



SNIMTB



International Conference

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

MEDITECH 2022

PROGRAMME

Hosted by

Romanian National Society for Medical Engineering and Biological Technology
Technical University of Cluj-Napoca, Romania

“Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj Napoca, Romania

“Dr. Constantin Papilian” Emergency Military Hospital, Cluj-Napoca, Romania

Online

Cluj-Napoca, Romania

20th – 22nd October 2022

Thursday, 20th October 2022

9.00 – 10.00	Opening Ceremony
	<p data-bbox="432 331 1000 424">Prof. Radu Ciupa Honorary president National Society for Medical Engineering and Biological Technology, Romania</p> <p data-bbox="432 459 1000 552">Prof. Ratko Magjarevic President of International Federation for Medical and Biological Engineering (IFMBE)</p> <p data-bbox="432 587 1000 679">Prof. Kang-Ping Lin Vice-president of International Federation for Medical and Biological Engineering (IFMBE)</p> <p data-bbox="432 715 1000 778">Dr. Christoph Baumann Editorial Director, Springer Nature, Netherlands</p> <p data-bbox="432 813 1000 909">Prof. Doina Pişlă Vice-rector Technical University of Cluj-Napoca, Romania</p> <p data-bbox="432 944 1000 1040">Prof. Mihaela Băciuţ Vice-rector “Iuliu Haţieganu” University of Medicine and Pharmacy, Cluj Napoca, Romania</p> <p data-bbox="432 1075 1000 1171">Med.Col. Doina Baltaru Commander of “Dr. Constantin Papilian” Emergency Military Hospital, Cluj-Napoca, Romania</p> <p data-bbox="432 1206 1000 1302">Prof. Nicolae-Marius Roman President of National Society for Medical Engineering and Biological Technology, Romania</p>

10.00– 16.00	<p>PLENARY SESSION</p> <p>Chairmen:</p> <p><i>Prof. Nicolae Marius Roman</i>, National Society for Medical Engineering and Biological Technology, Romania</p> <p><i>Prof. Radu Ciupa</i>, National Society for Medical Engineering and Biological Technology, Romania</p>
10.00	<p><i>Biomedical engineering - building International networks for growth of health care and well-being</i></p> <p>Ratko Magjarević President at International Federation for Medical and Biological Engineering (IFMBE); , Department for Electronic Systems and Information Processing, University of Zagreb, Croatia</p>
10.30	<p><i>Prospects of AI / ML Medical Devices</i></p> <p>Kang-Ping Lin, Vice-President at International Federation for Medical and Biological Engineering (IFMBE), Dept. of Electrical Engineering, Chung-Yuan Christian University, Taiwan</p>
11.00	<p><i>How can Medical & Biological Engineering & Science (MBES) contribute to the Development of the Humanistic Society (Society 5.0)?</i></p> <p>Helmut Hutten, Institute of Biomedical Imaging University of Technology, Graz, Austria</p>
11.30	<p><i>HowThe Post Covid-19 University will be more inclusive and more accessible for student with disabilities and learning disabilities and even more effective for all the students</i></p> <p>Alessandro Pepino, Department of Biomedical Engineering - University of Naples “Federico II”, Italy</p>
12.00	<p><i>Artificial Intelligence in Health and Social Care: Ethical and Legal Issues</i></p> <p>Lenka Lhotská, Czech Institute of Informatics, Robotics and Cybernetics, Czech Technical University in Prague, Czechia</p>

12.30	<p><i>Innovations in Medical Robotics</i></p> <p><i>Doina Pîslă</i>, Research Center of Robots Simulation and Testing, Technical University of Cluj-Napoca, Romania</p>
13.00	<p><i>Spinal cord stimulation after spinal cord injury - encouraging accomplishments, but problematic public relations</i></p> <p>Winfried Mayr, Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Austria</p>
13.30	<p><i>Artificial Intelligence in Military Medicine Diagnostic and Caregiving Services. Review of the Literature</i></p> <p>Doina Baltaru, Emergency Clinical Military Hospital "Dr.Constantin Papilian" Cluj-Napoca</p>
14.00	<p><i>Is Higher Education changing in a positive direction to meet the requirements industry has in graduates?</i></p> <p>Tony Ward, Department of Electronic Engineering, University of York, England</p>
14.30	<p><i>Interpretation of physical activity data collected with accelerometers</i></p> <p>Timo Jämsä, Research Unit of Health Sciences and Technology, University of Oulu, Finland</p>
15.00	<p><i>Educational strategies for capacity building in medical physics and technology</i></p> <p>Magdalena Stoeva, Department of Diagnostic Imaging, Medical University of Plovdiv, Bulgaria</p>
15.30	<p><i>The digital ecosystem facilitating treatment of people with diabetes</i></p> <p>Piotr Ladyzynski, Nalecz Institute of Biocybernetics and Biomedical Engineering, Polish Academy of Sciences, Warsaw, Poland</p>

16.30 – 18.00	<p>SESSION 1</p> <p><i>Education and Teaching</i></p> <p>Chairmen:</p> <p><i>Prof. Dan Mândru</i>, Technical University of Cluj-Napoca, Romania</p> <p><i>Assoc. Prof. Laura Grindei</i>, Technical University of Cluj-Napoca, Romania</p>
1.1	<p><i>Integrating IoT in educational engineering application development - An emerging paradigm for Smart Education</i></p> <p>Ioan Razvan Nicu; Nicolae Marius Roman; Anca I. Nicu; Anca Constantinescu - Dobra</p>
1.2	<p><i>Post- COVID19 Conclusion Regarding the Education in a Technical University in Romania. How Does Stress Influence the Educational Process</i></p> <p>Mihaela Cîrlugea, Paul Farago</p>
1.3	<p><i>Development of a repository of technologies and tools to improve digital skills and inclusivity in education, based on school gardens</i></p> <p>Laura Grindei, Sara Blanc, José Vicente Benlloch-Dualde, Nestor Martinez Ballester, Urška Knez</p>
1.4	<p><i>Social media as a teaching tool during Pandemic. A case of Romania</i></p> <p>Anca Constantinescu-Dobra, Carmen Homescu, Veronica Maier, Madalina Cotiu, Anca Iulia Nicu</p>
1.5	<p><i>Assisted Evaluation Method as Periodic Medical Control for Professional and Regular Drivers</i></p> <p>Barbu Cristian Braun</p>
1.6	<p><i>Advanced Computer Science Approaches in Alternative Education</i></p> <p>Mircea Vaida, Petre Gavril Pop, Ligia Chiorean, Cosmin Striletschi,</p>

18.15 – 20.00	<p>SESSION 2: <i>Biomedical Imaging and Image Processing</i></p> <p>Chairmen: <i>Prof. Marina Ţopa</i>, Technical University of Cluj-Napoca, Romania <i>Assoc. Prof. Rodica Holonec</i>, Technical University of Cluj-Napoca, Romania</p>
2.1	<p><i>U-net Network Optimization For 3D Reconstruction in Robotic SILS Pre-Planning Phase</i> Doina Pisla, Iulia Andras, Gabriela Rus, Claudia Moldovanu, Nicolae Crisan, Tiberiu Antal, Calin Vaida</p>
2.2	<p><i>Hepatocellular Carcinoma recognition from ultrasound images through Convolutional Neural Networks and their combinations</i> Delia A Mitrea, Raluca Brehar, Sergiu Nedevschi, Mihai Socaciu, Radu Badea</p>
2.3	<p><i>Classification of Liver Abnormality in Ultrasonic Images using Hilbert Transform Based Features</i> R. Karthikamani, R. Harikumar</p>
2.4	<p><i>Detecting Polyps in Endoscopic Images with U-Net based architectures - A Preliminary Evaluation</i> Radu Razvan Slavescu, Zsofia Fodor, Kinga Cristina Slavescu</p>
2.5	<p><i>Classification of hemorrhagic stroke lesions based on CT images and machine learning algorithms. A study on a highly imbalanced dataset</i> Madalina F. Ianovici, Simona Vlad, Angela Lungu</p>
2.6	<p><i>Medical Image Data Cleansing for Machine Learning: a Must in the Evidence-based Medicine?</i> Mircea-Sebastian Şerbănescu, Alexandra-Daniela Rotaru-Zăvăleanu, Anca-Maria Istrate-Ofiţeru, Elena-Iuliana-Ana Maria Berbecaru, Iuliana-Alina Enache, Rodica Daniela Nagy, Cristina Maria Comănescu, Didi Liliana Popa, Dominic-Gabriel Iliescu</p>
2.7	<p><i>Cataract Diagnosis using Convolutional Neural Networks Classifiers. A preliminary study</i> Oana Ciaca, Simona Vlad</p>

Friday, 21st October 2022

9.00 – 16.30	<p>PLENARY SESSION</p> <p>Chairmen: <i>Prof. Adrian Samuilă</i>, Technical University of Cluj-Napoca, Romania <i>Assoc.Prof. Simona Vlad</i>, Technical University of Cluj-Napoca, Romania <i>Assoc. Prof. Rodica Holonec</i>, Technical University of Cluj-Napoca, Romania</p>
9.00	<p><i>Technical Creativity in a Knowledge-based Society</i></p> <p>L. Dan Milici, Stefan cel Mare University of Suceava, Romania</p>
9.30	<p><i>Augmented Visualization in Medicine and Surgery</i></p> <p>Lucio Tommaso De Paolis, Augmented and Virtual Reality Laboratory (AVR Lab), Department of Engineering for Innovation, University of Salento, Italy</p>
10.00	<p><i>Breath tests for digestive diseases: an update</i></p> <p>Dan L. Dumitrașcu, Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca and Cluj County Clinical Emergency Hospital, Romania</p>
10.30	<p><i>Patient specific therapeutic solutions in cranio-maxillofacial surgery</i></p> <p>Cristian Dinu, Iuliu Hatieganu University of Medicine and Pharmacy, Maxillofacial Surgery Clinic, Cluj-Napoca, Romania</p>

11.00 – 11.30

Coffee break

11.30	<p><i>Personalized approaches in cranio-maxillofacial surgery</i></p> <p>Horațiu Rotaru, Department of Cranio-Maxillofacial Surgery, “Iuliu Hatieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania</p>
-------	--

12.00	<p><i>The fundamental role of computer model & simulation (CM&S) and Artificial Intelligence (AI) to digitalize healthcare towards Participatory, Personalized, Preventive and Predictive (P4) medicine</i></p> <p>Thierry Marchal, Program Director for Healthcare Solutions, Ansys & Secretary General Avicenna Alliance</p>
12.30	<p><i>The important role that software solutions play in the biomedical field. Innovation, precision, accuracy</i></p> <p>Irina David, INAS SA - Romania</p>
13.00	<p><i>Pyrocarbon implants used in hand and wrist surgery. Measurements of the in vivo wear</i></p> <p>Thomas Lauwers, Maastricht University Medical Centre, Netherlands</p> <p>Han Haitjema, Leonard Cezar Pastrav, Kathleen Denis, K.U. Leuven, Belgium</p>
13.30	<p><i>Patellar reflex test, transcutaneous spinal cord stimulation (tSCS), H-reflex analysis, and brain activity analysis in spinal cord injured and brain disorders</i></p> <p>Thordur Helgason, Health technology center, Reykjavik University and Landspítali, Iceland</p>

14.00 -14.30

S&C Presentation

14.30	<p><i>Virtual Instrumentation and Remote Technologies in Biomedical Engineering</i></p> <p>Doru Ursuțiu, “Transilvania” University of Brașov, Cornel Samoilă, Horia Alexandru Modran Romanian Academy of Sciences, Romania</p>
15.00	<p><i>Experimental optometry - a new paradigm on interdisciplinary procedural investigations correlated with biomechanics</i></p> <p>Mihaela Ioana Baritz, “Transilvania” University of Brașov, Romania</p>
15.30	<p><i>Economic influences on medical services quality</i></p> <p>Mircea Gelu Buta, Babeș-Bolyai University, Romania</p>
16.00	<p><i>Value sensitive design, an ethical concern of medical engineering and biological technology</i></p> <p>Mircea Leabu, “Victor Babeș” National Institute of Pathology & Research Center for Applied Ethics, University of Bucharest, Romania</p>

16.30 –18.15	SESSION 3: Health Technology Assessment Clinical Engineering Assessment Chairmen: <i>Prof. Tudor Palade</i> , Technical University of Cluj-Napoca, Romania <i>Ass.Prof. Andra Păstrăv</i> , Technical University of Cluj-Napoca, Romania
3.1	<i>Assisted Assessment of Visual Stress – Method to Prevent and Reduce the Risk of Visual Function Loss</i> Barbu Cristian Braun
3.2	<i>Influence of the Conventional and Planar Yagi Uda Antenna on Human Tissues</i> Claudia Constantinescu; Claudia Pacurar; Adina Giurgiuman; Calin Munteanu
3.3	<i>Air quality monitoring in a home using a low-cost device built around the Arduino Mega 2560 platform</i> Corneliu Druga, Barbu Cristian Braun; Ionel Serban, Ileana Constanta Rosca
3.4	<i>BE-AI: a beaconized platform with machine learning capabilities</i> Simion-Daniel Tatar, Gheorghe Sebestyen
3.5	<i>Experimental Research upon Neutralisation with Ozone of Chemical and Microbiological Pollutants from Sewage wastewater</i> Sorin Budu
3.6	<i>A multi-criteria decision making approach for the selection of a medical equipment</i> Ciprian Cristea, Maria Cristea, Horia Hedesiu, Radu-Adrian Tîrnovan, Florica Mioara Şerban, Carmen Elena Stoenoiu
3.7	<i>eHealth mobile application using Fitbit smartwatch</i> Adela Pop, Alexndra Fanca, Honoriu Vălean, Dan-Ioan Gota, Ovidiu Stan, Nicolae-Marius Roman, Iulia Clitan, Vlad Mureşan

18.15 - 18.20

Coffee break

18.20 – 20.00	<p>SESSION 4: Medical Devices, Measurement and Instrumentation; Biomedical Signal Processing</p> <p>Chairmen: <i>Prof. Eugen Lupu</i>, Technical University of Cluj-Napoca, Romania <i>Ass.Prof. Anca Nicu</i>, Technical University of Cluj-Napoca, Romania</p>
4.1	<p><i>A Dual-BRAM solution for BTSx Instructions on FPGA Processors</i></p> <p>Cristian Ignat, Paul Farago, Mihaela Cirlugea, Sorin Hinte</p>
4.2	<p><i>Low-Cost Tester for Electrical Safety of the Medical Devices</i></p> <p>Corneliu Druga, Ionel Serban, Barbu Cristian Braun, Ileana Constanta Rosca</p>
4.3	<p><i>Preliminaries of a Brain-Computer Interface Based on EEG Signal Classification</i></p> <p>Evelin-Henrietta Dulf, Alexandru G. Berciu, Eva-Henrietta Dulf, Teodora Mocan</p>
4.4	<p><i>Virtual Instrument used in the analysis of music complex influence on emotions</i></p> <p>Valentina Pomazan</p>
4.5	<p><i>Abnormal cardiac condition classification of ECG using 3DCNN - A Novel Approach</i></p> <p>Manu Raju, Ajin R. Nair</p>
4.6	<p><i>Detection of Respiratory Disorder and Performance Analysis from PPG Signals</i></p> <p>R.Harikumar, M. Kalaiyarasi B. Santhosh, A. Senthamil Selvi</p>
4.7	<p><i>Comparison between Different Methods of Segmentation in Dental Image Processing</i></p> <p>Cristina-Maria Stăncioi, Iulia Clitan, Nicolae-Marius Roman, Mihail Abrudean, Vlad Mureșan</p>

Saturday, 22nd October 2022

10.30	<p style="text-align: center;">Closing Ceremony</p> <p>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>
-------	--