



— ITIB CONFERENCE —

June 22-24, 2026



PROGRAM



# Monday, June 22nd, 2026

08:00	REGISTRATION
09:00	OPENING CEREMONY
09:15	KEYNOTE LECTURE <b>From Models to Systems: The Next Frontier of Generative AI</b> Prof. Dr. Ing. Jakub Tomczak <i>Eindhoven University of Technology</i>  Moderator: Arkadiusz Gertych
10:15	COFFEE BREAK
10:45	PLENARY SESSION <b>From Models to Systems</b>  Moderators: Paweł Badura, Żaneta Świdorska-Chadaj  <b>An Integrated Calibration–Uncertainty Framework to Improve Reliability of Deep Learning Models for Seizure Detection in EEG Signals</b> <i>Silvia Seoni*, Filippo Molinari, Margherita Benevieri, Massimo Salvi</i>  <b>Merging modeling at intracellular and population levels to improve accuracy of metastasis prediction</b> <i>Artur Wyciśłok, Małgorzata Kardyńska*, Jarosław Śmieja</i>  <b>A Modular Deep Learning Pipeline for Stromal TILs Scoring in Breast Cancer H&amp;E Slides</b> <i>Shrief Abdelazeez*, Faisal Ahmed, Laia Adalid, Krzysztof Siemion, Carlos Lopez, Marylene Lejeune, Hatem Rashwan, Anna Korzyńska</i>  <b>Actinic keratosis staging in multimodal image data</b> <i>Anna Slian*, Katarzyna Korecka, Adriana Polańska, Joanna Czajkowska</i>  <b>Application of Multimodal Large Language Models for HER2/CEN17 FISH Signal Detection</b> <i>Tomasz Leś*, Kamil Fryszkowski</i>  <b>Automated Quantification of Myeloblasts in Bone Marrow Trephine Biopsies</b> <i>Martyna Przybylska*, Sławomir Pakuło, Mateusz Miller, Małgorzata Sokół, Adrianna Boroń-Wanot, Gabriela Kaczmarek, Adam Krawczyk, Żaneta Swiderska-Chadaj</i>  <b>FSCL-BC: Federated Supervised Contrastive Learning for Breast Cancer Diagnosis with High Sensitivity</b> <i>Faisal Ahmed*, David Sánchez, Zouhair Haddi, Josep Domingo-Ferrer</i>  <b>Strategies for incorporating alternative splicing variants in thyroid nodule biopsy classification based on expression levels</b> <i>Agata Małgorzata Wilk*, Krzysztof Łakomicz, Małgorzata Oczko-Wojciechowska, Małgorzata Kowalska, Jolanta Krajewska, Barbara Jarząb, Sebastian Student</i>
13:00	LUNCH
14:00	KEYNOTE LECTURE <b>Simulation of blood flows in deformable vessels</b> Prof. Ryszard Białycki <i>Silesian University of Technology</i>  Moderator: Ewa Piętka

<b>15:00</b>	<p>PLENARY SESSION</p> <p><b>Advances in Cardiology</b></p> <p>Moderators: Jan Juszczyk, Ziemowit Ostrowski</p> <p><b>Detecting Cardiovascular Diseases Using ECG Scans and Explainable Artificial Intelligence</b>  <i>Arkadiusz Czerwiński*, Damian Kucharski, Jacek Kawa, Yalin Zheng, Gregory Y. H. Lip, Jakub Nalepa, Agata M. Wijata</i></p> <p><b>Patient-Specific Continuous Non-Invasive Blood Pressure Waveform in Computed Tomography Derived Fractional Flow Reserve Calculation: Comparison with Population-Based Pressure Models</b>  <i>Kryspin Mirola, Joanna Wicher-Żółtaniecka, Mateusz Rzycki, Izabela Popiel-Humeniuk, Andrzej Kosior, Ziemowit Ostrowski*</i></p> <p><b>Artifact-Aware Classification for Smartphone-Based Heart Auscultation</b>  <i>Ryszard Błazej*, Wiktoria Foryś, Mateusz Daniol</i></p> <p><b>Analysis of the Sensitivity of Systolic Time Intervals Derived from the Impedance Cardiogram to an Orthostatic Manoeuvre</b>  <i>Milena Natalia Chołuj, Bartosz Tomasz Śmigiełski*, Edward Koźluk, Ewa Michalak, Gerard Cybulski</i></p> <p><b>Adaptive Non-Uniform ECG Sampling with Linear Reconstruction: Achieving High Diagnostic Fidelity at Low Data Rates</b>  <i>Pratixita Bhattacharjee*, Piotr Augustyniak</i></p>
<b>16:15</b>	<b>COFFEE BREAK</b>
<b>16:30</b>	<p>PLENARY SESSION</p> <p><b>Modelling and Imaging</b></p> <p>Moderators: Dominik Spinczyk, Ryszard Białocki</p> <p><b>From 2D to 3D: Automated Ultrasound Segmentation and Cross-Sectional Validation in Murine Tumor Models</b>  <i>Weronika Smolak-Dyżewska, Jerzy Bazak, Wiktoria Brandys, Aleksandra Bienia, Aleksandra Murzyn, Gniewosz Drwięga, Julia Kozik, Agnieszka Drzał, Przemysław Spurek, Martyna Elas, Martyna Krzykawska-Serda*</i></p> <p><b>Detection of Selected Cerebral Vessels and Intracranial Aneurysms in Computed Tomography Angiography Image</b>  <i>Jakub Gumulski*, Jarosław Żyłkowski, Michał Szatkowski, Dominik Spinczyk</i></p> <p><b>Three-dimensional oxygen maps of tumors in real time – analysis in the context of active tumor vasculature</b>  <i>Gabriela Dziurman, Natalia Radzikowska, Agnieszka Drzał, Aleksandra Murzyn, Piotr Świerzewski, Małgorzata Szczygieł, Bożena Romanowska-Dixon, Martyna Krzykawska-Serda, Martyna Elas*</i></p> <p><b>Automatic segmentation of selected cerebral vascular structures and their geometric parameters in computed tomography</b>  <i>Jakub Gumulski*, Jarosław Żyłkowski, Michał Szatkowski, Dominik Spinczyk</i></p>
<b>18:30</b>	<b>GALA DINNER</b>

## Tuesday, June 23rd, 2026

09:00	<p style="text-align: center;">KEYNOTE LECTURE</p> <p style="text-align: center;"><b>Intelligence Integrated: Balancing AI Potential with Clinical Reality</b> Prof. Elizabeth Krupinski <i>Ernest Garcia Endowed Professor &amp; Vice Chair for Research Department of Radiology &amp; Imaging Sciences Emory University</i></p> <p style="text-align: center;">Moderator: Joanna Czajkowska</p>
10:00	<p style="text-align: center;">PLENARY SESSION</p> <p style="text-align: center;"><b>Texture Analysis in Biomedical Images I</b></p> <p style="text-align: center;">Moderators: Ewa Pietka, Michał Strzelecki</p> <p style="text-align: center;"><b>Introductory talk: Radiomics in Medical Image Analysis: From Classical Machine Learning to Deep Learning</b> <i>Michał Strzelecki, Adam Piórkowski</i></p> <p><b>White Matter Hyperintensity Segmentation in Brain MRI Images Using Local Histogram Skewness</b> <i>Tomasz Woźniak*, Adam Piórkowski</i></p> <p><b>The Enhancement of Trabecular Bone Structure on X-ray Images using the Statistical Dominance Algorithm</b> <i>Oliwia Gratek*</i></p> <p><b>Clinical experience shapes visual strategies across multiple diagnostic modalities in Dentistry: An Eye-Tracking Study</b> <i>Piotr Kociński*, Kinga Mytnik, Kinga Janczukowicz, Jaromir Przybyło, Elżbieta Pociask</i></p> <p><b>Effect of Contrast-Limited Adaptive Histogram Equalization on the Correlation Between Bone Mineral Density and Histogram-Based Features in Digital Radiography</b> <i>Olga Zegzda*, Adam Piórkowski, Paweł Kamiński</i></p>
11:30	<b>COFFEE BREAK</b>
12:00	<p style="text-align: center;">PLENARY SESSION</p> <p style="text-align: center;"><b>Texture Analysis in Biomedical Images II</b></p> <p style="text-align: center;">Moderators: Joanna Czajkowska, Adam Piórkowski</p> <p style="text-align: center;"><b>ThermoTrack: An Interactive Framework for Robust Thermal Signal Extraction</b> <i>Oskar Kapuśniak*, Adam Piórkowski, Paweł Rubiś</i></p> <p><b>Transparent Augmented-reality Head-Mounted Displays vs Medical-Grade Monitor in Laryngologic Endoscopy: A Comparative FM-100 Color Discrimination and Fitts' Law Pointing Study</b> <i>Jaromir Przybyło*, Paweł Dobosz</i></p> <p><b>Radiomic Feature-Based Classification of BI-RADS 4/5 Breast Lesions on Contrast-Enhanced Mammography</b> <i>Wiktoria Błędzińska*, Jakub Pałachniak, Mateusz Winder, Anna Grażyńska, Joanna Czajkowska</i></p> <p><b>Skin Segmentation in High-Frequency Ultrasound Images Using the nnU-Net Framework</b> <i>Irmina Lepiarczyk*, Anna Slian, Katarzyna Korecka, Adriana Polańska, Natalia Salwowska, Joanna Czajkowska</i></p>
13:00	<b>LUNCH</b>

14:00	<p style="text-align: center;">KEYNOTE LECTURE</p> <p style="text-align: center;"><b>Towards the rehabilitation of neurovascular retinal functions</b></p> <p style="text-align: center;">Univ. Prof. Dr. Ing. Sascha Klee Head of Optoelectrophysiological Engineering Technische Universität Ilmenau, Ilmenau, Germany</p> <p style="text-align: center;">Moderator: Andrzej Mitas</p>
14:30	<p style="text-align: center;">PLENARY SESSION</p> <p style="text-align: center;"><b>Biomedical Signal Processing</b></p> <p style="text-align: center;">Moderators: Paweł Badura, Damian Borys</p> <p style="text-align: center;"><b>Pre-stimulus Oculomotor Signatures of Deception in the Concealed Information Test</b> <i>Weronika Celniak*, Dominika Słapczyńska, Piotr Augustyniak</i></p> <p style="text-align: center;"><b>Deep learning-based hair removal on ultraviolet-induced fluorescence dermatoscopy images</b> <i>Aleksander Kempski*, Natalia Salwowska, Anna Slian, Katarzyna Korecka, Paweł Pietkiewicz, Adriana Polańska, Damian Borys, Joanna Czajkowska</i></p> <p style="text-align: center;"><b>Identification and characterization of genetic variants based on the analysis of NGS data from breast cancer samples</b> <i>Szymon Tylnicki, Anna Tamulewicz*</i></p> <p style="text-align: center;"><b>Integrating Evolutionary Game Theory with SEIRD Models: A Spatial Epidemic Simulator for Strategy-Based Interventions</b> <i>Paweł Mendzik*, Damian Borys</i></p> <p style="text-align: center;"><b>Analysis of Modification in Photoplethysmographic Signal Descriptors Induced by Orthostatic Maneuver</b> <i>Bartosz Tomasz Śmigielski*, Milena Natalia Chołuj, Mateusz Pałasz, Marek Żyliński, Gerard Cybulski</i></p> <p style="text-align: center;"><b>Application of the quantum reconstruction method to the geometry of a commercial CT scanner</b> <i>Robert Cierniak*, Jakub Sosnowski</i></p> <p style="text-align: center;"><b>Spectral Super-Resolution for Parkinson's Voice via Diffusion-Inspired Models and Signal-Consistent Constraints</b> <i>Miłosz Dudek*, Jakub Sikora, Justyna Krzywdziak, Magda Zbik, Daria Hemmerling, Wojciech Szczowka, Marek Wodźński, Mateusz Daniol, Magdalena Wojcik-Pędziwiatr</i></p> <p style="text-align: center;"><b>Neural estimates of language comprehension of sentences with selected action verbs in a non-literal context in the Polish language studied by permutation cluster-based analysis and decoding of the event-related potentials</b> <i>Karina Maciejewska, Kamil Wałczyk*, Tomasz Nowak</i></p>
16:30	COFFEE BREAK
17:00	<p style="text-align: center;">SPECIAL SESSION</p> <p style="text-align: center;"><b>Neurology and Ophthalmology: Clinical Needs as a Source of Inspiration in Biomedical Engineering</b></p> <p style="text-align: center;">Moderator: prof. Andrzej Mitas, prof. Sławomir Teper</p>
18:30	SOCIAL EVENT

## Wednesday, June 24th, 2026

09:00

KEYNOTE LECTURE

### Why Medicine Needs Robots, Why Robots Need Intelligence, and Why Physicians Need Engineers

Prof. Zbigniew Nawrat

*Department of Biophysics, Faculty of Medical Science, Medical University of Silesia  
Foundation of Cardiac Surgery Development, Zabrze  
International Society for Medical Robotics, President*

Moderator: Piotr Zarychta

10:00

SPECIAL SESSION

#### Advances in Biomechanics

Moderators: Daniel Ledwoń, Robert Michnik

##### Energy Expenditure During Variable-Speed Walking Under Rhythmic Auditory Stimulation

*Martyna Świtula, Daniel Ledwoń\*, Andrzej W. Mitas*

##### Effects of Movement Sonification on Simple Motor Task Performance: A Pilot Study

*Aleksandra Tuszy\*, Patrycja Romaniszyn-Kania, Daniel Ledwoń, Martyna Świtula, Damian Kania, Milana Komosar, Jens Haueisen, Andrzej W. Mitas*

##### Biomechanical Evaluation of the Impact of Cigarettes and Nicotine Products on Reaction Time Results

*Jakub Sornek\*, Patryk Pasternak, Martyna Przybylska, Klaudia Śmiełowska, Jakub Wołosz, Piotr Szaflik, Hanna Zadoń, Robert Michnik*

##### Biomechanical Evaluation of the Influence of Cigarettes and Nicotine Products on the Results of Stabilographic Examination

*Martyna Przybylska\*, Klaudia Śmiełowska, Jakub Sornek, Patryk Pasternak, Piotr Szaflik, Jakub Wołosz, Hanna Zadoń, Robert Michnik*

##### Biomechanical Effects of Cigarette Smoking and Nicotine Use on Spatiotemporal Gait Parameters

*Klaudia Śmiełowska\*, Martyna Przybylska, Jakub Sornek, Patryk Pasternak, Piotr Szaflik, Jakub Wołosz, Hanna Zadoń, Robert Michnik*

##### Rigid-Body Transformation for Head Motion Compensation in Facial Expression Tracking Using ArUco Markers – Pilot Study

*Marta Polewka\*, Dawid Danecki, Davide Rzeszowski, Wiktoria Mazur, Sebastian Zowada, Zuzanna Miodońska, Andrzej Myśliwiec, Krzysztof Dowgierd, Anna Lipowicz, Michał Kręcichwost*

SPECIAL SESSION

#### Voice and Speech Analysis

Moderators: Michał Kręcichwost, Agata Sage

##### Histopathology-Verified Clinical Voice Database – Pilot Acoustic Analysis of Sustained

*Katarzyna Mazur\*, Oliwia Skórzewska, Zuzanna Miodońska, Barbara Mika, Miłosz Dudek, Daria Hemmerling, Michał Simlot, Alicja Dworak-Marczenko, Virginia Likus, Jarosław Markowski, Michał Kręcichwost*

##### Voice Pathology Detection Based on Acoustic Signal Analysis Using ML Models

*Jakub Kosman\*, Aleksandra Badura, Oliwia Skórzewska, Zuzanna Miodońska, Michał Simlot, Alicja Dworak-Marczenko, Virginia Likus, Jarosław Markowski, Michał Kręcichwost*

##### Sigmatism Detection from Child Speech Spectrograms Using Convolutional Autoencoders and Support Vector Machines

*Wojciech Pieniążek\*, Maria Filipek, Oliwia Skórzewska, Zuzanna Miodońska*

##### The Influence of Environmental Conditions on Acoustic Voice Parameters and Vowel Differentiation

*Aleksandra Urantówka\*, Hanna Zielonka, Patrycja Romaniszyn-Kania, Damian Kania, Klaudia Wojciech, Mirosław Czak, Paulina Krasnodębska, Agata Szkiełkowska, Andrzej W. Mitas*

##### Relative spectral and frication-based descriptors as numerical indicators of place of articulation shifts in fricatives produced by Polish children

*Oliwia Skórzewska\*, Zuzanna Miodońska*

11:30	<b>COFFEE BREAK</b>
12:00	<p style="text-align: center;">PLENARY SESSION  <b>Biotechnology and Biomaterials</b></p> <p style="text-align: center;">Moderators: Jan Juszczyk, Maria Bieńkowska</p> <p style="text-align: center;"><b>Prototype of Hydrogel-Based Corneal Implant via Bioprinting Technique</b>  <i>Mikołaj Gąbka*, Zofia Sierpień, Ewa Stodolak-Zych</i></p> <p style="text-align: center;"><b>Effect of Nanoscale Surface Texturing of Metallic Implants on Microbiological Properties</b>  <i>Zuzanna Burkiewicz*, Paulina Armatys, Ewa Stodolak-Zych</i></p> <p style="text-align: center;"><b>Multimodal Analysis of 3D Skin Models Thickness Using 75 MHz HFUS, OCT and Histopathology: A Preliminary Study</b>  <i>Anna Slian*, Christoph Malkmus, Christa Albert, Maximiliane Wußmann, Marc Möllmann, Maryam Sadat Mirabdollahyan, Jan Hansmann, Joanna Czajkowska</i></p>
13:00	<b>LUNCH AND CLOSING</b>