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Information Technology in Biomedicine

June 18-20, 2018

Kamień Śląski, Poland

Conference program



foto Paweł Grzywacz

Conference organizers:



Silesian University
of Technology

Faculty of Biomedical Engineering
Department of Informatics and
Medical Devices

SAS Institute Polska



Under the auspices:

Polish Academy of Sciences



Monday, June 18, 2018	
08:00	Registration
09:00	Opening
Moderator: prof. Ewa Piętka, PhD, DSc	
09:15	Invited lecture: prof. Adam Wojciechowski, PhD, DSc Selected challenges of assistive technologies
10:00	Invited lecture: Kimiaki Shirahama, PhD Recognition of Activities of Daily Living: How to Extract High-level Activities from Raw Sensor Data
10:45	Coffee break
Multimodal Imaging and Computer-aided Surgery	
Chair: Arkadiusz Gertych, PhD	
11:15	Algorithm for the Fusion of Ultrasound Tomography Breast Images Allowing Automatic Discrimination Between Benign and Malignant Tumors in Screening Tests p. 125 <i>Krzysztof J. Opiełiński, Piotr Pruchnicki, Andrzej Wiktorowicz, Marcin Jóźwik</i>
11:30	Development of a Multimodal Image Registration and Fusion Technique for Visualising and Monitoring Chronic Skin Wounds p. 138 <i>Andre Woloshuk, Michał Krecichwost, Jan Juszczyk, Bartłomiej Pyciński, Marcin Rudzki, Beata Choroba, Daniel Ledwon, Dominik Spinczyk, Ewa Pietka</i>
11:45	Rigid and Non-Rigid Registration Algorithm Evaluation in MRI for Breast Cancer Therapy Monitoring p. 150 <i>Paweł Bzowski, Marta Danch-Wierchowska, Krzysztof Psiuk-Maksymowicz, Rafał Panek, Damian Borys</i>
12:00	Image Guided Core Needle Biopsy of the Breast p. 160 <i>Bartłomiej Pyciński, Jan Juszczyk, Agata Wijata, Marta Galińska, Joanna Czajkowska, Ewa Pietka</i>
12:15	An Application of a Haptic Device in a Computer Aided Surgery p. 194 <i>Magdalena Żuk, Jakub Mazur, Matylda Żmudzińska, Marcin Majak, Michał Popek, Ewelina Świątek-Najwer</i>
12:30	Time Regarded Method of 3D Ultrasound Reconstruction p. 205 <i>Jan Juszczyk, Marta Galinska, Ewa Pietka</i>
12:45	Statistical Analysis of Radiographic Textures Illustrating Healing Process After the Guided Bone Regeneration Surgery p. 217 <i>Gabriela Girejko, Marta Borowska, Janusz Szarmach</i>
13:15	Lunch
Special Session: Analytics in Action on SAS Platform	
Chair: prof. Dominik Spinczyk, PhD, DSc	
14:30	Automatic Classification of Text Documents Presenting Radiology Examinations p. 495 <i>Monika Kłos, Jarosław Żyłkowski, Dominik Spinczyk</i>
14:45	Similarity Search for the Content of Medical Records Using Unstructured Data p. 506 <i>Sylwia Wilczek, Kinga Gawrysiak, Dominik Spinczyk</i>
15:00	Application of Text Analytics to Analyze Emotions in the Speeches p. 525 <i>Mariusz Dzieciątko</i>
15:15	Coffee break
Special Session: Assistive Technologies and Affective Computing (ATAC)	
Chair: prof. Adam Wojciechowski, PhD, DSc, Bartłomiej Stasiak, PhD	
15:45	Sensor Headband for Emotion Recognition in a Virtual Reality Environment p. 539 <i>David Krönert, Armin Grünewald, Frédéric Li, Marcin Grzegorzek, Rainer Brück</i>
16:00	EEG-Based Mental Task Classification with Convolutional Neural Networks - Parallel vs 2D Data Representation p. 549 <i>Bartłomiej Stasiak, Sławomir Opalka, Dominik Szajerman, Adam Wojciechowski</i>
16:15	Computer Aided Feature Extraction in the Paper Version of Luria's Alternating Series Test in Progressive Supranuclear Palsy p. 561 <i>Paula Stępień, Jacek Kawa, Dariusz Wieczorek, Magda Dąbrowska, Jarosław Sławek, Emilia J. Sitek</i>
16:30	Video-Based Automatic Evaluation of the 360 Degree Turn Test p. 571 <i>Patrycja Romaniszyn, Paula Stępień, Agnieszka Nawrat-Szołtysik, Jacek Kawa</i>
16:45	Usability of Dynamic Thermography for Assessment of Skeletal Muscle Activity in Physiological and Pathological Conditions - Preliminary Results p. 580 <i>Dariusz Radomski, Krzysztof Kruszewski</i>
18:00	Concert
19:00	Gala dinner

Tuesday, June 19, 2018	
Moderator: Arkadiusz Gertych, PhD	
09:00	Invited lecture: prof. Ivo Provaznik, PhD <i>Bioinformatics tools for gene prediction in bacteria</i>
Bioinformatics Chair: prof. Ivo Provaznik, PhD	
09:45	Semantic Segmentation of Colon Glands in Inflammatory Bowel Disease Biopsies p. 379 <i>Zhaoxuan Ma, Zaneta Swiderska-Chadaj, Nathan Ing, Hootan Salemi, Dermot McGovern, Beatrice Knudsen, Arkadiusz Gertych</i>
10:00	Color Normalization Approach to Adjust Nuclei Segmentation in Images of Hematoxylin and Eosin Stained Tissue p. 393 <i>Adam Piórkowski, Arkadiusz Gertych</i>
10:15	Cell Nuclei Segmentation Using Marker-Controlled Watershed and Bayesian Object Recognition p. 407 <i>Marcin Skobel, Marek Kowal, Józef Korbicz, Andrzej Obuchowicz</i>
10:30	Bioinformatic Tools for Genotyping of Klebsiella pneumoniae Isolates p. 419 <i>Marketa Nykrynova, Denisa Maderankova, Matej Bezdicke, Martina Lengerova, Helena Skutkova</i>
10:45	Coffee break
Image Processing Chair: prof. Artur Przelaskowski, PhD, DSc	
11:15	A Brief Review for Content-Based Microorganism Image Analysis Using Classical and Deep Neural Networks p. 3 <i>Chen Li, Ning Xu, Tao Jiang, Shouliang Qi, Fangfang Han, Wei Qian, Xin Zhao</i>
11:30	On the Influence of Image Features Wordlength Reduction on Texture Classification p. 15 <i>Michał Strzelecki, Marcin Kociotek, Andrzej Materka</i>
11:45	Application of Fuzzy Image Concept to Medical Images Matching p. 27 <i>Piotr Zarychta</i>
12:00	Analysis of the Possibility of Doppler Tomography Imaging in Circular Geomery p. 52 <i>Tomasz Świetlik, Krzysztof J. Opieliński</i>
12:15	Efficient Genetic Algorithm for Breast Cancer Diagnosis p. 64 <i>Lukasz Chomatek, Agnieszka Duraj</i>
12:30	Reconstruction of Gigapixel Stereometric Maps of Ceramic Surfaces p. 101 <i>Marcin Piatek, Wiktoria Sapota, Sebastian Stach, Zygmunt Wróbel</i>
12:45	Segmentation of Three-Dimensional Images of the Butterfly Wing Surface p. 111 <i>Zaneta Garczyk, Sebastian Stach, Sławomir Tüalu, Sobola Dinara, Zygmunt Wróbel</i>
13:15	Lunch
Poster session Chair: Joanna Czajkowska, PhD, Jan Juszczyk, PhD	
1	Preliminary Study of Modeling Sagging Breasts for Support Navigation in Ultrasound Guided Biopsy p. 172 <i>Aleksandra Juraszczyk, Dominik Spinczyk</i>
2	Novel Geometric Technique of Ultrasound Probe Calibration p. 182 <i>Beata Choroba, Bartłomiej Pyciński, Dominik Spinczyk, Ewa Pietka</i>
3	New Challenges for Information Technologies in Medicine: Big Data Analysis? p. 518 <i>Zdzisław S. Hippe, Rafał Niemiec</i>
4	The Long-Term Effects of Surgery in Patients with Myelomeningocele and Their Influence on the Parameters of Gait - Preliminary Research p. 602 <i>Katarzyna Jochymczyk-Woźniak, Robert Michnik, Katarzyna Nowakowska, Weronika Bartecka, Tomasz Koszutski and Agnieszka Pastuszka</i>
5	High Dynamic Range in X-ray Imaging p. 39 <i>Przemysław Skurowski, Kamila Wicher</i>
6	Preliminary Development of an Automatic Breast Tumour Segmentation Algorithm from Ultrasound Volumetric Images p. 77 <i>Wojciech Wieclawek, Marcin Rudzki, Agata Wijata, Marta Galinska</i>
7	A Preliminary Evaluation of a Basic Fluorescence Image Processing in MentorEye System Using Artificially Prepared Phantoms p. 89 <i>M. Majak, M. Wojtków, M. Żmudzińska, W. Macherzyński, Z. Kulas, M. Popek, E. Świątek-Najwer, M. Żuk</i>
8	Influence of Gravitational Offset Removal on Heart Beat Detection Performance from Android Smartphone Seismocardiograms p. 337 <i>Szymon Sieciński, Paweł Kostka</i>
9	Transfer Entropy in Quantifying the Interactions in Preterm Labor p. 345 <i>Marta Borowska, Paweł Kuć</i>
10	Dynamic Resource Allocation of Switched Ethernet Networks in Embedded Real-Time Systems p. 353 <i>Michael Schmidt, Roman Obermaisser, Christian Wurbach</i>
11	Evaluation of Puberty in Girls by Spectral Analysis of Voice p. 243 <i>Marcin D. Bugdol, Maria J. Bieńkowska, Monika N. Bugdol, Anna Lipowicz, Andrzej W. Mitas, Agata M. Wijata</i>
12	Boys' Age Modeling Using Voice Features p. 251 <i>Monika N. Bugdol, Andrzej W. Mitas, Anna M. Lipowicz, Marcin D. Bugdol, Maria J. Bieńkowska</i>
13	Application of Reverse Engineering in the Therapy of Lower Limb Defects p. 431 <i>Szymon Sikorski, Joanna Wiśniowska, Adam Konik</i>
14	Sensitivity Analysis of the Insulin-Glucose Mathematical Model p. 455 <i>Dariusz Radomski, Jagoda Głowacka</i>
15	Limitations of Corneal Deformation Modelling During IOP Measurement - A Review p. 469 <i>Magdalena Jędzierska, Robert Koprowski, Zygmunt Wróbel</i>
16	Three-Dimensional Children Gait Pattern - Reference Data for Healthy Children Aged Between 7 and 17 p. 589 <i>Katarzyna Jochymczyk-Woźniak, Katarzyna Nowakowska, Robert Michnik, Marek Gzik, Piotr Wodarski, Joanna Gorwa, Piotr Janoska</i>
16:00	Social event
19:00	Dinner

Wednesday, June 20, 2018	
Moderator: prof. Andrzej Świerniak, PhD, DSc	
09:00	Invited lecture: prof. Rainer Brück, PhD <i>Digitalization as the key for future medical care in rural and remote places</i>
Signal Processing and Medical Devices Chair: prof. Andrzej Świerniak, PhD, DSc	
09:45	Brute Force ECG Feature Extraction Applied on Discomfort Detection p. 365 <i>Guillermo Hidalgo Gadea, Annika Kreuder, Carsten Stahlschmidt, Sebastian Schnieder, Jarek Krajewski</i>
10:00	The Higher-Order Spectra (HOSA) as a Tool for the Rehabilitation Progress Estimation Referred to the Patients Diagnosed with Various Cardiac Diseases p. 303 <i>Ewaryst Tkacz, Zbigniew Budzianowski, Wojciech Oleksy, Anna Tamulewicz</i>
10:15	Spatio-Temporal Extension of Independent Component Analysis for Fetal ECG Extraction p. 315 <i>Michał Piela, Tomasz Morań</i>
10:30	Computational Analysis of Induced Voltage on Implanted Cardiac Pacemaker's Lead by Mobile Phones p. 325 <i>Maros Smondrk, Mariana Benova, Zuzana Psenakova</i>
10:45	Coffee break
Computer-aided Diagnosis Chair: Paweł Badura, PhD, DSc	
11:15	Determination of the Cognitive Model: Compressively Sensed Ground Truth of Cerebral Ischemia to Care p. 229 <i>Artur Przelaskowski, Ewa Sobieszczuk, Izabela Domitrz</i>
11:30	CAD of Stigmatism Using Neural Networks p. 260 <i>Andre Woloshuk, Michał Kręcichwost, Zuzanna Miodońska, Paweł Badura, Joanna Trzaskalik, Ewa Pietka</i>
11:45	Arterial Flows in Bronchopulmonary Dysplasia Prediction p. 272 <i>Wiesław Wajs, Piotr Kruczek, Piotr Szymański, Piotr Wais, Marcin Ochab</i>
12:00	Attribute-Based Assessment of Lung Nodules in CT Using Support Vector Machine and Random Forest p. 279 <i>Beata Choroba, Paweł Badura</i>
12:15	Games with Resources and Their Use in Modeling Effects of Anticancer Treatment p. 290 <i>Andrzej Świerniak, Michał Krzeslak, Damian Borys</i>
Modelling and Simulation Chair: Bartłomiej Stasiak, PhD	
12:30	3D Modeling of Leg Muscle Using Mechanochemical Representations of Muscular Tissue and Solid Fibers p. 442 <i>Adrianna Bielak, Radosław Bednarski, Adam Wojciechowski</i>
12:45	Sensitivity Analysis of Biomedical Models Using Green's Function p. 481 <i>Krzysztof Łakomiec, Karolina Kurasz, Krzysztof Fajarewicz</i>
13:15	Lunch & closing