

Table of Contents

Health Care Technology

Engineering Control of Airborne Disease Transmission in Health Care Facilities	1
<i>D. Curseu, M. Popa, D. Sirbu, and M.S. Popa</i>	
Field Investigation of Volatile Organic Compounds' Levels and Origin in an Unpolluted Residential Area	5
<i>M. Popa, D. Sirbu, D. Curseu, M.S. Popa, and A. Hosu</i>	
Collaborative Pre-surgery Planning in a Tele-immersive Environment Using VR Technology ...	9
<i>T. Butnaru and F. Gîrbacia</i>	
Indications of the Modern Vitreo-Retinal Surgery Techniques	15
<i>S.D. Talu, N. Lazan, S. Lupascu, E. Sebestyen, and L. Toader</i>	
Diagnosis and Control by Using Biomarkers	19
<i>M. Culea, E. Culea, O. Cozar, D. Ilesan, and M. Udrescu</i>	
Patient Simulation Experience in Family Medicine Residents Education	25
<i>M. Florea, S. Talu, and M. Talu</i>	
Assessing Glycemic Control in Diabetes: From Self Monitoring of Blood Glucose to Continuous Glucose Monitoring System	29
<i>M. Gribovschi, A. Fodor, G. Grosu, and N. Hancu</i>	
Transformation of Micro-radio-Photography System into X-Ray Standard System with Applications in Romania	33
<i>H. Waedt, M. Popa, and P. Manea</i>	
Digital Simulation for Computer Control of Radiological Devices: A Preliminary Model Using Partial Differential Equations	37
<i>N.M. Roman, H. Colosi, and M. Pusca</i>	
Trust and Reputation in e-Health Systems	43
<i>L. Alboaie and S.C. Buruga</i>	
Home Monitoring Device for Cardiovascular Diseases	49
<i>R. Ciorap, C. Hritcu-Luca, C. Corciova, A. Stan, and D. Zaharia</i>	
EKG Monitoring on the Mobile Phone Using Bluetooth Transmission	53
<i>M. Munteanu, R. Balaban, D. Moga, M. Dumitrescu, D. Rafiroiu, and F. Neaga</i>	
Dynamic Service Composition for Plug-and-Play Medical Devices	57
<i>F.C. Pop, M.F. Vaida, M. Cremene, M. Riveill, and C. Puia</i>	

Database Design Patterns for Healthcare Information Systems	63
<i>M. Muji, R.V. Ciupa, D. Dobru, C. Bica, P. Olah, V. Bacarea, and M. Marusteri</i>	
Multi-Agent Model for a Mobile Hospital Logistic System	67
<i>D. Floroian, F. Moldoveanu, and L. Floroian</i>	
The Role of Information Technology in Health Education: Strengths and Weaknesses	73
<i>L.M. Lotrean, F. Mocean, V. Laza, and S. Poledna</i>	
Effectiveness of Charismatic Leadership in Romanian Hospitals	77
<i>Gh.A. Catana and D. Catana</i>	
Core Decisional Values in Romanian Hospitals Leadership	81
<i>Gh.A. Catana and D. Catana</i>	
External Marketing Environment as Perceived by Managers from Romanian Hospitals	85
<i>A. Constantinescu-Dobra</i>	
 Medical Devices, Measurement and Instrumentation	
Modified Screen Printed Electrodes for the Development of Biosensors	89
<i>C. Cristea, E. Bodoki, V. Sima, and R. Sandulescu</i>	
Electromyographic Response for Grip Exercise	93
<i>K. Menyhardt, D.I. Stoia, M. Toth-Tascau, and M. Dreucean</i>	
Patient Movement Monitoring and Respiration Rate Analysis with an Acceleration Sensor	97
<i>A.V. Craciun and D. Borzasi</i>	
A Study about Human Eyes Wavefront Aberrations Capture and Correction	101
<i>F. Toadere</i>	
Anthropometric Measurements for Assessment of Body Fat in Young People	105
<i>D. Sirbu, D. Curseu, M. Popa, and M.S. Popa</i>	
Electromagnetic Fields of MRI Scanners and Human Exposure Safety	109
<i>S. Miclaus and L. Beldean</i>	
How Biomedical Technology Becomes Nowadays a Main Actor in Prevention and Control of Hypertension	115
<i>R.M. Negoescu and A.C. Meruta</i>	
Dynamic Shielding in Biomagnetism	121
<i>D. Costandache, A. Banarescu, O. Baltag, I. Rau, M. Rau, and S. Ojica</i>	
Automated Method for Computing Peak Area on a Drifted Baseline Signal	125
<i>S. Gergely and M.N. Roman</i>	

Table of Contents	XI
Technical Performance for Glycemic Control in Diabetes Mellitus	129
<i>G. Roman and G. Ghimpeteanu</i>	
Wireless Monitoring of S_aO₂ in Chronic Disease	133
<i>C. Hritcu-Luca, C. Corciova, and R. Ciorap</i>	
Design of a Heart Rate Monitor Device	137
<i>L.M. Man</i>	
Positioning System for Transcranial Magnetic Stimulation	143
<i>C. Curta, A. Nicu, M. Plesa, M. Valcu, and R. Ciupa</i>	
A Model of Selective Left VNS and Recording in a Man	147
<i>P. Peclin and J. Rozman</i>	
Enhancing the Human Reactivity by Using the Negative Air Ions Generators	151
<i>V. Laza</i>	
Using the Negative Air Generators to Improve the Animal Reactivity	157
<i>V. Laza and L. Lotrean</i>	
Transcranial Magnetic Stimulation to Elicit Changes in Motor Cortex Excitability during Haptic Training	163
<i>D. Rafolt, M. Christova, M. Krenn, and E. Gallasch</i>	
Modulation of Stimulation Frequency of Spinal Cord Afferents with Constant Electrode Site and Stimulus Intensity Can Induce a Variety of Movements	167
<i>W. Mayr, C. Hofer, K. Minassian, U. Hofstotter, H. Kern, M. Bijak, E. Unger, F. Rattay, and M. Dimitrijevic</i>	
Development of a Control System for a Parallel Robot Used in Minimally Invasive Surgery	171
<i>C. Vaida, D. Pisla, N. Plitea, B. Gherman, B. Gyurka, E. Stancel, J. Hesselbach, A. Raatz, L. Vlad, and F. Graur</i>	
Virtual Reality Simulation of Tetrobot Parallel Robot for Medical Applications	177
<i>E. Teutan, S.-D. Stan, D. Verdes, and R. Balan</i>	
Medical Imaging, Image and Signal Processing	
Transmit Frequency Optimization for Ultrasound Contrast Agent Response	181
<i>S. Menigot, A. Novell, I. Voicu, A. Bouakaz, and J.-M. Girault</i>	
Estimating Fetal Heart Rate from Multiple Ultrasound Signals	185
<i>I. Voicu, D. Kouame, M. Fournier-Massignan, and J.-M. Girault</i>	
Estimating Activation of Denervated, Degenerated Muscle after Functional Electrical Stimulation with Magnetic Resonance Imaging	191
<i>T. Mandl, M. Meyerspeer, M. Reichel, H. Kern, C. Hofer, W. Mayr, and E. Moser</i>	

Microwaves and Infrared Thermography – Applications in Early Breast Cancer Detection	195
<i>O. Baltag, A. Banarescu, D. Costandache, M. Rau, and S. Ojica</i>	
Principal Component Analysis of Eye-Tracking Data during Visual Perception of Human Faces in Adults and Children with Autism	199
<i>M. Ben Mlouka, J. Martineau, I. Voicu, N. Hernandez, and J.M. Girault</i>	
Architecture of an on Electrode Integrated Electronics with an All Digital Interface for Electrical Impedance Tomography	205
<i>I. Jivet</i>	
Conscience and Consciousness in Biomedical Engineering Science and Practice	209
<i>R. Negoescu</i>	
Monitoring Neuromuscular Fatigue through the Area/Amplitude Ratio Computed on the SEMG and MMG	215
<i>M.T. Tarata</i>	
Numerical Representations in Alpha Satellite DNA Analysis	219
<i>G.P. Pop and E. Onaca</i>	
DNA Cryptographic Algorithms	223
<i>O. Tornea and M.E. Borda</i>	
Efficient ECG Signal Parameters Extraction Using Multiresolution Analysis	227
<i>Z. German-Sallo</i>	
EKG Analysis Using STFT Phase	231
<i>M. Munteanu, C. Rusu, L. Vladareanu, D. Petreus, V. Rusu, and M. Dobra</i>	
Analysis of ECG Signals and Their Automatic Classification	235
<i>M. Chetan, A.M. Morega, and M. Morega</i>	
Voice Biometric System	239
<i>E. Lupu and M. Cioban</i>	
Colors Vision Analysis for a Normal Viewer and for a Daltonist	243
<i>F. Toadere</i>	
Rule-Based Methods for the Computer Assisted Diagnosis of Medical Images	247
<i>A.L. Ion, S.C. Udristoiu, L. Stanescu, and D.D. Burdescu</i>	
Liver 3D Reconstruction Modalities – The First Step toward a Laparoscopic Liver Surgery Simulator	251
<i>F. Graur, D. Pisla, L. Scurtu, N. Plitea, A. Cote, A. Lebovici, S. Draghici, L. Furcea, A. Muresan, H. Neagos, and L. Vlad</i>	
3D Rendering of Radiological Images Using Java Secure Technologies	257
<i>L. Chiorean and M.-F. Vaida</i>	

Fourier Domain – Optical Coherence Tomography in Diagnosing and Monitoring of Retinal Diseases	261
<i>S. Talu, F. Balta, S.D. Talu, A. Merticariu, and M. Talu</i>	
Classification of the Hepatocellular Carcinoma in Ultrasound Images Based on the Imagistic Textural Model of This Tumor	267
<i>D. Mitrea, S. Nedevschi, M. Lupsor, M. Socaciu, and R. Badea</i>	
Deformable Variational Models Used in Medical Imaging	273
<i>A.I. Mitrea, D.M. Ivan, D. Mitrea, D. Inoan, and P. Mitrea</i>	
Optical Multi-touch System for Patient Monitoring and Medical Data Analysis	279
<i>S. Crisan, I.G. Tarnovan, B. Tebrean, and T.E. Crisan</i>	
Determination of Wall Strain in Model Cerebral Aneurysms by Image Registration	283
<i>D.C. Barber, J. Hartwell, S. Naylor, A. Marzo, and D.R. Hose</i>	
Modelling and Simulation	
Organ Confinement of Prostate Cancer: Neural Networks Assisted Prediction	287
<i>C. Botoca, R. Bardan, M. Botoca, and F. Alexa</i>	
An Overview on Mathematical Models of Human Corneal Surface	291
<i>S. Talu and M. Talu</i>	
ALE Formulation and WEB-Method Approximation for a Fluid Structure Interaction Problem on Carotids	295
<i>A.M.I. Maiercan</i>	
The Design of an Adapted Osteosynthesis Implant for Fibula' Fracture	299
<i>C. Radu, I.C. Rosca, and D. Cotoros</i>	
Analysis of an Adapted Osteosynthesis Implant for Fibula's Fracture Using Finite Element Method	303
<i>I.C. Rosca, C. Radu, and M.I. Baritz</i>	
Enzyme-Synthetic Inhibitor Specific Interactions Study by a New Non-equilibrium Molecular Dynamics Method	307
<i>T. Petreus, C.E. Cotrutz, M. Neamtu, E.C. Buruiana, P.D. Sirbu, and A. Neamtu</i>	
Molecular Dynamics Simulation of Fibroblast Growth Factors Receptors Activation	311
<i>M. Neamtu, C.E. Cotrutz, A. Filioreanu, T. Petreus, and A. Neamtu</i>	
Mathematical Modeling of Human Ventricular Action Potentials	315
<i>A.I. Nicu, C.S. Curta, M. Cretu, R.V. Ciupa, and M. Voinicu</i>	
COAST: Modelling Restenosis and Stent Based Therapies	319
<i>D.J.W. Evans, A. Caiazzo, J.L. Falcone, J. Hegewald, E. Lorenz, B. Stahl, D. Wang, J. Bernsdorf, B. Chopard, J. Gunn, D. Walker, R. Hose, M. Krafczyk, A. Hoekstra, and P. Lawford</i>	

Analog Modeling and Numeric Simulation of the Van der Pol Equation with Variable Parameters (α and β)	323
<i>M.N. Roman, H. Colosi, and F. Roman</i>	
Matlab Modelling of Nerve Fiber Activation by Magnetic Stimulation	327
<i>M. Plesa, L. Darabant, R. Ciupa, A. Nicu, and C. Curta</i>	
3D Modeling of the Induced Electric Field of Transcranial Magnetic Stimulation	333
<i>D. Rafiroiu, S. Vlad, L. Cret, and R.V. Ciupa</i>	
Artificial Intelligence Techniques Applied to Electromagnetic Interference Problems	339
<i>L. Czumbil, D.D. Micu, and A. Ceclan</i>	
Analysis of Several FEM Models for the Assessment of the Human Head Exposure to Microwaves	345
<i>M. Morega, A.M. Morega, and A. Machedon</i>	
Towards a New Concept: Electromagnetic Biocompatibility	351
<i>M.I. Buzdugan and H. Balan</i>	
The Electromagnetic Threat in the Today's Environment	355
<i>M.I. Buzdugan, Dan D. Micu, E. Simion, A. Ceclan, and L. Cimpan</i>	
CFD Simulation of the Portal Vein Blood Flow	359
<i>C.C. Botar, T. Vasile, S. Sfrangeu, S. Clichici, P.S. Agachi, R. Badea, P. Mircea, M.V. Cristea, and R. Moldovan</i>	
Closure Mechanics of Mechanical Heart Valve Prostheses – Experimental and Computational Analysis	363
<i>A. Turcu, A. Lungu, S. Vlad, D. Rafiroiu, R.V. Ciupa, V.A. Diaz, A.J. Narracott, P.V. Lawford, and D.R. Hose</i>	
Reverse Engineering of Some Cardiovascular Devices	369
<i>D. Rafiroiu, A. Iancu, A. Lazar, I. Tiseanu, T. Craciunescu, and J. Hart</i>	
Computational Modeling of Arterial Blood Flow	373
<i>A.M. Morega, A. Dobre, M. Morega, and D. Mocanu</i>	
Biomechanics	
Research about Precision Casting of Removable-Fixed Ensemble Applied in Dental Prosthodontics	379
<i>W.A. Uriciuc</i>	
Computer Technologies Applied in Orthodontic Biomechanical Analysis	383
<i>D. Bica and L.C. Brezeanu</i>	

Experimental Model for Orthodontic Tooth Movement	387
<i>C. Bica, L.C. Brezeanu, and M. Muji</i>	
Cervical Spine Mobility Using 3D Ultrasound-Based Measuring System	391
<i>D.I. Stoia and M. Toth-Tascau</i>	
Diffusion Convection in a Vertical Rectangular Porous Cavity	395
<i>C. Revnic, I. Pop, A. Prodan, and R. Campean</i>	
Designing and Implementing a Human Hand Prosthesis	399
<i>L. Stanciu and A. Stanciu</i>	
Development of an Active Upper-Limb Orthosis	405
<i>A. Alutei, A. Vaida, D. Mandru, and M.O. Tatar</i>	
Dynamic Condylar Screw (DCS) versus Condylar Blade Plate (CBP) in Complex Supracondylar Femoral Fractures – A Biomechanical Study.....	409
<i>P.D. Sirbu, E. Carata, T. Petreus, F. Munteanu, C. Popescu, R. Asaftei, and P. Botez</i>	
Minimally Invasive Surgery by Angular Stability Systems in Proximal Tibia Fractures – Biomechanical Characteristics and Preliminary Results	413
<i>P.D. Sirbu, E. Carata, T. Petreus, F. Munteanu, C. Popescu, R. Asaftei, and P. Botez</i>	
Estimating Dynamic Properties of Denervated Muscles with the Pendulum Test.....	417
<i>M. Krenn, D. Rafolt, E. Gallasch, H. Kern, and W. Mayr</i>	
Author Index	421
Keyword Index	425