



**SNIMTB**



International Conference

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

# **MEDITECH 2024**

## **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

**Hybrid**

Cluj-Napoca, Romania

30<sup>th</sup> September – 2<sup>nd</sup> October 2022

[www.snimtb.ro](http://www.snimtb.ro)

**Monday , 30<sup>th</sup> September 2024**

**Venue**

**HUB**

*Technical University of Cluj Napoca*

*2, G. Barițiu Street, Cluj Napoca, Romania*

9.00-9.30	Opening Ceremony
	<p><b><i>Prof. Ratko Magjarevic</i></b> President of International Federation for Medical and Biological Engineering (IFMBE)</p> <p><b><i>Prof. Kang-Ping Lin</i></b> Vice-president of International Federation for Medical and Biological Engineering (IFMBE)</p> <p><b><i>Prof. Mihaela Băciuț</i></b> Vice-rector of “Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj Napoca, Romania</p> <p><b><i>Prof. Vasile Țopa</i></b> Rector of Technical University of Cluj Napoca, Romania</p> <p><b><i>Prof. Nicolae-Marius Roman</i></b> President of National Society for Medical Engineering and Biological Technology, Romania</p> <p><b><i>Prof. Dan Doru Micu</i></b> President of Senate Research Commission, Technical University of Cluj Napoca, Romania</p>

9.30– 11.00	<p><b>PLENARY SESSION Chairmen</b>  <i>Prof. Nicolae Marius Roman</i>, National Society for Medical Engineering and Biological Technology  <i>Prof. Adrian Samuila</i>, Technical University of Cluj Napoca  <i>Assoc. Prof. Simona Vlad</i>, Technical University of Cluj Napoca</p>
9.30-10.00 on site	<p><b><i>Key drivers in medical technology and their implications to health care</i></b></p> <p><b>Ratko Magjarević</b> President at International Federation for Medical and Biological Engineering (IFMBE); , Department for Electronic Systems and Information Processing, University of Zagreb, Croatia</p>
10.00-10.30 on site	<p><b><i>How does ICT suport the patient safety and medical quality ?</i></b></p> <p><b>Kang-Ping Lin</b>, Vice-President at International Federation for Medical and Biological Engineering (IFMBE), Dept. of Electrical Engineering, Chung-Yuan Christian University, Taiwan</p>
10.30-11.00 online	<p><b><i>Inherent Ambivalence Risks in Biomedical Engineering Progress: From Technical Aids to Cyborgs, from Signal Processing to Artificial Intelligence, from Gene Analysis to Genome Editing</i></b></p> <p><b>Helmut Hutten</b>, Institute of Biomedical Imaging University of Technology, Graz, Austria</p>

11.00-11.30

Coffee break

11.30-12.00 online	<p><b><i>Africa's Readiness for Artificial Intelligence in Radiotherapy – Technological Aspects and the Way Forward</i></b></p> <p><b>Magdalena Stoeva</b>, Department of Diagnostic Imaging, Medical University of Plovdiv, Bulgaria</p>
12.00-12.30 on site	<p><b><i>Functional electrical stimulation is a versatile, highly effective and efficient tool for rehabilitation. Why is it not better accessible for patients in need?</i></b></p> <p><b>Winfried Mayr</b>, Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Austria</p>

12.30-13.00 on site	<b><i>Point of Use Electrochemical Systems for Fast and On-site Detection</i></b>  <b>Cecilia Cristea</b> , Group of Biosensors and Bioelectrochemistry, Analytical Chemistry Department, Faculty of Pharmacy, "Iuliu Hațieganu" University of Medicine and Pharmacy, Cluj-Napoca,
13.00-13.30 on site	<b><i>Addressing the problem of drug use in prisons. Methods and perspectives</i></b>  <b>Andreea Catalina Forțu, Antoanela Cristina Teoroc</b> , Bucharest - Jilava Penitentiary <b>Ana-Maria Culai</b> National Administration of Penitentiaries
13.30-14.00 on site	<b><i>13C Urease breath test to prevent gastric cancer</i></b> <b>Dan Lucian Dumitrașcu</b> , 2 <sup>nd</sup> Medical Clinic, Cluj County Clinical Emergency Hospital; University of Medicine and Pharmacy "Iuliu Hațieganu" Cluj-Napoca, Romania

11.00-11.30

Lunch

16.00 – 18.00		<b>SESSION 1 Chairmen</b> <i>Prof. Dan Mandru</i> , Technical University of Cluj-Napoca, Romania <i>Assoc. Prof. Simona Vlad</i> , Technical University of Cluj-Napoca, Romania
16.00 – 1.15 on site	1.1	<b><i>Search for common physiological responses to videos evoking unpleasant emotions with different arousal levels</i></b> Masaji Yamashita, Yoshitaka Itoh
16.15 – 16.30 on site	1.2	<b><i>Artificial Intelligence in Pediatric Pneumonia Diagnosis</i></b> Evelin Henrietta Dulf, Raul Petru Banut, Alexandru-George Berciu
16.30 – 16.45 on site	1.3	<b><i>Accurate MRI-based Alzheimer's Disease Detection Using CNNs and Encoding Techniques</i></b> Florina-Luminița Rostaș, Raluca Cosmina Maria Ardelean, Emilia Sipos, Laura-Nicoleta Ivanciu

16.45 – 17.00 on site	1.4	<b>3D Reconstruction of Neovascularization in Age-Related Macular Degeneration from OCTA Scans</b> Adrian Pop, Adrian Groza, Ioana Damian and Simona Delia Nicoara
17.00 – 17.15 on site	1.5	<b>AI-based 3D segmentation of pulmonary vasculature of CTEPH patients</b> Angela Lungu, Andrew Swift, Alina S. Danciu, Rod Hose, Maciej Malawski
17.15 – 17.30 online	1.6	<b>Post radiation treatment cancer recurrence prediction using multivariate adaptive regression splines from Head and Neck Squamous Cell Carcinoma CT Images</b> Manjunath K N, Dr. Anjali Kulkarni, Vamshi Krishna, Manuel Manuel, Pavankumar Pidugu
17.30 – 17.45 on site	1.7	<b>Prototype for a Telemedicine Applications within the Framework of Energy-Positive Homes to Enhance Healthcare Accessibility</b> Roxana-Valentina Briscan, Denisa Stet, Simona Vlad
17.45 – 18.00 on site	1.8	<b>Comparative Analysis of Machine Learning Algorithms on Kidney Transplant Medical Data</b> Gabriel Cristian Dragomir-Loga

18.00-18.15 Coffee break

18.15 – 20.00		<b>SESSION 2 Chairmen</b> <i>Assoc. Prof. Rodica Holonec</i> , Technical University of Cluj-Napoca, Romania <i>Ass. Prof. Angela Lungu</i> , Technical University of Cluj-Napoca, Romania
18.15 – 18.30 online	2.1	<b>Empathetic AI: Bridging Technology and Human Emotion for Enhanced Mental Health Support</b> Muhammad Zunnurain Hussain, Muhammad Zulkifl Hasan, Muzzamil Mustafa, Aqsa Khalid, Ali Moiz Qureshi, Muhammad atif Yaqub, Rimsha Awan, Afshan Bilal , Zohaib Ahmed Khan, Arslan Javaid, Saad Hussain Chuhan
18.30 – 18.45 on site	2.2	<b>13.56 MHz RFID Module – from Application to Process Modelling and Effects on Human Health</b> Claudia Constantinescu, Claudia Pacurar, Adina Giurgiuman, Calin Munteanu, Sergiu Iulian Andreica, Marian Razvan Gliga, Sabin Dusa

18.45 – 19.00 on site	2.3	<b><i>Analysis of human exposure to electric and magnetic fields while charging and driving an electric vehicle</i></b> Marian Razvan Gliga, Adina Giurgiuman, Calin Munteanu, Sergiu Iulian Andreica, Claudia Pacurar, Claudia Constantinescu, Marius Botezatu
19.00 – 19.15 on site	2.4	<b><i>YourDiagnosFriend - Integration of machine learning in medicine</i></b> Laura Nemeş, Emilia Sipos, Laura-Nicoleta Ivanciu
19.15 – 19.30 online	2.5	<b><i>Foot drop orthosis, low cost, with thermoplastic</i></b> Ionel Şerban, Corneliu Druga, Barbu Cristian Braun, Alexandru Tulică, Ileana Constanta Rosca
19.30 – 19.45 online	2.6	<b><i>Efficient High-Voltage Probe Designs for EV Systems</i></b> Bogdan Cirstinoiu, Dumitru-Daniel Bonciog, Nicolae Ionica, Bogdan Nyiredi , Valentin-Laurentiu Ordodi , Nicolae-Marius Roman, Valentin-Ioan Maranescu
19.45 – 20.00 online	2.7	<b><i>Solutions for Heating in Healthcare Facilities: A Case Study on the Use of Heat Pumps and Energy Consumption Reduction</i></b> Constantin Cilibiu and Ancuta Coca Abrudan

**Tuesday, 1<sup>st</sup> October 2024**

**Venue**

***Aula Domşa***

*Technical University of Cluj Napoca*

*15, C. Daicoviciu Street, Cluj Napoca, Romania*

9.00 – 16.30	<b>PLENARY SESSION Chairmen</b> <i>Prof. Dan Mandru, Technical University of Cluj-Napoca, Romania</i> <i>Prof. Mihai Munteanu, Technical University of Cluj-Napoca, Romania</i>
9.00-9.30 on site	<b><i>Biomedical engineering a tool to apply the Noumenal principle “Everything is possible” into Phenomenal</i></b>  <b>Mircea Leabu</b> , Victor Babeş National Institute of Pathology, Bucharest, Romania
9.30-10.00 on site	<b><i>Simulation Software Solutions in Biomedicine: Enhancing Innovation, Precision, and Accuracy</i></b>  <b>Irina David</b> , INAS S.A., Romania
10.00-10.30 on site	<b><i>Implantable ports in medical practice</i></b>  <b>Bogdan Micu</b> , Fifth Surgical Clinic, Municipal Clinical Hospital, University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca, Romania
10.30-11.00 on site	<b><i>The Evolution in the 21<sup>st</sup> Century of Personalised Parotid Surgery</i></b>  <b>Cristian Dinu</b> , University of Medicine and Pharmacy, Maxillofacial Surgery and Implantology Department, Cluj-Napoca, Romania
11.00-11.30	Coffee break
11.30-12.00 on site	<b><i>Custom reconstructions of post ablative cranio-maxillofacial defects</i></b>  <b>Horaşiu Rotaru</b> , Department of Cranio-Maxillofacial Surgery, “Iuliu Hatieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania

12.00-12.30 online	<b><i>A general design approach to engineering programmes designed to produce employment ready graduates with a Medical Engineering degree example described.</i></b>  Tony Ward, Department of Electronic Engineering, University of York, England
12.30-13.00 online	<b><i>Novel trends and technologies in Engineering and Biomedical Engineering Education</i></b>  Doru Ursuțiu, CVT –“Transilvania” University of Brasov, Romania
13.00-13.30 online	<b><i>Integrated multimodular structures for monitoring the biomechanics of the human locomotor system</i></b>  Mihaela Ioana Baritz, “Transilvania” University of Brasov, Romania
13.30-14.00 on site	<b><i>Stress Monitoring Device for IT Professionals</i></b>  Laurențiu-Dan Milici, “Ștefan cel Mare “ Univeristy of Suceava, Romania

14.00 - 16.00

Lunch

16.00 –19.00		<b>SESSION 3 Chairmen</b> <i>Assoc.Prof. Laura Grindei</i> , Technical University of Cluj-Napoca, Romania <i>Ass.Prof. Andra Păstrăv</i> , Technical University of Cluj-Napoca, Romania
16.00-16.15 on site	3.1	<b><i>The study of a low-cost system used to evaluate the body mass index</i></b> Traian Paduret, Mariana Rodica Milici
16.15-16.30 on site	3.2	<b><i>Adaptable Mechanism for Walking Aids</i></b> Istvan Ver, Alina-Elena Ver, Silviu-Dan Mandru
16.30-16.45 on site	3.3	<b><i>A Photoplethysmography-Based Affordable Demonstrator for Monitoring Muscle Oxygenation Using Infrared Light</i></b> Ana C Fenesan, Alexandru Ianosi-Andreeva-Dimitrova, Silviu-Dan Mandru
16.45-17.00 on site	3.4	<b><i>Rehabilitation Sensory Device</i></b> Alina-Elena Ver, Istvan Ver, Silviu-Dan Mandru



17.00-17.15 on site	3.5	<b>Neonatal Incubator: An Arduino-Based Prototype with Multi-Sensor Integration and Real-Time Data Streaming</b> Laura-Nicoleta Ivanciu, Ioana Ariton and Emilia Sipos
17.15-17.30 online	3.6	<b>Low cost thermic system for transfusable substance improving</b> Barbu Cristian Braun, Corneliu Druga, Ionel Șerban and Leonard Gabriel MITU

17.30-17.45 Coffee break

17.45 – 18.00		<b>SESSION 4 Chairmen</b> <i>Prof. Eugen Lupu</i> , Technical University of Cluj-Napoca, Romania <i>Ass.Prof. Anca Nicu</i> , Technical University of Cluj-Napoca, Romania
17.45 – 18.00 online	4.1	<b>Measuring angle with an Arduino based device for a foot drop orthosis adjustment</b> Ionel Șerban, Corneliu Druga, Barbu Cristian Braun, Alexandru Tulică and Ileana Constanta Rosca
18.00 – 18.15 on site	4.2	<b>Biometric Medication Storage System</b> Rodica C Holonec, Laura Grindei and Laszlo Rapolti
18.15 – 18.30 on site	4.3	<b>Students Evaluating Teachers Before, During and After the COVID19 Pandemics. Human Interaction in Education, a Psychological and Behavioral Perspective</b> Mihaela Cirlugea
18.30 – 18.45 online	4.4	<b>Modern methods meaning visual training for strabismic and amblyopic children via assisted serious games</b> Barbu Cristian Braun, Corneliu Druga, Ionel Șerban and Leonard Gabriel MITU
18.45 – 19.00	4.5	<b>Conceptual model of an eye movement simulation procedure for motor dysfunction prediction</b> Alexandra Maria Lazar-Cateanu, Barbu Cristian Braun, Mihaela Ioana Baritz, Angela Repanovici, Daniela Mariana Barbu, Anca Ioana Tataru-Ostafe), Mirela Gabriela Apostoai

20.00-23.00 Dinner

**Wednesday, 2<sup>nd</sup> October 2024**

**Venue**

***Aula Domșă***

*Technical University of Cluj Napoca*

*15, C. Daicoviciu Street, Cluj Napoca, Romania*

9.30 – 10.00		<b>PLENARY SESSION Chairmen</b> <i>Prof. Radu Ciorap, Technical University of Cluj-Napoca, Romania</i>
9.30-10.00 online		<b><i>Patellar tendon test, evoked potentials and brain connectivity</i></b>  <b>Thordur Helgason</b> , Science and Technology at Reykjavik University
10.00 – 11.15		<b>SESSION 5</b> <i>Ass. Prof. Anca Nicu, Technical University of Cluj-Napoca, Romania</i>
10.00 – 10.15 on site	5.1	<b><i>Predictive Mathematical Modeling of COVID-19 Pandemic: A Comparative Analysis of ARX and ARMAX Approaches</i></b> <i>Cristina M Stancioi, Vlad Muresan, Mihail Abrudean, Nicolae-Marius Roman</i>
10.15 – 10.30 online	5.2	<b><i>Virtual Reality Soccer Game for Lower Limb Rehabilitation</i></b> <i>Silviu George Ciorap, Monica Blănaru, George Iftimie, Eugen Crețu, Radu Ciorap</i>
10.30 – 10.45 on site	5.3	<b><i>Product strategy on ventricular assist devices market</i></b> <i>Constantinescu-Dobra Anca, Veliche Madalina, Martis Claudia</i>
10.45 – 11.00 online	5.4	<b><i>Conceptual model of an eye movement simulation procedure for motor dysfunction prediction</i></b> <i>Manan Kathuria, Tanisha Singh, Shaifali Sharma</i>
11.00 – 11.15 on site	5.5	<b><i>Development of a Patient-Mounted Ambulatory Infusion Pump Device - Solutions for Home Treatment and Patient Freedom</i></b> <i>Anca Iulia Nicu, Iannis-Patriciu Ilișuan</i>

11.15	<b>Closing Ceremony</b>
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