



Zabrze, Poland
June 23-25, 2025

10th

International Conference
Information Technology in Biomedicine

Conference program



Silesian
University
of Technology



RESEARCH
UNIVERSITY
EXCELLENCE INITIATIVE
Building of Science
and Higher Education



ANNIVERSARY
Silesian University
of Technology



Department of Medical
Informatics
and Artificial Intelligence



OŚRODEK
PRZETWARZANIA
INFORMACJI
PAŃSTWOWY INSTYTUT BADAWCZY

Monday, June 23rd, 2025

08:00	REGISTRATION EHTIC, main hall	
09:00	OPENING CEREMONY Philips Auditorium	
09:15	KEYNOTE LECTURE Philips Auditorium Artificial- Intelligence-Powered Lab Automation Jan Hansmann <i>Fraunhofer Institute for Silicate Research, Würzburg, Germany</i> Chair: Ewa Piętka	
10:15	COFFEE BREAK	
10:45	PLENARY SESSION AI and Image Analysis Applications in Medicine Philips Auditorium Chair: Ewa Piętka, Arkadiusz Gertych Semantic-Driven Synthesis of Histological Images with Controllable Cellular Distributions <i>Alen Shahini, Alessandro Gambella, Filippo Molinari, Massimo Salvi</i> Unveiling the Precision: Benchmarking Deep Learning Models for Nuclear Detection and Segmentation Across Diverse Tissue Datasets <i>Natalia Żurek, Arkadiusz Gertych</i> AI-Driven Glomerular Morphology Quantification: A Novel Pipeline for Assessing Basement Membrane Thickness and Podocyte Foot Process Effacement in Kidney Diseases <i>Michifumi Yamashita, Natalia Piaseczna, Akira Takahashi, Daisuke Kiyozawa, Narihito Tatsumoto, Shohei Kaneko, Natalia Żurek, Arkadiusz Gertych</i> Efficient Annotation Bootstrapping for Cell Identification in Follicular Lymphoma <i>Adam Krawczyk, Aleksandra Osowska-Kurczab, Sławomir Pakuło, Wojciech Kotłowski, Zaneta Swiderska-Chadaj</i> Segmentation of Skin Layers on HFUS Images Using the Attention Mechanism <i>Anna Slian, Katarzyna Korecka, Adriana Polańska, Joanna Czajkowska</i> Automated Evaluation of Lymphoma Treatment Response: Integrating Delta Radiomics and Deep Learning from 2-[18F] FDG PET/CT <i>Jakub Mitura, Rafał Józwiak, Beata E. Chrapko, Oliwia Bachanek-Mitura, Joanna Wybrańska</i>	
12:30	LUNCH	
13:30	SPECIAL SESSION (IN POLISH) Sztuczna inteligencja w walce z rakiem Philips Auditorium Organizator:  OŚRODEK PRZETWARZANIA INFORMACJI PANSTWOWY INSTYTUT BADAWCZY	JUNIOR RESEARCHER SESSION Information Technology in Biomedicine EHTIC, Conference Room Chair: Paweł Kostka, Zuzanna Miodońska Optimization of Microtomography Scanning of Fixed Paraffin Samples <i>Zuzanna Łazorko, Jan Juszczyk</i>

	Wydarzenie poświęcone promocji wyników projektu Radiologia wzmocniana AI – wykrywanie, raportowanie i podejmowanie decyzji klinicznych w diagnostyce raka prostaty sfinansowanego z programu INFOSTRATEG I Narodowego Centrum Badań i Rozwoju. Chair: Rafał Józwiak  Narodowe Centrum Badań i Rozwoju Projekt finansowany przez Narodowe Centrum Badań i Rozwoju w ramach programu INFOSTRATEG I	Wound AI: Deep Learning for Chronic Wound Detection and Segmentation <i>Kornel Bujak, Magdalena Chojnacka, Jakub Nalepa, Agata M. Wijata</i> AI-Powered Healing: Machine Learning Approaches for Chronic Wound Detection <i>Mikołaj Musioł, Jakub Sikora, Hubert Wróbel, Jakub Nalepa, Agata M. Wijata</i> Influence Analysis of Musical Track with String Instruments on the Basic EEG Signal Waves and Rhythms <i>Anna Miruk-Mirska, Piotr Zarychta</i> The Influence of Place of Articulation Shift on the Acoustic Features of Retroflex Voiceless Fricative in Preschool Children's Speech <i>Oliwia Skorzeńska, Maria Filipek, Magdalena Krycha, Wiktoria Mazur, Zuzanna Miodońska</i> Computer-Assisted Diagnosis of Child Speech using SVM: A Preliminary Study on Polish Voiceless Retroflex Affricates <i>Maria Filipek, Wojciech Pieniążek, Michał Kręcichwost, Zuzanna Miodońska</i> ECG Changes in Electronic Cigarette Users Under Rest and Post-Exercise Conditions: A Pilot Study <i>Emmanuel Quiles Martínez, Aleksandra Badura</i>
15:00	COFFEE BREAK	
15:30	DISCUSSION PANEL (IN POLISH) Rozwój medycyny cyfrowej – jak usprawnić interdyscyplinarną współpracę? Philips Auditorium Organizator:  OŚRODEK PRZETWARZANIA INFORMACJI PAŃSTWOWY INSTYTUT BADAWCZY Chair: Rafał Józwiak, Tomasz Jaworski  Narodowe Centrum Badań i Rozwoju Projekt finansowany przez Narodowe Centrum Badań i Rozwoju w ramach programu INFOSTRATEG I	JUNIOR RESEARCHER SESSION Information Technology in Biomedicine EHTIC, Conference Room Chair: Maciej Gawlikowski, Michał Kręcichwost Towards Automatic Recognition of Pain Modality: A Pilot Study on Experimentally-Induced Pain Using Electricity and Pressure <i>Maja Sokołowska, Paweł Mruzek, Marta Biesok, Aleksandra Badura</i> A Marker-Based System for Objective Facial Movement Assessment in Therapy - Pilot Study <i>Dawid Danecki, Agata Sage, Sebastian Zowada, Zuzanna Miodońska, Andrzej Myśliwiec, Krzysztof Dowgierd, Anna Lipowicz, Ewa Piętka, Michał Kręcichwost</i> A Software Platform Integrating Wearable Sensors for Home-Based Rehabilitation <i>Jeremiasz Potoczny, Piotr Augustyniak</i> Assessment of Brain Oxygenation Depending on Music Preferences Using the fNIRS System <i>Hanna Zielonka, Aleksandra Urantowska, Patrycja Romaniszyn-Kania, Damian Kania, Andrzej W. Mitas</i> Preliminary Segmentation of Cerebrovascular Structures in Computed Tomography Angiography <i>Jakub Gumulski, Jarosław Żyłkowski, Dominik Spinczyk</i>

		Impact of Cerebrovascular Segmentation Accuracy on Geometric Features in Computed Tomography Angiography Images <i>Jakub Gumulski, Jarosław Żyłkowski, Dominik Spinczyk</i> Facial Surgery Preview Based on the Orthognathic Treatment Prediction <i>Huijun Han, Congyi Zhang, Lifeng Zhu, Pradeep Singh, Richard Tai-Chiu Hsung, Yiu Yan Leung, Taku Komura, Wenping Wang, Min Gu</i>
18:00	GALA DINNER Guido Mine, Zabrze	
Tuesday, June 24th, 2025		
09:00	KEYNOTE LECTURE Philips Auditorium Novel sensors and signal processing for ubiquitous mobile EEG Patrique Fiedler <i>Technische Universität Ilmenau, Germany</i> Chair: Joanna Czajkowska	
10:00	PLENARY SESSION AI and Image Analysis Applications in Medicine Philips Auditorium Chair: Massimo Salvi, Dominik Spinczyk Automated Determination of Hip Arthrosis on the Kellgren-Lawrence Scale in Pelvic Digital Radiographs Scans Using Machine Learning <i>Karolina Nurzynska, Marek Wodzinski, Adam Piórkowski, Michał Strzelecki, Rafał Obuchowicz, Paweł Kamiński</i> VesselKnife – Software for the Analysis of Tubular Structures in Biomedical Images <i>Piotr M. Szczypiński, Artur Klepaczko, Robert Olbrycht</i> Decision Support System Based on Pattern Detection in Iterative Dermoscopic Screening <i>Natalia Salwowska, Aleksander Kempski, Piotr Zielonka, Paweł Pietkiewicz, Damian Borys</i> Performance Analysis of 2D and 3D Image Features for Computer-Assisted Speech Diagnosis of Dental Sibilants in Polish Children <i>Agata Sage</i>	WORKSHOP (IN POLISH) Platforma AI4AR Room 012 Organizator:  OŚRODEK PRZETWARZANIA INFORMACJI PAŃSTWOWY INSTYTUT BADAWCZY Wydarzenie poświęcone promocji wyników projektu Radiologia wzmacniana AI – wykrywanie, raportowanie i podejmowanie decyzji klinicznych w diagnostyce raka prostaty sfinansowanego z programu INFOSTRATEG I Narodowego Centrum Badań i Rozwoju.  NCBR Narodowe Centrum Badań i Rozwoju Projekt finansowany przez Narodowe Centrum Badań i Rozwoju w ramach programu INFOSTRATEG I
11:00	COFFEE BREAK	
11:30	PLENARY SESSION AI and Image Analysis Applications in Medicine Philips Auditorium Chair: Massimo Salvi, Dominik Spinczyk	WORKSHOP (IN POLISH) Platforma AI4AR Room 012 Organizator:

	Towards the Use of Multiple ROIs for Radiomics-Based Survival Modelling: Finding a Strategy of Aggregating Lesions <i>Agata Małgorzata Wilk, Andrzej Swierniak, Andrea d'Amico, Rafał Suwiński, Krzysztof Fajewicz, Damian Borys</i> Automatic Skull Reconstruction by Deep Learnable Symmetry Enforcement <i>Marek Wodzinski, Mateusz Daniol, Daria Hemmerling</i> Factors Influencing the Estimation of Phacoemulsification Procedure Time in Cataract Surgery: Analysis Using Neural Networks <i>Magdalena Jędzierowska, Robert Koprowski, Michele Lanza, Michał Walczak, Anna Deda</i> Multi-Positive Contrastive Learning-Based Cross-Attention Model for T cell Receptor–Antigen Binding Prediction <i>Yi Shuai, Pengcheng Shen, Xianrui Zhang</i>	 OŚRODEK PRZETWARZANIA INFORMACJI PAŃSTWOWY INSTYTUT BADAWCZY Wydarzenie poświęcone promocji wyników projektu Radiologia wzmacniana AI – wykrywanie, raportowanie i podejmowanie decyzji klinicznych w diagnostyce raka prostaty sfinansowanego z programu INFOSTRATEG I Narodowego Centrum Badań i Rozwoju.  NCBR Narodowe Centrum Badań i Rozwoju Projekt finansowany przez Narodowe Centrum Badań i Rozwoju w ramach programu INFOSTRATEG I
12:30	LUNCH	
13:30	PLENARY SESSION Biomedical Signal Processing Philips Auditorium Chair: Bartłomiej Stasiak, Dariusz Komorowski Artifact Removal Methods for EEG Signal Preprocessing – A Comparative Analysis <i>Markus Deriu, Stanisław Zakrzewski, Bartłomiej Sztyler, Bartłomiej Stasiak, Adam Wojciechowski</i> Automated Segmentation of Polish Sibilants Using Modified YAMNet Architecture for Computer-Aided Speech Diagnosis in Children <i>Michał Kręcichwost, Paweł Badura, Artur Piet, Abid Hasan, Natalia Moćko, Zuzanna Miodońska, Agata Sage, Marcin Grzegorzek</i> Evaluation of the linear and nonlinear classifiers for distinguishing between healthy subjects and patients with valvular heart diseases based on electrocardiograms, seismocardiograms, and gyrocardiograms <i>Szymon Sieciński, Marcin Grzegorzek</i> Supervised Factor Selection in Tensor Decomposition of EEG Signal <i>Stanisław Zakrzewski, Bartłomiej Stasiak, Adam Wojciechowski</i> Differentiating Characteristics of EMG Signals in Pediatric Muscle Tone Disorders in the Aspect of Evaluating Functional Disturbances in the Stomatognathic System <i>Aleksandra Tuszy, Patrycja Romaniszyn-Kania, Andrzej W. Mitas, Andrzej Myśliwiec</i> Protein Hot Spot Identification by Means of Classification Methods Employing Wavelet Transform-Based Features <i>Anna Tamulewicz, Ewaryst Tkacz</i> Assessment of Music in Intrauterine Environment Using Mathematical Model of Sound Attenuation <i>Maria Bieńkowska</i> Multimodal Approach to Assessing Cognitive Impairment in Patients with Multiple Sclerosis Using qEEG and MRI – Preliminary Report <i>Katarzyna Zawiaślak-Fornagiel, Weronika Galus, Patrycja Romaniszyn-Kania, Daniel Ledwoń, Julia Wyszomirska, Oskar Bożek, Damian Kania, Hannes Oppermann, Aleksandra Tuszy, Joanna Siuda, Andrzej W. Mitas</i>	
16:00	SOCIAL EVENT	

Wednesday, June 25th, 2025

09:00	KEYNOTE LECTURE Philips Auditorium Pathomics in Action: Can We predict Crohn's Disease Recurrence? Arkadiusz Gertych <i>Cedars-Sinai Medical Center, Los Angeles, USA</i> Chair: Paweł Badura
10:00	PLENARY SESSION Modelling, Simulation, and Therapy Support Philips Auditorium Chair: Michał Strzelecki, Jacek Kawa Modelling Changes in Genetic Heterogeneity Using Games with Resources <i>Katarzyna Hajdowska, Andrzej Swierniak, Damian Borys</i> Associative Knowledge Graphs for Efficient Sequence Storage and Retrieval <i>Przemysław Stokłosa, Janusz A. Starzyk, Paweł Raif, Adrian Horzyk, Marcin Kowalik</i> MIInfer: Bridging MetaboAnalyst and Jacobian Analysis for Metabolomic Networks <i>Jana Schwarzerova, Erdő Gabor Mate, Jakub Idkowiak, Dominika Olesova, Ales Kvasnicka, Dana Dobesova, David Friedecky, Valentyna Provaznik, Jozef Skarda, Wolfram Weckwerth, Thomas Nägele</i> Model of Data Acquisition System for the Diagnosis and Treatment Support in Parkinson's Disease <i>Mirosław Czak, Andrzej W. Mitas</i>
11:00	COFFEE BREAK
11:30	PLENARY SESSION Modelling, Simulation, and Therapy Support Philips Auditorium Chair: Robert Cierniak, Daniel Ledwoń Multifunctional Device for Hard-to-Heal Wounds: Pilot Study <i>Kinga Kostera, Dominik Jan Dziadek, Wojciech Więclawek</i> Retinal Thickness Analysis for Genotype-Phenotype Associations in Age-Related Macular Degeneration Risk Assessment <i>Anna Wąsowska, Adam Sendeki, Daniel Ledwoń, Patrycja Romaniszyn-Kania, Aleksandra Tuszy, Julia Nycz, Wojciech Więclawek, Anna Boguszewska-Chachulska, Andrzej W. Mitas, Edward Wylęgała, Sławomir Teper</i> The Use of Vision Therapy in the Treatment of Refractory Amblyopia <i>Marcin Jaworski, Patrycja Romaniszyn-Kania, Daniel Ledwoń, Anna Bierzyńska, Marta Świerczyńska, Piotr Jaworski, Dorota Wyględowska-Promieńska, Sławomir Teper, Andrzej W. Mitas</i> Linguistic-Grammar Profile of Polish Patients with Anorexia Nervosa <i>Stella Maćkowska, Katarzyna Rojewska, Dominik Spinczyk</i> A New Approach to the Statistical Reconstruction Method with Rebinning as a Method of Reducing the Dose in CT Scanners with a Flying Focal Spot <i>Piotr Pluta, Robert Cierniak</i>
13:00	LUNCH
14:00	CLOSING CEREMONY Philips Auditorium