

2009 Advanced Technologies for Enhanced Quality of Life

(ATEQUAL 2009)

**Iasi, Romania
22 – 26 July 2009**



IEEE Catalog Number: CFP0938H-PRT
ISBN: 978-1-4244-4631-5

**2009 Advanced Technologies
for Enhanced Quality of Life**

AT-EQUAL 2009

Table of Contents

Preface

Conference Organizers

Program Committee and Reviewers

ARTIPED 2009 Symposium Organizers

LAB-RS 2009 Symposium Organizers

AT-EQUAL 2009

Daphne System for Neuromotor Control Evaluation: Reconfiguration Concepts	3
<i>Alberto Rovetta</i>	
Robotic Surgery: Past Results and Current Developments	15
<i>Paolo Fiorini</i>	
Robotically Assisted Aorto-Femoral Bypass Grafting Surgery: French Experience and Technique Description	16
<i>Adrian Lobontiu, Pascal Desgranges, and Daniel Loisanca</i>	
A Novel Revolutionary Surgical Device for TransOral Incisionless Surgery: EsophyX™ Used for Endoluminal Fundoplication (ELF) in Patients Suffering of Reflux Disease	20
<i>Adrian Lobontiu and Daniel Loisanca</i>	
Towards Improved Assessment of Bone Fracture Risk	21
<i>J. Vander Sloten and G. H. van Lenthe</i>	
Use of Compliant Actuators in Robotic Applications	22
<i>Dirk Lefeber</i>	
Issues on Mechatronic Devices Aiming to Test Neuroprosthesis	23
<i>Marian S. Poboroniuc, Ciprian M. Stefan, Gheorghe Livint, and Danut C. Irimia</i>	
A Brain-Machine Interface Based on EEG: Extracted Alpha Waves Applied to Mobile Robot	28
<i>Mufti Mahmud, David Hawellek, and Aleksander Valjamae</i>	
A High Resolution Bi-Directional Communication through a Brain-Chip Interface	32
<i>Marta Maschietto, Mufti Mahmud, Girardi Stefano, and Stefano Vassanelli</i>	

Minimally Invasive Plate Osteosynthesis with Systems with Angular Stability in Complex Distal Femoral Fractures. Design, Biomechanics and Clinical Results	36
<i>P. D. Sirbu, E Carata, T. Petreuş, R. Asaftei, and P. Botez</i>	
Chitosan-Hydroxyapatite Composite Obtained by Biomimetic Method as New Bone Substitute	42
<i>C. E. Tanase, M. I. Popa, and L. Verestiuc</i>	
Robotic Scaffolds for Tissue Engineering and Organ Growth	47
<i>Adrian Stoica</i>	
Robotics and Automation in Regenerative Medicine for Musculoskeletal Applications	52
<i>Luminita Simion, Paul Botez, and Florin Zugun-Eloae</i>	
The Effect of Clearance in Total Hip Endoprosthesis	57
<i>Florin Munteanu, Paul Sirbu, Constantin Barbarosie, Anca Munteanu, and Paul Botez</i>	
The Gliding Nail (GN). A Universal Implant for Immediate Weight Bearing Restauration in all Per- and Subtrochanteric Femur Fractures. Evaluation of 501 Patients	61
<i>Friedl W., Hilsenbeck Fl., and Stürzenhofecker Ph.</i>	
Is the Cross Section Profile Relevant for the Cut Out Risk of the Femur Neck Component in Implants Used for the Treatment of Proximal Femur Fractures? Experimental Examination and Clinical Results	62
<i>Friedl W., Hilsenbeck Fl., and Stürzenhofecker Ph.</i>	
Quality Improvement of Knee Resurfacing with the Galileo Navigation System	63
<i>Wilhelm Friedl and Ralf Imig</i>	
Statistic Evaluation of the Clinical Benefits of Rehabilitation in Patients with Spine Cord Injury Undergoing Complex Treatment with Specific Therapeutic Factors from Techirghiol Health Resort	64
<i>Camelia Ciobotaru, Minea Mihaela, Olga Surdu, and Surdu Traian Virgiliu</i>	
The Need for Multidisciplinary Approach in the Treatment of Eating Behaviour Disorders of the Young Population	66
<i>Celina Stafie and Maria Manuela Apostol</i>	
Clinical Simulation - Efficacy and Tendency in Medical Technological Education	71
<i>Elena Toader and Daniela Damir</i>	
Oxygen Availability and Self Renewal of Stem Cells	73
<i>Zoran Ivanović</i>	
Home Monitoring of Sleep Apnea Treatment: Benefits of Intelligent CPAP Devices	77
<i>Daniela Boisteanu, Raluca Vasiluta, Andrei Cernomaz, and Corina Mucenica</i>	
Improving the Quality of Life of People with Dementia through the Use of Socially Assistive Robots	81
<i>Adriana Tapus</i>	

Communication between the Sensor Levels for Monitoring Subjects with Disabilities	87
<i>Mihaela Hnatiuc and Alexandru Caranica</i>	
Review of Communication Systems for Ingestible Miniaturized Integrated Sensor Microsystems	91
<i>N. Aydin and T. Arslan</i>	
Signature Enzyme Identification Using Amperometric Biosensor	96
<i>Mihaela Hnatiuc and Mariarita Montereal</i>	
Development of Pseudo 3D Visualization System by Superimposing Ultrasound Images	100
<i>Yumi Iwashita, Shinji Tarumi, Ryo Kurazume, and Makoto Hashizume</i>	
Determining Sound Source Orientation from Analytical Source Directivity and Real Multi-Microphone Recordings	106
<i>Francesco Guarato, John Hallam, and Dieter Vanderelst</i>	
Goal-Directed Movement Generation with a Transient-Based Recurrent Neural Network Controller	112
<i>R. Felix Reinhart and Jochen J. Steil</i>	
Design of a Central Pattern Generator Using Reservoir Computing for Learning Human Motion	118
<i>Francis Wyffels and Benjamin Schrauwen</i>	
Adaptive Anytime Motion Planning for Robust Robot Navigation in Natural Environments	123
<i>Mihail Pivtoraiko</i>	
Monitoring Strategies for Adaptive Periodic Control in Behavior-Based Robotic Systems	130
<i>Ernesto Burattini, Alberto Finzi, Silvia Rossi, and Mariacarla Staffa</i>	
A Novel Information Measure for Adaptive Controllers in Swarm Systems	136
<i>Paolo Di Prodi, Bernd Porr, and Florentin Wörögter</i>	
Collaborative Robotic System Obtained by Combining Planning and Holonic Architecture	138
<i>Doru Panescu, Carlos Pascal, Marius Sutu, and Gabriela Varvara</i>	
Multi-robot Cooperation in Space: A Survey	144
<i>Jürgen Leitner</i>	
Onboard Learning of Adaptive Behavior: Biologically Inspired and Formal Methods	152
<i>Terry Huntsberger</i>	
Simulating Human Reasoning in Mine-Like Object Inspection Assignments for a Formation of Unmanned Underwater Vehicles	158
<i>Nicodemus Hallin, Benjamin Johnson, Henry Egbo, Michael O'Rourke, Terence Soule, and Dean Edwards</i>	
Adaptive Filter and Estimator for Echolocation in Air and Robotic Vision	163
<i>Horia-Nicolai L. Teodorescu</i>	

Laser Based Localization Techniques for Indoor Mobile Robots169
Levente Tamas, Gheorghe Lazea, Mircea Popa, Istvan Szoke, and Andras Majdik

Author Index