressive properties.

This talk should give an overview about the use of above mentioned procedures within the Austrian Cluster for Tissue Regeneration.

Heinz Redl, Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Vienna, Austria; Austrian Cluster for Tissue Regeneration, Vienna, Austria; Red Cross Blood Transfusion Service of Upper Austria, Linz, Austria

Dr. Heinz Redl is the head of the Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, and Associate Professor at the Vienna University of Technology. He is the coordinator of the Austrian Cluster for Tissue Regeneration (together with the Medical University Vienna) with 5 branches – bone, cartilage, peripheral nerve, soft tissue (woundhealing) and imaging. He is the CEO of the Trauma Care Consult (a non-profit). Dr. Redl specializes in biochemistry and ultrastructural research. His research interests are in the areas of: diagnostic and therapeutic measures in trauma care; fibrin matrix for cells and growth factors and its application methods; adult STEM cells (including iPS); preclinical models for musculoskeletal/neuro area; imaging techniques for TERM; and translational approaches. He is a book editor and a member of multiple editorial boards. His publications include more than 360 PubMed cited publications and 10 patents (mainly in the fibrin matrix (sealant) field). Dr. Redl is an invited speaker and organizer at various international conferences and meetings.

15:00 – 15:30 COFFEE BREAK

Location: TBA

15:30 – TELEHEALTH SESSION 1 – TELEHEALTH APPLICATIONS

Chairs: Dr. Joseph Finkelstein (USA) and Prof. Mircea-Florin Vaida (Romania)

Location: Baroque Hall

765-023

Introducing Home Asthma Telemanagement using the PlayStation 3 Gaming Platform

Joseph Finkelstein and Jeffrey Wood (USA)

765-012

Assessing Daily Activity of Older Persons in a Real Life AAL System

Peter Mayer and Paul Panek (Austria)

765-009

Telecare: Legal, Ethical and Socioeconomic Factors
Richie Sethi, Gautam Bagga, David Carpenter, Djamel Azzi, and Rinat Khusainov (UK)

765-020

The Conception of Virtual Health Assistants for Solving Insufficient Business Processes in Future Health Care
Haithem Derouiche, Christian Schlagenhauer, and Freimut Bodendorf (Germany)

765-019

Evaluation of Monogenic Phase Apport in Ultrasound-MRI Image Registration
Marius-Cristian Ureche (Romania), Adrian Basarab (France), Mircea-Florin Vaida (Romania), and Denis Kouame (France)

15:30 – AT SESSION 2 – ASSISTIVE REHABILITATION AND ROBOTICS

Chairs: Asst. Prof. Pedro Encarnação (Portugal) and Dr. Antoni Jaume-i-Capó (Spain)
Location: Meinhard Hall

766-008

On Tools for Game Interaction Analysis
Ivo Maly, Michal Hapala, Jiri Bittner, and Pavel Slavík (Czech Republic)

766-010

Virtual Assistive Robot for Play
Pedro Encarnação, Gonçalo Piedade (Portugal), Kim Adams, and Albert M. Cook (Canada)

766-012

Motivational Rehabilitation using Vision-based Serious Games
Antoni Jaume-i-Capó, Biel Moyà-Alcover, Javier Varona, Paz Martínez (Spain), and Alejandro Mesejo (Cuba)

766-020

Rehabilitation Device Construction based on Artificial Muscle Actuators
Kamil Zidek, Jan Pitel, Alena Galajdova, and Marek Fodor (Slovakia)

766-005

Developing Accessible City Maps for the Web
Julia Neuschmid, Patrick Krejci, Manfred Schrenk, and Wolfgang Wasserburger (Austria)

766-004

A Step Towards a Smart Rehabilitation Environment: A Case Study
Tero Tulppo, Anna Rohunen, Kari Liukkunen, and Mikko

Järvilehto (Finland)

752-007

Robust Virtual Keyboard for Brain-Computer Interface (ROBIK): An Halfway Update on the Project
Louis Mayaud, Marco Congedo, Sabine Filipe, Guillaume Charvet, Remy Schoettel, and Djillali Annane

15:30 – BIOMED SPECIAL SESSION A – MULTI-SCALE BIOMECHANICS AND MECHANOBIOLOGY

Chair: Prof. Christian Hellmich (Austria)
Location: Theresiensalon

764-004

An Automated Method to Estimate Femoral Shape and Mineral Mass
Danilo Pietro Pau (Italy), Xinfeng Bao (PR China), Daniele Masala, Alberto Gnemmi (Italy), Rachel C. Entwistle, and Dan Dragomir-Daescu (USA)

764-019

Effects of Wall Thickness and Elastic Modulus in Fluid Structure Interaction of Patient Specific Cerebral Aneurysm
Alvaro Valencia, Hernan Figueroa, Rodrigo Rivera, and Eduardo Bravo (Chile)

764-025

Flow Chamber System for Evaluation of Effect of Shear on Cells
Haruka Iwata, Aki Nakajima, and Shigehiro Hashimoto (Japan)

764-038

Consistent Quasi-Static and Ultrasonic Elasticity Determination of PLLA-based Rapid-Prototyped Tissue Engineering Scaffolds
Krzysztof W. Luczynski (Austria), Tomasz Brynk, Barbara Ostrowska, Wojciech Swieszkowski (Poland), Roland Reihnsner, and Christian Hellmich (Austria)

764-041

The Bounds for Technical Elastic Constants of a Cortical Bone
Young June Yoon and Won Seok Yoon (Korea)

764-046

From Micro-CT to Multiscale Mechanics of Double-Porous Hydroxyapatite Granules for Regenerative Medicine
Alexander Dejaco (Austria), Vladimir S. Komlev, Alexey N. Gurin (Russia), Jakub J Jaroszewicz, Wojciech Swieszkowski (Poland), and Christian Hellmich (Austria)

764-050
Collagen Mechanics: Role of Structural Hierarchy
*Dinesh R. Katti, Shashindra M. Pradhan, and
Kalpana S. Katti (USA)*

764-057
Computational Simulation of the Mechanobiological
Regulation of Bone Remodeling by Means of a
Coupled Systems Biology-Micromechanical Approach
*Stefan Scheiner (Austria), Peter Pivonka (Australia),
Christian Hellmich (Austria), and David W. Smith
(Australia)*

15:30 – BIOMED SESSION 7 – DEVICES AND INSTRUMENTATION III

*Chairs: Dr. Eng. Luigi Battista (Italy), Dr. Uwe Friederich
(UK)*

Location: Wedding Hall

764-122
A Survey of Telecardiology Projects in Italy
*Claudio De Lazzari, Domenico M. Pisanelli, Igino Genuini,
Elisa Silveti, Alessandra D'Ambrosi, and Francesco
Fedele (Italy)*

764-124
A Floating Point LMS based Automatic Balancing AC
Bridge for BIS
*Zhou Zhou, Hui Xu, Hongqi Yu, Xin Xu, Zhaolin Sun,
Sen Liu, and Nan Li (PR China)*

764-125
Reverse Engineering Gain Adaptation in Sensory Systems
*Uwe Friederich, Stephen A. Billings, Mikko A. Juusola, and
Daniel Coca (UK)*

764-126
Hospital based HTA Model by Structuring the Decision
Making Process Regarding the Medical Device
Incorporation
Ana E. Margotti and Renato Garcia (Brazil)

764-127
The Notion of Cardiac Phase and its Applications in
Electrophysiological Studies
Bahman Vahabzadeh and Reza Sameni (Iran)

764-128
Experimental Characterization of a Novel Fiber-Optic
Accelerometer for the Quantitative Assessment of Rest
Tremor in Parkinsonian Patients
*Luigi Battista, Andrea Scorza, and Salvatore Andrea Sciuto
(Italy)*

764-129
Preliminary Evaluation of a Simple Optical Fiber

Measurement System for Monitoring Respiratory
Pressure in Mechanically Ventilated Infants
*Luigi Battista, Andrea Scorza, and Salvatore Andrea Sciuto
(Italy)*

764-134
Virtual Reality, Robot, and Objects in Hand and Arm
Training: A Case of Guillain-Barre
*Katherine G. August, Marie-Claude Hepp-Reymond,
Marco Guidali (Switzerland), Mathini Sellathurai (UK),
Daniel Kiper, Kynan Eng, Robert Riener (Switzerland),
Sergei V. Adamovich, Anett Ulrich (USA), and Armin Curt
(Switzerland)*

764-136
Enhancement Interval Training Exercise based on the
Analysis of Dynamic Cardio-Respiratory
*Azzam Haddad, Steven W. Su, Branko G. Celler, and
Hung T. Nguyen (Australia)*

764-159
Hand Exoskeleton Robot as a Force Measurement Tool
*Evan A. Susanto, Raymond K.Y. Tong, Newmen S.K. Ho,
and Xiaoling Hu (PR China)*

19:00 – DINNER BANQUET

Meeting Place: Baroque Hall

Friday, February 17th, 2012

08:30 – AT SESSION 3 – AMBIENT ASSISTED LIVING

Chairs: Dr. Srinivasan Jayaraman (India) and Prof. Ing. Paolo Ciampolini (Italy)
Location: Wedding Hall

766-003
Orientation Independent Human Mobility Monitoring with an Android Smartphone
John J. Guiry, Pepijn van de Ven, and John Nelson (Ireland)

766-006
Prototyping a LED Projector Module Carried by a Humanoid NAO Robot to Assist Human Robot Communication by an Additional Visual Output Channel
Georg Edelmayer, Georg Ehrenfels, Christian Beck, Peter Mayer, and Paul Panek (Austria)

766-007
A Flexible Framework for Ambient Assisted Living Applications
Ferdinando Grossi, Valentina Bianchi, Agostino Losardo, Guido Matrella, Ilaria De Munari, and Paolo Ciampolini (Italy)

766-014
Wearable Cardiac and Mobility Monitoring System for Elderly People
Kriti Kumar and Srinivasan Jayaraman (India)

766-026
Testing of Rehabilitation Shoes for Gait Training
Dusan Simsik and Alena Galajdova (Slovakia)

08:30 – BIOMED SPECIAL SESSION B – MULTI-SCALE BIOMECHANICS AND MECHANOBIOLOGY

Chair: Prof. Christian Hellmich (Austria)
Location: Baroque Hall

764-132
A Novel Approach to Estimate Trabecular Bone Anisotropy using Fabric Tensors Derived from Stress Tensors
Javad Hazrati Marangalou, Bert van Rietbergen, and Keita Ito (The Netherlands)

764-133
Contributions of Pore Volume Fraction and Mineralized Matrix Elasticity to Millimeter-Scale Cortical Bone Elastic Coefficients
Mathilde Granke, Quentin Grimal, Amena Saied,

Pascal Laugier, Françoise Peyrin (France), Alf Gerisch, and Kay Raum (Germany)

764-163
Evaluation Cortical Bone Elasticity in Response to Pulse Power Excitation using Ultrasonic Technique
Hajarossadat Asgarifar, Adekunle Oloyede, Firuz Zare, and Christian M. Langton (Australia)

764-174
X-Ray-Electron Interactions in Fibrillar Bone Ultrastructure: A Quantitative Electrodynamics Approach
Peter Henits and Christian Hellmich (Austria)

764-175
Multiscale Biomechanics of Actin Filaments and Crosslinked Networks
Tamara C. Bidone (Italy), TaeYoon Kim (USA), Marco A. Deriu, Umberto Morbiducci (Italy), and Roger D. Kamm (USA)

764-176
Fast Algorithms for the Simulation of Human Knee Joint Motion
Corinna Klapproth, Anton Schiela, and Peter Deuflhard (Germany)

764-177
An Efficient Preconditioning Strategy for Schur Complements Arising from Biphasic Models
Marco Favino, Rolf Krause, and Johannes Steiner (Switzerland)

764-173
Layered Water in Crystal Interfaces as Source for Bone Viscoelasticity: Arguments from a Multiscale Approach
Lukas Eberhardsteiner, Christian Hellmich, and Stefan Scheiner (Austria)

08:30 – AT SESSION 4 – SPECIAL SESSION: REHABILITATION METHODS AND TOOLS

Chairs: Dr. Anirban Dutta (Germany) and Dr. Alakananda Banerjee (India)
Location: Meinhard Hall

766-015
International Classification of Functioning: A Framework for Understanding Elderly Problem in the Bathroom – A Pilot Study
Alakananda Banerjee, Deepak Rohilla, and Deepak Kumar (India)

766-017
Assessing Bodystorming Simulators for Healthcare Design and Innovation: Rehabilitation Professionals' Perspective

Alakananda Banerjee, Amitoj Singh, and Pradeep Kumar (India)

766-021

Effect of Transcranial Direct Current Stimulation on Cortico-Muscular Coherence and Standing Postural Steadiness

Anirban Dutta and Sanjay Chugh (India)

766-022

Relationship between Balance and Depression in Elderly
Robins Kumar, Ruby Aikat, and Alakananda Banerjee (India)

766-023

Evaluation of an Instrumented Sleeve for Myoelectrically-Triggered Functional Electrical Therapy: Indo-German Stroke Study

Anirban Dutta (Germany), Asokan Thondiyath, and Alakananda Banerjee (India)

766-024

Effects of Cathode Placement on Anodal Transcranial DC Stimulation of Leg Motor Area: A Simulation Study
Anirban Dutta, Walter Paulus, and Michael A. Nitsche (Germany)

08:30 – BIOMED SESSION 8 – GENETICS AND CELL BIOLOGY

Chairs: Dr. Xia Ji (PR China), Gianni Orsi (Italy)

Location: Theresiensalon

764-007

A Microarray Gene Expression Profile in Peripheral Blood Mononuclear Cells for Allergic Asthma in Chinese

Xia Ji, Weizhong Zhang, Shao-dan Jia, Haiyan Wang, Xiao-xia Wang, Jing Li, Zhixiu Xiao, Weiyi Zhang, and Zhenmin Bao (PR China)

764-055

Hierarchical Motif Vectors for Amino Acid Sequence Alignment

Bilge Karaçalı (Turkey)

764-069

CREPE: A First Mathematical Model for Crosstalking of Endothelial Cells and Hepatocyte Metabolism

Giuseppe Valvano, Gianni Orsi, Maria A. Guzzardi, Federico Vozzi, and Giovanni Vozzi (Italy)

764-083

Neuron Cell Classification using Machine Learning Algorithms: Methodological Considerations

Slade Matthews, Ian Spence, Herbert F. Jelinek, and Craig S. McLachlan (Australia)

764-139

An Evaluation of Motif Detection Tools

Alin G. Voina, Petre G. Pop, and Mircea-Florin Vaida (Romania)

11:00 – 11:30 COFFEE BREAK

Location: TBA

11:30 – BIOMED INVITED SPEAKER – “BACTERIA KILLING AND TISSUE GROWING NANOSTRUCTURES”

Presenter: Prof. Thomas Webster (USA)

Location: Baroque Hall

Nanotechnology is being used to mimic structural components of tissues in synthetic materials intended for various implant applications. Recent studies have highlighted that when compared to flat or micron rough surfaces, surfaces with nanofeatures promote optimal initial protein interactions necessary to mediate cell adhesion and subsequent tissue regrowth. This has been demonstrated for a wide range of implant chemistries (from ceramics to metals to polymers) and for a wide range of tissues (including bone, vascular, cartilage, bladder, skin, and the central and peripheral nervous systems). Importantly, these results have been seen at the in vitro and in vivo level. Recently, certain nanostructures and nanomaterials have also been shown to decrease bacteria function (without releasing antibiotics). This talk will cover some of the more significant advancements in these areas by highlighting the creation of better vascular, cardiovascular, neural, and orthopedic implants through nanotechnology efforts. It will also cover recent in vitro and in vivo studies which highlight reduced infection on nanomaterials. This talk will also address recent concerns of nanoparticle toxicity through either manufacturing or implantation.

Prof. Thomas Webster is currently an associate professor for the Division of Engineering and Department of Orthopaedics at Brown University. His degrees are in chemical engineering from the University of Pittsburgh (B.S., 1995) and in biomedical engineering from Rensselaer Polytechnic Institute (M.S., 1997; Ph.D., 2000).

12:30 – LUNCH BREAK

Self-Catered

14:00 – TELEHEALTH SESSION 2 – TELEHEALTH AND DECISION SUPPORT SYSTEMS

Chair: Dr. Jeffrey Sponsler (USA)

Location: Theresiensalon

765-010

An Electronic Medical Record for Neurology
Jeffrey L. Sponsler and Fei Pan (USA)

765-017
An Ambient Intelligent Environment to Abstract Physiological Parameters for Interference and Management of "Well Being"
Sherief Mowafey and Stephen Gardner (UK)

765-007
Is it Time for Telemedicine Applications in the Management of Diabetes? Physicians' Perceptions Disclosed through a Questionnaire
Andrea Tura, Stefano Sbrignadello, and Giovanni Pacini (Italy)

765-022
An Ubiquitous and Low Cost System for Rehabilitation
Joaquín D. García-Pérez, Antonio Soriano-Payá, Daniel Ruiz-Fernández, Sergio Hernandez-Sanchez, and Oscar Marin-Alonso (Spain)

765-008
Monitoring of Syncope using a Bluetooth Holster Monitor
Marc Rogers and Stephen Gardner (UK)

765-003
StrokeDX: A Logic Programming System to Diagnose Stroke
Jeffrey L. Sponsler (USA)

765-004
Automated Analysis of Electromyography Data
Jeffrey L. Sponsler (USA)

765-005
Stroke Expert System Extended to Diagnosis CADASIL
Jeffrey L. Sponsler, Michael Senta, and Anastasia Kendrick-Adey (USA)

765-018
A SOA Approach from Medical Services Optimization using Evolutionary Algorithms
Florin-Claudiu Pop, Marcel Cremene, Mircea-Florin Vaida, and Andrea Șerbănescu (Romania)

765-021
Live ECG Streaming at the Berlin Marathon 2011
Alexander Schacht, Martin von Löwis, and Andreas Polze

14:00 – BIOMED SESSION 9 – PHYSIOLOGY AND CONTROL III

Chair: Dr. Reza Tafreshi (USA)
Location: Baroque Hall

764-095
A New Differentiation Algorithm for Electrocardiogram based on Wavelet Transform

Hidetoshi Oya, Kosuke Tanaka, Katsuhiko Hirose, Kazushi Nakano, Yoshihiro Yamaguchi, and Hiroshi Miyauchi (Japan)

764-096
An Extraction System based on Analyzing the Electrocardiogram during CPR
Hidetoshi Oya, Kojiro Hagino, Yoshihiro Yamaguchi, Hiroshi Miyauchi, Takayuki Okai, and Shigeru Kirioka (Japan)

764-135
Detecting QRS Complex in ECG using Wavelets and Cubic Spline Interpolation
Luiz C. Rodrigues and Maurício Marengoni (Brazil)

764-137
An EEG based Nonlinearity Analysis Method for Schizophrenia Diagnosis
Qinglin Zhao, Bin Hu, Li Liu (PR China), Martyn Ratcliffe (UK), Hong Peng, Jingwei Zhai, Lanlan Li, Qiuxia Shi, Quanying Liu, and Yanbing Qi (PR China)

764-141
Electrocardiogram QRS Detection using Temporal Correlation for Diagnosis of Myocardial Infarction
Reza Tafreshi, Jongil Lim, Jaleel Abdul (Qatar), and Leyla Tafreshi (USA)

764-146
Switching Multiple Models for the Segmentation of Sleep EEG Data
Tracey A. Cassar, Kenneth P. Camilleri, and Simon G. Fabri (Malta)

764-147
A New Approach for Granger Causality between Neuronal Signals using the Empirical Mode Decomposition Algorithm
João Rodrigues and Alexandre Andrade (Portugal)

764-152
Normalized Area under Catacrotic Phase of the Photoplethysmogram Pulse for Estimating Vascular
Firas M. Salih, Omar Abdallah, Qasem Qananwah, and Armin Bolz (Germany)

764-167
Performance Evaluation of Classifiers in Distinguishing Mental Tasks from EEG Signals
Isaak Kavasidis, Carmelo Pino, Concetto Spampinato, Francesco Maiorana, and Giuseppe Lanza (Italy)

14:00 – BIOMED SESSION 10 – IMAGING AND VISUALIZATION II

Chairs: Dr. Mauren Abreu de Souza(Brazil) and Dr. Concetto Spampinato (Italy)
Location: Meinhard Hall

764-144
Combined Ultrasound Technologies and Optimized Probe Design for Neck Veins Examination
Leonardo Forzoni, Sara D'Onofrio, Massimiliano Farina, Paolo Semplici, Massimo Corsi, Roberto Furia, Fabio Rezzonico, and Piero Tortoli (Italy)

764-081
A New Method for Generating 3D Thermography Models
Mauren Abreu de Souza, Ionildo J. Sanches, and Humberto Remigio Gamba (Brazil)

764-098
Research on Voltage Controlled Current Source for Electrical Impedance Tomography
Yinan Wang, Nan Li, Hui Xu, Hongqi Yu, Xin Xu, Zhaolin Sun, and Husheng Liu (PR China)

764-112
Comparing Zebris Ultrasound-based Motion Analysis System with X-Ray during the Examination of Posture at Children Suffering from Scoliosis
Mária Takács, Ervin Rudner, and Rita M. Kiss (Hungary)

764-150
Design, Implementation and Evaluation of Two Medical Content based Image Retrieval Systems
Francesco Maiorana and Carmelo Pino (Italy)

764-157
Ventilation Inhomogeneity Analysis using Electrical Impedance Tomography Image Processing
Syedah Sadaf Zehra, Inam Ul Ahad, Rafay Mehmood Siddiqui (Pakistan), Bassim Aklan (Germany), Tahir Uddin (Hungary), and Zeeshan Islam (Germany)

764-160
Phase Synchronization Features and Common Spatial Patterns for the Classification of Motor Imagery Data
Owen Falzon and Kenneth P. Camilleri (Malta)

764-165
A Visualization Methodology for Studying Relations of Medical Data via Extended Dependency Networks
Simon Fong, Luke Lu (PR China, Macau), Jinan Fiaidhi, and Sabah Mohammed (Canada)

764-168
Automatic Skeletal Bone Age Assessment: State of the Art and Future Directions

Isaak Kavasidis, Carmelo Pino, and Edoardo Sicurezza (Italy)

764-076
Peripheral Vision Dynamic Test for Athletes
João P. Rodrigues, João D. Semedo, Daria Migotina, Fernando M. Melicio, Jose G. Pereira, and Agostinho Rosa (Portugal)

14:00 – BIOMED SESSION 11 – DEVICES AND INSTRUMENTATION IV

Chair: Dr. Martin Brandl (Austria)
Location: Wedding Hall

764-145
Simulation of Bileaflet Mechanical Heart Valves Flow Dynamics
Yee Han Kuan, Vinh-Tan Nguyen, and Hwa Liang Leo (Singapore)

764-148
Resonant Capacitors and the Performance of Transcutaneous Energy Transmitters
Daniela Wolter Ferreira and Luiz Lebensztajn (Brazil)

764-149
Semi-Supervised Neural Classifier using Memristive Nanodevices
Ahmad M. Sheri (Pakistan), Seungjong No, and Moongu Jeon (Korea)

764-154
Dynamic Cell Trapping by Adaptable Ferromagnetic Structures Built Inside a Microfluidic Device
Ha Nguyen, Claudia Rauch, and Martin Brandl (Austria)

764-155
Test Case Generation for Integrating Medical Systems Considering Function Characteristics
Youngsul Shin (Korea), Muhammad I. Hossain (Bangladesh), and Woo J. Lee (Korea)

764-161
Coronary Venous Bypass Graft Failure, Hemodynamic Parameters Investigation
Sandor I. Bernad and Elena S. Bernad (Romania)

764-178
A Comparison of TiN, Iridium and Iridium Oxide Stimulating Electrodes for Neural Stimulation
Naser Pour Aryan, Christian Brendler, Viola Rieger, Steffen Kibbel, Alex Harscher, Gerhard Heusel, and Albrecht Rothermel (Germany)

15:00 – 15:30 COFFEE BREAK

Location: TBA

15:30 – TELEHEALTH SESSION 2 CONTINUED

Location: Theresialon

15:30 – BIOMED SESSION 9 CONTINUED

Location: Baroque Hall

15:30 – BIOMED SESSION 10 CONTINUED

Location: Meinhard Hall

15:30 – BIOMED SESSION 11 CONTINUED

Location: Wedding Hall

**IASTED would like to thank you for attending BioMed,
 AT & Telehealth 2012. Your participation helped make
 this international event a success, and we look forward
 to seeing you at upcoming IASTED events.**

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