



International Conference

ADVANCEMENTS OF **MEDICINE** AND HEALTH CARE THROUGH
TECHNOLOGY

MEDITECH 2020

PROGRAMME

Hosted by the Romanian National Society for Medical Engineering
and Biological Technology

Online

Cluj-Napoca, Romania
13th – 15th October 2020

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Tuesday, 13th October 2020

9.00 – 9.30	Opening Ceremony
	<p><i>Prof. Nicolae Marius Roman</i>, President of National Society for Medical Engineering and Biological Technology, Romania</p> <p><i>Prof. Kang-Ping Lin</i>, Secretary-General at International Federation for Medical and Biological Engineering (IFMBE);</p> <p><i>Prof. Doina Pîslă</i>, Vice-rector Technical University of Cluj-Napoca, Romania</p> <p><i>Prof. Mihaela Băciuț</i>, Vice-rector “Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj Napoca, Romania</p> <p><i>Med.Col. Doina Baltaru</i>, Commander of “Dr. Constantin Papilian” Emergency Military Hospital in Cluj-Napoca, Romania</p> <p><i>Prof. Radu Ciupa</i>, Honorary president National Society for Medical Engineering and Biological Technology, Romania</p>
9.30 – 11.00	PLENARY SESSION Chairmen: <i>Prof. Nicolae Marius Roman</i> , National Society for Medical Engineering and Biological Technology, Romania <i>Prof. Radu Ciupa</i> , National Society for Medical Engineering and Biological Technology, Romania
9.30	<p><i>Potentials and Challenges of Healthcare AI Technology for Medical Devices</i></p> <p>Kang-Ping Lin, Secretary-General at International Federation for Medical and Biological Engineering (IFMBE); Dept. of Electrical Engineering, Chung-Yuan Christian University, Taiwan</p>
10.00	<p><i>The roll of electrical parameters and electrodes in FES supported motor control</i></p> <p>Winfried Mayr, Center for Medical Physics and Biomedical Engineering - Medical University of Vienna, Austria</p>

10.30	<p><i>Capacitive electrodes for bioelectric signals: solution or chimera?</i> Ramon Pallàs Areny Instrumentation, Sensors and Interfaces Group, Dept. of Electrical Engineering, Universitat Politècnica de Catalunya (BarcelonaTech), Spain</p>
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11.00 – 11.15

Coffee break

11.15 – 12.45	<p>PLENARY SESSION Chairmen: <i>Prof. Nicolae Marius Roman</i>, National Society for Medical Engineering and Biological Technology, Romania <i>Prof. Radu Ciupa</i>, National Society for Medical Engineering and Biological Technology, Romania</p>
11.15	<p><i>Augmented Reality in Medicine and Surgery</i> Lucio Tommaso De Paolis, Augmented and Virtual Reality Laboratory (AVR Lab), Department of Engineering for Innovation, University of Salento, Italy</p>
11.45	<p><i>Virtual Instrumentation, Reconfigurable Systems, from IoT to Medical IoT</i> Doru Ursuțiu, “Transilvania” University of Brașov, Romania</p>
12.15	<p><i>A rationale for tension measurement in abdominal wall hernia repair</i> Valentin Oprea, Department of Surgery Emergency Clinical Military Hospital “Constantin Papilian” Cluj-Napoca Romania</p>

12.45 – 14.30

Lunch break

14.30 – 17.00	SESSION 1 <i>Telemedicine and Health Care Information Systems</i> Chairmen: <i>Prof. Tudor Palade</i> , Technical University of Cluj-Napoca, Romania <i>Ass.Prof. Andra Păstrăv</i> , Technical University of Cluj-Napoca, Romania
1.1	<i>Audio Events Detection to Help TIAGo to Act as a Medical Robot</i> Lorena Muscar; Lacrimioara Grama
1.2	<i>Horse Optimization Algorithm Based Recurrent Neural Network Method for Epileptic Seizures Classification</i> Dorin I Moldovan
1.3	<i>Binary Cat Swarm Optimization Feature Selection and Machine Learning Based Ensemble for the Classification of the Daily Living Activities of the Elders</i> Dorin I Moldovan; Ionut Anghel; Tudor Cioara; Cristina Pop; Viorica Chifu; Ioan Salomie
1.4	<i>Quick Response in the SARS-COV-2 Context. How to Build up a Patient Video Monitoring System in Two Days</i> Horia Hedesiu; Dan Blendea
1.5	<i>Deep Learning in Classification of Covid-19 Coronavirus, Pneumonia and Healthy Lungs on CXR and CT images</i> Mihaela Lascu
1.6	<i>Automatic Liver and Hepatic Tumors Segmentation in CT Images using Convolutional Neural Networks</i> Alina S. Danciu, Simona Vlad, Marius Leordean;
1.7	<i>Brain Tumors Detection using Convolutional Neural Networks</i> Catalina Maghiar; Viorica Rozina Chifu; Cristina Bianca Pop; Emil Stefan Chifu
1.8	<i>Machine Learning for Fatigue Estimation and Prediction "An introduction Study"</i> Lilia Aljihmani; Doru Ursutiu; Samoila Cornel, Khalid Qarage;

1.9	<i>Wireless Sensor Networks for Healthcare Monitoring</i> Ioana Borz; Tudor Palade; Emanuel Puschita; Paul Dolea; Andra Pastrav
1.10	<i>Smart House Control using Hand Gestures Recognition LabVIEW Applications</i> Rodica Holonec, Simona Vlad, Marius N. Roman, Laszlo Rapolti;

17.00 – 17.15

Coffee break

17.15 – 19.30	SESSION 2: Medical Devices, Measurement and Instrumentation; Biomedical Signal Processing Chairmen: <i>Prof. Mihai Munteanu</i> , Technical University of Cluj-Napoca, Romania <i>Prof. Radu Ciorap</i> , "Grigore T.Popa" University of Medicine and Pharmacy of Iași, Romania
2.1	<i>A Matlab Simulation Platform for a Biometric Identification System based on ECG Fiducial Features</i> Claudia Cordos, Paul Farago, Sorin Hintea, Calin Farcas
2.2	<i>A Study on ECG Denoising using Wiener Filter</i> Laura Mihaila, Paul Farago, Calin Farcas, Sorin Hintea
2.3	<i>Correlation of Electric EEG and VEP Signals in Normal Neurophysiological Brain Activity</i> Nicolae Stelian Stanciu
2.4	<i>Information theory-based methods in HRV analysis</i> Zoltan German-Sallo
2.5	<i>Margin Pruning Adaboost Classification with Nature Inspired Optimization for Alcoholic EEG Classification</i> Harikumar Rajaguru; Sunil Kumar Prabhakar
2.6	<i>Hand Movements Monitoring Device for Post Parese Recovery Process</i> Titus T. Crisan, Madalin I. Ardelean, Bogdan Tebreaan, Radu A. Munteanu
2.7	<i>Monitoring of respiratory parameters during wearing medical masks</i> Doru Andritoi, Radu Ciorap, Catalina Luca

2.8	<i>The Incubation Time Effects on the Precision and Accuracy of the Glycated Hemoglobin</i> Manole-Stefan Niculescu; Adriana Florescu; Sever Pasca
2.9	<i>Consideration Regarding the Implementation of a System for Monitoring a Person in the Office</i> Mihaela Paval; Mihai Cenusu; Dan Laurentiu Milici

Wednesday, 14th October 2020

9.00 – 11.00	<p>PLENARY SESSION</p> <p>Chairmen: <i>Prof. Dan Mândru</i>, Technical University of Cluj-Napoca, Romania <i>Prof. Adrian Samuilă</i>, Technical University of Cluj-Napoca, Romania</p>
9.00	<p><i>Breath test applications in gastroenterology</i> Dan L. Dumitraşcu, Semiology Department, 2nd Medical Clinic University of Medicine and Pharmacy “Iuliu Haţieganu”, Cluj Napoca, Romania</p>
9.30	<p><i>How Simulation can support covid-19 challenges in medical education</i> Alessandro Pepino, Department of Biomedical Engineering - University of Naples “Federico II”, Italy</p>
10.00	<p><i>The role of in silico technologies for medical innovation, testing and regulatory approval: illustrations with implantable devices, wearables and cancer treatments.</i> Thierry Marchal, Ansys, Inc. & Avicenna Alliance</p>
10.30	<p><i>Multiscale and Multiphysics Simulation Approach for Increased Productivity in Tablet Manufacturing</i> Rahul Bharadwaj, Ph.D., VP of Engineering and Business Development at ESSS</p>

11.00 – 11.15

Coffee break

11.15 – 12.45	<p>PLENARY SESSION</p> <p>Chairmen: <i>Prof. Dan Mândru</i>, Technical University of Cluj-Napoca, Romania <i>Prof. Adrian Samuilă</i>, Technical University of Cluj-Napoca, Romania</p>
11.15	<p><i>Can Higher Education ever meet the requirements industry has in graduates?</i> Tony Ward, Department of Electronic Engineering, University of York, England</p>
11.45	<p><i>The Disenchantment of Medicine</i> Mircea Gelu Buta, Babeş-Bolyai University of Cluj-Napoca,</p>

12.15	<p><i>Available Diagnostic Methods of Deformities in the Diabetic Foot</i> Paula Pavel, MD, PhD General Surgeon, Clinical Emergency Military Hospital Cluj-Napoca, Romania</p>
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12.45-14.30

Lunch break

14.30 –16.45	<p>SESSION 3: <i>Health Technology Assessment Telemedicine and Health Care Information Systems</i> Chairmen: <i>Prof. Marina Țopa</i>, Technical University of Cluj-Napoca, Romania <i>Assoc. Prof. Laura Grindei</i>, Technical University of Cluj-Napoca, Romania</p>
3.1	<p><i>Numerical study on electropemabilization of cell membranes in sine-wave electric field of variable frequency</i> Ana-Maria Sandu, M. A. Ungureanu, M. Morega, V. L. Călin, M. G. Moiescu, I. A. Paun, M. Mihailescu</p>
3.2	<p><i>The Influence of Electromagnetic Waves Emitted by PIFA Antennas on the Human Head</i> Claudia Constantinescu; Claudia Pacurar; Adina Giurgiuman; Calin Munteanu; Sergiu Andreica and Razvan Gliga</p>
3.3	<p><i>On the design of an isolated booth for tuberculosis sample collection</i> Ionut Ulinici, Ferenc Puskas, Bogdan Gherman, Cecilia Roman, Iosif Birlescu, Doina Pisla</p>
3.4	<p><i>Using Probabilistic Functional Dependencies for determining correlations in skewed data</i> Luminita Ioana Loga (Iancu), Gabriel Cristian Dragomir-Loga, Lucia Dican</p>
3.5	<p><i>Towards Detecting Fake Medical Content on the Web with Machine Learning</i> Radu Razvan Slavescu; Florina-Ionela Pop; Kinga Cristina Slavescu</p>
3.6	<p><i>Agents that argue and explain classifications of retinal conditions</i> Adrian Groza; Liana Todorean; George Muntean; Simona Delia Nicoara</p>

3.7	Prototype music recommendation system – preliminary results in using music as therapy Cristina Simina Ciubancan; Laura Ivanciu; Emilia Sipos
3.8	A Game-Theoretic Analysis of the Recurrent Patient-Doctor Interaction using Genetic Algorithms Paul Farago, Mihala Cirlugea, Sorin Hintea, Calin Farcas
3.9	A System Proposal for Collecting Medical Data from Heterogeneous Sensors Using Software-Defined Networks Sorin Buzura; Bogdan Iancu; Vasile Teodor Dadarlat
3.10	The Building of a Medical Platform Cornelia Melenti, Bianca Maria Dobrescu, Ovidiu Florin Coza

17.00 - 17.15

Coffee break

17.15 – 19.30	SESSION 4: Clinical Engineering Assessment Biomechanics, Robotics and Rehabilitation Chairmen: Assoc. Prof. Rodica Holonec, Technical University of Cluj-Napoca, Romania Prof. Radu A. Munteanu, Technical University of Cluj-Napoca, Romania
4.1	Study on the Prevention of the Installation of Physical Deficiency Scoliosis in Children of Prepubertan Age Vizitiu Elena, Constantinescu Mihai, Milici L. Dan, Vicoveanu Dragoş
4.2	Design workflow for mandibular reconstruction. Opportunities and limitations of in-house virtual surgical planning Daniel Ostas; Mihaela Hedeşiu ; Rares Roman; Mircea Ciurea; Horatiu Rotar
4.3	Assessment of Magnetic Fields Produced in Clinical Environment “Operating Rooms” Hussain Alnamir
4.4	Design of a pet-like assistive robot for elderly people Alexandru Ianosi-Andreeva-Dimitrova; Alis-Maria Maier; Dan Silviu Mandru
4.5	Concept of robotic system for assistance / rehabilitation of persons with motor disabilities Claudiu Schonstein; Felicia Aurora Cristea

4.6	<i>Sensitivity to Mechanical Vibrations, Methods of Attenuation</i> Aurora Felicia Cristea
4.7	<i>Studies Regarding Vibration Transmitted, Using an Additional Damper, Mounted on the Hand-Arm System</i> Aurora Felicia Cristea; Claudiu Schonstein
4.8	<i>Programing a robotic ambulance with virtual reality and artificial intelligence control</i> Andrei Lavinia, Oniga Tudor, Chindea Viorel
4.9	<i>Current Trends in Assistive Upper-limb Rehabilitation Devices</i> Anca Iulia Nicu; Claudia Steluta Martis

Thursday, 15th October 2020

09.00 – 11.00	<p>SESSION 5: <i>Biomedical Imaging and Image Processing</i></p> <p>Chairmen: <i>Assoc.Prof. Simona Vlad</i>, Technical University of Cluj-Napoca, Romania <i>Prof. Călin Munteanu</i>, Technical University of Cluj-Napoca, Romania</p>
5.1	<p><i>Fractal Dimension Box-counting Algorithm Optimization Through Integral Images</i></p> <p>Mircea-Sebastian Serbanescu</p>
5.2	<p><i>Exploring Two Deep Learning Based Solutions for Improving Endoscopy Artifact Detection</i></p> <p>Radu Razvan Slavescu; Ioan Catalin Sporis; Kriszta Gombos; Kinga Cristina Slavescu</p>
5.3	<p><i>HCC Recognition within B-mode and CEUS images using traditional and deep learning techniques</i></p> <p>Delia Mitrea, Cosmina Mendoiu, Paulina Mitrea; Sergiu Nedevschi; Monica Lupsor-Platon ; Magda Rotaru; Radu Badea</p>
5.4	<p><i>Modified Adam to update control parameters of Crow Search Algorithm in Transformation Technique Based Dementia MRI Image Classification</i></p> <p>Bharanidharan N, Harikumar Rajaguru</p>
5.5	<p><i>Automatic Detection of Diabetic Retinopathy using Image Processing Techniques</i></p> <p>Mihai Ciobanca, Simina Emerich, Mircea Giurgiu</p>
5.6	<p><i>Improvement of the in vitro pig mandible periodontal tissue images quality recorded by an OCT handheld in 1200-1400 nm infrared domain: A preliminary study</i></p> <p>Florin Toadere; Nicoleta Tosa; Mindra Eugenia Badea; Andreea Miron; Victor Cebotari; Valer Tosa, Ioan Turcu, Radu Chifor</p>
5.7	<p><i>Voting Based CAD Model for Breast Cancer Classification</i></p> <p>Sannasi Chakravarthy S R., Harikumar Rajaguru</p>
5.8	<p><i>Detection of Liver Cirrhosis in Ultrasonic Images from GLCM Features and Classifiers</i></p> <p>R. Karthikamani, Harikumar Rajaguru</p>

11.00-11.15

Coffee break

11.15-12.30	SESSION 6: Clinical Engineering Assessment Miscellaneous topics Chairmen: <i>Prof. Eugen Lupu</i> , Technical University of Cluj-Napoca, Romania <i>Ass.Prof. Anca Nicu</i> , Technical University of Cluj-Napoca, Romania
6.1	<i>Indoor Air Quality Monitoring System Applied in Healthcare Facilities</i> <i>Adela Puscasiu; Alexandra Fanca; Honoriu Valean; Dan Ioan Gota; Ovidiu Stan; Marius Nicolae Roman; Iulia Clitan; Vlad Muresan</i>
6.2	<i>Pain points in the experiences of diabetes patients with ambulatory care. An analysis of patients fears and recommendations for service improvement in Romania</i> <i>Cotiu Madalina Alexandra, Constantinescu-Dobra Anca, Sabou Adrian</i>
6.3	<i>Are Electrical and hybrid vehicles safe for human health?</i> <i>Cotiu Madalina Alexandra, Constantinescu-Dobra Anca, Martis Claudia</i>
6.4	<i>Using an Unsupervised Neural Network to Detect and Categorize Offensive Language in Social Media</i> <i>Emil Stefan Chifu; Viorica Rozina Chifu; Ana-Maria Costea</i>
6.5	<i>Automated Sorting of Pharmaceutical Waste using Machine Vision Technology</i> <i>Rapolti Laszlo; Rodica Holonec, Laura Grindei and Oana Viman</i>
12.30 – 13.00	Closing Ceremony Chairmen: <i>Prof. Nicolae Marius Roman</i> , National Society for Medical Engineering and Biological Technology, Romania <i>Prof. Radu Ciupa</i> , National Society for Medical Engineering and Biological Technology, Romania