16.03.22

Description of the research team and area of expertise

Organisation	**Department of Biocybernetics and Biomedical Engineering**, AGH University of Science and Technology
Address	30, Mickiewicza Ave. 30-059 Krakow, Poland
Contact person[1]	Piotr Augustyniak (head) e-mail: august@agh.edu.pl phone: (+4812) 6174886 mobile: (+48) 697032858
Web address	http://www.agh.edu.pl/kbib
Ranking[2]	AGH University of Science and Technology is ranked as the second in Poland among other 25 state universities of technology
Research area(-s)	A. Modelling of biological systems for decision making, B. Design and prototyping of medical equipment and software, C. Development of biosignal and images interpretation methodology, D. Research of human monitoring and assisted living, E. Research of visual perception and technical applications of eyetracking, F. Development of sensor systems for affective computing, G. Automatic processing, analysis, recognition and understanding of medical images, H. Application of neural networks as problem-solving and system modelling tool, I. Analysis of pathological speech for diagnosis and therapy optimization
Strategic plan / annual report[3]	AGH University of Science and Technology (AGH-UST) is for years the most important technological centre in southern Poland. It has the staff of over 2000 scientists (over 200 of them are full professors) and over 33000 students on 16 faculties. Despite its traditional Polish name, distinctive among other institutes of technology, the research in the AGH-UST is performed in many domains raising at the beginning of the 21-st century. The Department of Biocybernetics and Biomedical Engineering bears the particular responsibility in the areas of signal processing and interpretation as well as the modelling of objects and systems. Several research groups develop the applications of electronics and information technology in medicine and biology. We have a longstanding experience in acquiring, processing and interpreting biosignals and images of various origins and modalities. Main directions of research include electrocardiology, electroencephalography with BCI applications, posture and motion tracking, vocal tract diseases, human visual system, telemedicine, ambient assisted living, virtual and mixed-reality, affective computing, knowledge representation and modeling, deep neural networks and image understanding. The particular projects are usually inspired by the needs of the partners from medical sciences and from the industry. Recently, the most important projects are founded by the Polish Government and concern the cross-country solutions for the health service. The area of expertise includes applications of modern mathematical and statistical tools for data analysis and interpretation like wavelets, higher order spectra and principal/independent component analysis. The techniques recently added to the knowledge portfolio are: non-uniform sampling (frames theory), perceptual models of signals and images and MRI noise estimation. The pursuit of the expert's scanpaths justifies the hope for extracting the non-verbalized knowledge about the signal and creates new possibilities of intelligent signal optimization for storage and transmission. The affective computing research paves the way for a more effective and natural man-machine interaction. The strategy for next years includes the further development of information technology methods for medical applications.

[1] Name, telephone number, email

[2] If you have a national ranking system, what is the result for your group / institute

[3] Are these available in paper form or on the web?

Staff[4]	Piotr Augustyniak / professor (head) / DSc. EE. (2004) / employed 1989 Mateusz Baran / associate professor / PhD. CS. (2018) / employed 2019 Anna Broniec-Wójcik / associate professor / PhD. BME. (2013) / employed 2013 Joanna Grabska-Chrząstowska / associate professor / PhD. CS. (1994) / employed 1988 Marek Iwaniec / university professor / DSc. ME. (2014) / employed 1993 Andrzej Izworski / associate professor (dean) / PhD. EE. (1988) / employed 1984 Adrian Horzyk / university professor / DSc. CS. (2014) / employed 1998 Eliasz Kańtoch / university professor / DSc. BME. (2013) / employed 2010 Tomasz Nabagło / associate professor / PhD. CS. (2013) / employed 2010 Tomasz Pięciak/ associate professor / PhD. CS. (2016) / employed 2011 Adam Piórkowski / university professor / DSc. CS. (2015) / employed 2018 Elżbieta Pociask / associate professor / PhD. MP. (2019) / employed 2019 Jaromir Przybyło / associate professor / PhD. CS. (2007) / employed 2003 Krzysztof Rzecki / associate professor / PhD. CS. (2009) / employed 2019 Magdalena Smoleń / assistant professor / PhD. BME. (2013) / employed 2013 Tomasz Sośnicki / assistant professor / MSc. CS. (2011) / employed 2019 Magdalena Szymczyk / associate professor / PhD. CS. (1999) / employed 1998 Piotr Szymczyk / university professor / DSc. CS. (2016) / employed 1988 Zbisław Tabor / professor / DSc. Ph. (2011) / employed 1999 Ryszard Tadeusiewicz / professor / DSc. EE. (1985) / employed 1971
PhD students[5]	1. Dominik Grochala MSc. BME. (2016) / thesis expected in 2022 2. Marcin Kajor MSc. BME. (2016) / thesis expected in 2022 3. Fabian Bogusz MSc BME. (2019) / thesis expected in 2024 4. Daniel Gut MSc. CS. (2019) / thesis expected in 2024
Research infrastructure[6]	Regular state university of technology
Collaborating centres[7]	*Clinical:* Collegium Medicum, Jagiellonian University, Krakow Institute of Physiology and Pathology of Hearing, Warszawa John Paul II Hospital, Krakow Military Hospital, Krakow Krakow Cardiac Research Institute
Industry relations[8]	Onwelo (IT company) - common R&D projects Aspel SA. Zabierzow (manufacturer of ECG equipment) - common R&D projects, Siemens Healthcare (manufacturer of medical equipment) - students trainings, Institute of Medical Technology and Equipment (ITAM) - common R&D projects, software validation, Onwelo (IT company) - common R&D projects
"Past 5 years"[9] *(number of publications, patents, PhD graduates)*	Publications: 154 *the number only concerns the six people listed above as staff* PhD graduates: 4 *all PhD graduates in the discipline of Biomedical Engineering*

[4] List all relevant staff by name / professional status / title / period of employment
[5] List all relevant PhD students by name and expected year of graduation
[6] List special resources at your disposal (e.g. GRID facilities, technological or clinical platforms with indication of the area, e.g. cardiology, experimental, animal,...)
[7] List centres that you collaborate. Identify them as "clinical", "biomedical" or "engineering"
[8] Name industries that you work with. Characterise the type of partnership per each industry.
[9] Describe your performance during the past 5 years through the number of publications, patents, number of PhD graduates etc that is relevant

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Qualifications of the individual for defining area of expertise

Name/ Birth year	**Piotr Augustyniak** / 1965
Title (year degree obtained) / Prof. status	Ph. D. EE. (1995) / research scientist DSc. (2004) / associate professor Professor (2013)
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 6174712 fax: (+4812) 6341568, mobile: +48 697032858 august@agh.edu.pl, http://home.agh.edu.pl/august
Area of expertise[2]	biomedical signal processing, visual pursuit and human perception, medical electronic equipment.
Relevant (best) publications[3]	1. Agnieszka Świerkosz, Piotr Augustyniak, *Optimizing Wavelet ECG Watermarking to Maintain Measurement Performance According to Industrial Standard*. Sensors, vol. 18 paper. 3401, 2018 **IF: 3.031** 2. Jaromir Przybyło, Eliasz Kańtoch, Piotr Augustyniak, Eyetracking-based assessment of affect-related decay of human performance in visual tasks. Future Generation Computer Systems. 92, pp 504–515, **IF: 5.768** 3. Piotr Augustyniak, *Adaptive sampling of the electrocardiogram based on generalized perceptual features*. Sensors, vol. 20(2) paper. 373, 2020 **IF: 3.031** 4. Augustyniak P. Diagnostic Interpretation of Non-Uniformly Sampled Electrocardiogram. Sensors — 2020 vol. 21 art. no. 2969, **IF: 3,756** 5. Mohammad Shahbakhti, ..., Piotr Augustyniak, et al. Simultaneous Eye Blink Characterization and Elimination From Low-Channel Prefrontal EEG Signals Enhances Driver Drowsiness Detection IEEE Journal of Biomedical and Health Informatics, Vol. 26, No. 3, March 2022, pp. 1001-1012, **IF: 5,772**
Publications statistics:	**Google Scholar:** Publications: 273, Citations: 1244, H-index: 17 **Scopus:** Publications: 130, Citations: 588, H-index: 12 **Web of Science**: Publications: 111, Citations: 412, H-index: 11
Other[4]	*didactic responsibilities* 1995 - to date, Lecturer at AGH-UST, "Signal processing in medical technology" 1998 - to date, Lecturer at AGH-UST, "Advanced mathematics in biosignal processing", "Electronic medical equipment" etc. 1995 - to date, AGH-UST, supervision of 10 PhD, 62 Master's, 33 BSc students, with their thesis/diploma 2001 - 2003 participant of the International Visegrad Fund project on BME education 2005 – 2012 head of the Multidisciplinary School of Engineering in Biomedicine 2018 - head of the Department of Biocybernetics and Biomedical Engineering *major grants (as Principal Investigator)* Title: Optimization of the software of cardiac telemonitoring recorder Period: 2004-2007 Centre: AGH University of Science and Technology (3T11E 00127) Funds: State Committee for Scientific Research: EUR 115.000 Number of persons: 12

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

Title: Investigation of multimodal sensing of selected physiological parameters in human with assessment of their utility in the premise infrastructure of disabled
Period: 2008-2012
Centre: AGH University of Science and Technology (N N518 426736)
Funds: State Committee for Scientific Research: EUR 212.000
Number of persons: 15

Title: Relationships between thermoregulation, fluid balance and exercise capacity in chronic heart failure
Period: 2020-2024
Centre: John Paul II Hospital in Krakow
Funds: State Committee for Scientific Research: EUR 147.000
Number of persons (in AGH-UST): 3

invited lectures

- Conference on Biocybernetics and Biomedical Engineering 2007
- International Conference on Information Technology in Biomedicine 2008
- Conference on Medical Informatics and Technologies 2011
- Conference on Measurement and Modelling in Medicine 2011
- International Conference on Innovative Technologies in Biomedicine 2013

memberships

- Polish Society of Medical Physics - since 1995
- Polish Association Biomedical Engineering - since 2003
- IEEE Engineering in Biology and Medicine Society (M'2004, SM'2009)
- IEEE Signal Processing Society (elected Chair 2019 – 2023)
- International Society of Electrocardiology – since 2005
- elected member of the Committee for Technical Sciences, Polish Academy of Arts and Sciences (2011 – 2023)
- elected member of the Committee for Biocybernetics and Biomedical Engineering, Polish Academy of Science (2011 – 2023)
- elected member of the Council of Scientific Excellence (2019 – 2023)

reviewer of papers submitted to

- IEEE Transactions of Biomedical Engineering
- IEEE Transactions of Information Technology in Biomedicine
- Computer Methods and Programs in Biomedicine (Elsevier)
- Optoelectronic Review (Springer)
- Journal of Medical Imaging and Health Informatics (Am. Sci. Publishers)
- Journal of Electrocardiology (Elsevier)
- Sensors (MDPI)
- Pattern Analysis and Applications (Springer)
- Medical Engineering & Physics (Elsevier)

reviewer of research project applications to:

* National Centre for Research and Development
* National Science Centre

16.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Mateusz Baran** / 1989
Title (year degree obtained) / Prof. status	Ph. D. CS (2018) / assistant professor
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: +48 12 617 46 61 mbaran@agh.edu.pl ResearcherID: AAE-1126-2022 ORCID: 0000-0001-9667-5579
Area of expertise[2]	Machine learning Analysis of functional biometric data Quality assurance in radiotherapy Medical image analysis
Relevant (best) publications[3]	**1.** K. Rzecki and M. Baran, "Application of Elastic Shape Analysis to User Authentication and Identification," IEEE Transactions on Emerging Topics in Computing, pp. 1–1, 2021. **IF = 7.691** **2.** M. Baran et al., "Are gamma passing rate and dose-volume histogram QA metrics correlated?," Med Phys, vol. 48, no. 9, pp. 4743–4753, Sep. 2021. **IF = 4.071** **3.** M. Baran, D. Kabat, M. Tulik, K. Rzecki, T. Sośnicki, and Z. Tabor, "Statistical approach to the selection of the tolerances for distance to agreement improves the quality control of the dose delivery in radiotherapy," Phys. Med. Biol., vol. 65, no. 14, p. 145004, Jul. 2020. **IF = 3.030** **4.** M. Baran, "Closest paths in graph drawings under an elastic metric," International Journal of Applied Mathematics and Computer Science, vol. 28, no. 2, pp. 387–397, 2018. **IF = 1.504** **5.** K. Rzecki et al., "Application of Computational Intelligence Methods for the Automated Identification of Paper-Ink Samples Based on LIBS," Sensors (Basel), vol. 18, no. 11, Oct. 2018. **IF = 3.031** **6.** M. Tulik, D. Kabat, M. Baran, R. A. Kycia, and Z. Tabor, "Use of statistical approaches to improve the quality control of the dose delivery in radiotherapy," Phys. Med. Biol., vol. 64, no. 14, p. 145018, 2019. **IF = 3.030**
Publications statistics:	**Google Scholar:** Publications: 25, Citations: 138, H-index: 6 **Web of Science**: Publications: 15, Citations: 48, H-index: 3
Other[4]	*didactic responsibilities* 2013 – 2019, Lecturer at Cracow University of Technology 2019 – to date, Lecturer at AGH-UST *major grants* Title: BIMLOQ (MNiSW N516 422338) Period: 2012 Title: Prosecco (PBS1/B3/14/2012) Period: 2013

1 Organisation, street address, telephone, email, web page
2 With keywords characterising your field(-s) of expertise
3 Max. 10
4 List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

	Title: Fantom do testów eksploatacyjnych urządzeń radioterapeutycznych w teleradioterapii (POIR.04.01.04-00-0014/16) Period: 2018-2019 Title: Reconfigurable detector for measuring the spatial distribution of radiation dose for applications in the preparation of individual patient treatment plans (POIR.04.04.00-00-15E5/18) Period: 2020-2023 *reviewer of papers submitted to* • Medical Physics • Physics in Medicine and Biology • Journal of Applied Clinical Medical Physics • PLOS ONE • Physica Scripta

Qualifications of the individual for defining area of expertise

Name	**Anna Broniec-Wójcik**
Title (year degree obtained) / Prof. status	B.S. and M.S. in Physics with specialization in Medical Physics Ph. D. (2013) in Biocybernetics and Biomedical Engineering/ assistant professor
Address	AGH University of Science and Technology, 30 Mickiewicza Ave. 30-059 Kraków, Poland phone: (+4812) 6174370 abroniec@agh.edu.pl, http://home.agh.edu.pl/~abroniec/
Area of expertise	Biomedical signal processing, electroencephalography, brain-computer interfaces.
Relevant (best) publications	1. A. Broniec, Analysis of EEG signal by flicker-noise spectroscopy: identification of right-/left-hand movement imagination, Medical & Biological Engineering & Computing, 2016 vol. 54 iss. 12, s. 1935–1947. https://goo.gl/wmS3eg, **IF=2.61**, 2. A. Broniec, The FNS-based analysis of precursors and cross-correlations in EEG signal related to an imaginary motor task, Biomedical Signal Processing and Control ; ISSN 1746-8094. — 2021 vol. 64 art. no. 102315, s. 1–9, **IF=3.88**, 3. Mohammad Shahbakhti, Matin Beiramvand, Mojtaba Nazari, Anna Broniec-Wójcik, Piotr Augustyniak, Ana Santos Rodrigues, Michał Wierzchoń, Vaidotas Marozas VME-DWT: an efficient algorithm for detection and elimination of eye blink from short segments of single EEG channel, IEEE Transactions on Neural Systems and Rehabilitation Engineering ; ISSN 1534-4320. — 2021 vol. 29, s. 408–417, **IF=3.802**, 4. Mohammad Shahbakhti, Ana Santos Rodrigues, Piotr Augustyniak, Anna Broniec-Wójcik, Andrius Sološenko, Matin Beiramvand, Vaidotas Marozas, SWT-kurtosis based algorithm for elimination of electrical shift and linear trend from EEG signals, Biomedical Signal Processing and Control; ISSN 1746-8094. — 2021 vol. 65 art. no. 102373, s. 1–8, **IF=3.88**, 5. Mohammad Shahbakhti, Matin Beiramvand, Izabela Rejer, Piotr Augustyniak, Anna Broniec-Wójcik, Michal Wierzchon, Vaidotas Marozas, Simultaneous eye blink characterization and elimination from low-channel prefrontal EEG signals enhances driver drowsiness detection, IEEE Journal of Biomedical and Health Informatics; ISSN 2168-2194. 2022 vol. 26 no. 3, s. 1001-1012, **IF=5.772**.
Publication statistics:	Web of Science: Publications: 4, Citations: 18, H-index: 2 Scopus: Publications: 8, Citations: 25, H-index: 3
Other	*didactic responsibilities* 2014 - to date, assistant professor AGH-UST, "Digital Signal Processing" 2014 - to date, assistant professor AGH-UST, "Laboratory of Medical Electronic Equipment" 2014 - to date, supervision of 3 Master's, 8 BSc students, with their thesis/diploma *major grants* Title: Investigation of multimodal sensing of selected physiological parameters in human with assessment of their utility in the premise infrastructure of disabled Period: 2008-2012 Centre: AGH University of Science and Technology (N N518 426736) Funds: State Committee for Scientific Research: EUR 212.000 Number of persons: 15, (as contractor)

	reviewer of papers submitted to * Biomedical Signal Processing and Control * Pattern Analysis and Applications * International Journal of Pattern Recognition and Artificial Intelligence * The Journal of Signal Processing Systems

16.12.17

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Joanna Grabska-Chrząstowska** / 1959
Title (year degree obtained) / Prof. status	Ph. D. E.E.(1994) / associate professor
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 617 38 55 fax: (+4812) 6341568, mobile: +48 606 202 102 asior@agh.edu.pl, http://home.agh.edu.pl/~asior
Area of expertise[2]	artificial neural networks, data mining biocybernetics, medical electronic equipment.
Relevant (best) publications[3]	Ziółko M., Pietrzyk J., **Grabska-Chrząstowska J.:** Accuracy of hemodialysis modeling. Kidney International, Vol. 57, (2000), pp.1152-1163 **IF:** Korohoda P., **Grabska-Chrząstowska J.:** Logistic regression realized with artificial neuron and estimation formulas. Image Processing & Communications : an International Journal ; ISSN 1425-140X. (2012) vol. 17 no. 4, s. 265–274. **Grabska-Chrząstowska J**.: Neural network approach to incomplete data applied to assessing cardiac health. Computing in Cardiology ; ISSN 2325-8861 (2013) vol. 40, s. 499–502 Przybyło Jaromir, **Grabska-Chrząstowska J.,** Korohoda P.**:** Low-cost scalable home video surveillance system. Image Processing & Communications : an International Journal ; ISSN 1425-140X (2014) vol. 19 no. 2–3, s. 51–58 Comparison of selected classification methods in automated oak seed sorting — **Grabska-Chrząstowska J.**, Kwiecień J., Drożdż M, Bubliński Z., Ryszard Tadeusiewicz R., Szczepaniak J., Walczyk J., Tylek P.: Porównanie wybranych metod klasyfikacji w automatycznym sortowaniu nasion dębu. Journal of Research and Applications in Agricultural Engineering ; ISSN 1642-686X, (2017), vol. 62 [nr] 1, s. 31–33
Publications statistics:	**Google Scholar:** **Microsoft Academic:** **Web of Science**:
Other[4]	*didactic responsibilities* 1998 - to date, Lecturer at AGH-UST, "Artificial Neural Networks" 2000 - to date, Lecturer at AGH-UST, "Biocyberneics" 2016-to date Lectures at AGH-UST, ”Electronical Systems of Diagnostic and Therapy 1995 - to date, AGH-UST, supervision of 40 Master's, 10 BSc students, with their thesis/diploma *reviewer of papers submitted to* • Image Processing &Communications • NeuroComputing (Elsevier) • Computer Science (Easy Chair)

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

15.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Adrian Horzyk** / 1973
Title (year degree obtained) / Prof. status	Ph. D. CS (2001) / research scientist DSc. (2014) / associate professor
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 617 4659 fax: (+4812) 617 4659, mobile: +48 533307642 horzyk@agh.edu.pl, http://home.agh.edu.pl/~horzyk/
Area of expertise[2]	artificial intelligence, computational intelligence machine learning, associative neural systems, cognitive neural systems, data mining knowledge engineering, biomedical data processing.
Relevant (best) publications[3]	1. J. A. Starzyk, M. Jaszuk, Ł. Maciura, A. Horzyk, Concurrent Associative Memories with Synaptic Delays, IEEE Transactions on Neural Networks and Learning Systems, DOI 10.1109/TNNLS.2020.3041048, Accepted and Preview Dec. 2020, published Aug. 2021, Vol. 32, Issue 8, pp. 3736 - 3747, Open Access, **IF: 10.451** 2. A. Horzyk, D. Bulanda, J. A. Starzyk, ASA-graphs for Efficient Data Representation and Processing, International Journal of Applied Mathematics and Computer Science (AMCS), Vol. 30, No. 4, 2020, pp. 717 - 731, DOI 10.34768/amcs-2020-0053, **IF: 1.417** 3. Basawaraj, J. A. Starzyk, A. Horzyk, Episodic Memory in Minicolumn Associative Knowledge Graphs, IEEE Transactions on Neural Networks and Learning Systems, Vol. 30, Issue 11, Nov. 2019, pp. 3505-3516, DOI: 10.1109/TNNLS.2019.2927106 (TNNLS-2018-P-9932), **IF: 8.793** 4. A. Horzyk, J. A. Starzyk, J. Graham, Integration of Semantic and Episodic Memories, IEEE Transactions on Neural Networks and Learning Systems, Vol. 28, Issue 12, Dec. 2017, pp. 3084 - 3095, DOI: 10.1109/TNNLS.2017.2728203, IF: **7.982**.
Publications statistics:	**Elsevier Scopus:** Publications: 55, Citations: 247, H-index: 9 **Google Scholar:** Publications: 77, Citations: 545, H-index: 13
Other[4]	*didactic responsibilities* 2017 - to date, Lecturer at AGH-UST, "Computational Intelligence" 2019 - to date, Lecturer at AGH-UST, "Knowledge-based Computational Intelligence and Data Mining in Biomedicine" 2002 - to date, AGH-UST, supervision of 1 PhD, 96 Master's, 40 BSc students, with their thesis/diploma *major grants (as Principal Investigator or Main Contributor)* Title: The use of associative-cognitive deep neural networks for modeling knowledge, prediction and classification in the area of pathophysiology of heart diseases

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

Period: 2021-2023
Centre: AGH University of Science and Technology (IDUB 1570)
Funds: IDUB AGH-UST: EUR 88.000
Number of persons: 4

Title: Development of effective mechanisms for robot perception using motivated learning and self-organizing associative memory
Period: 2017-2020
Centre: AGH University of Science and Technology (2016/21/B/ST7/02220)
Funds: State Committee for Scientific Research: EUR 193.000
Number of persons: 6

Title: Efficient classification based on a new type of ontogenic neural networks
Period: 2003-2006
Centre: AGH University of Science and Technology (4 T11C 025 24)
Funds: State Committee for Scientific Research: EUR 22.000
Number of persons: 1

invited lectures

- CEPE 2021 “Artificial intelligence in the medical service”
- ICAISC 2015 “Innovative types and abilities of neural networks based on associative mechanisms and a new associative model of neurons"

memberships

- Member of the Biocybernetics and Biomedical Engineering Committee of the Polish Academy of Sciences in years 2020 – 2023,
- Member of the Polish Section of the IEEE Association since 2020,
- IEEE Senior Member no 93112804 since 2018,
- European Neural Network Society Member since 2018,
- INSTICC Member no 14562 since 2017,
- Board Member of the Polish Neural Network Society since 2011,
- Member and co-founder of the Polish Association of Artificial Intelligence since 2009

reviewer of papers submitted to

- IEEE Transactions of Neural Networks and Learning Systems
- International Journal of Applied Mathematics and Computer Science
- Image Processing and Communication
- Journal of Computing and Informatics
- Elsevier Neurocomputing

reviewer of research project applications to:

* National Centre for Research and Development
* National Science Centre

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Eliasz Kańtoch**
Title (year degree obtained) / Prof. status	Ph. D. BME. (2013) / research scientist DSc. BME (2019) / associate professor
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland
Area of expertise[2]	biomedical signal processing, wearable computing, wireless sensor networks, artificial intelligence, telemedicine, medical devices
Relevant (best) publications[3]	1. Kańtoch E, Kańtoch A. Cardiovascular and Pre-Frailty Risk Assessment during Shelter-In-Place Measures Based on Multimodal Biomarkers Collected from Smart Telemedical Wearables. *Journal of Clinical Medicine*. 2021; 10(9):1997. **IF: 4.242** 2. Kańtoch E, Kańtoch A. What Features and Functions Are Desired in Telemedical Services Targeted at Polish Older Adults Delivered by Wearable Medical Devices?—Pre-COVID-19 Flashback. *Sensors*. 2020; 20(18):5181. **IF: 3.676** 3. Kańtoch Eliasz Recognition of Sedentary Behavior by Machine Learning Analysis of Wearable Sensors during Activities of Daily Living for Telemedical Assessment of Cardiovascular Risk. Sensors 2018, 18, 3219 **IF: 3.676** 4. Piotr Augustyniak, Magdalena Smoleń, Zbigniew Mikrut and Eliasz Kańtoch ”*Seamless Tracing of Human Behavior Using Complementary Wearable and House-Embedded Sensors*” Sensors, vol. 14(5), 2014, pp. 7831-7856, **IF: 2.964** 5. Kańtoch, E., & Augustyniak, P. (2013). Technical verification and analysis of implementation of wearable sensors for providing telemedical services in home environment. Journal of Critical Care, 28(6), e42. **IF: 2.648.** 6. Jaromir Przybyło, Eliasz Kańtoch, Piotr Augustyniak, *Eyetracking-based assessment of affect-related decay of human performance in visual tasks*, Future Generation Computer Systems, vol. 92, 2019, pp. 504–515, **IF=3.999**
Publications statistics:	**Google Scholar:** Publications: 55, Citations: 435, H-index: 15 **Scopus**: Publications: 33, Citations: 317, H-index: 11
Other[4]	*didactic responsibilities* 2019 – to date, Lecturer at AGH-UST, "Intelligent mobile technologies" 2013 - to date, Lecturer at AGH-UST, "Object oriented programming" 2009 - to 2013, Lecturer at AGH-UST, "Data Structures and Algorithms" 2009 - to 2013, Lecturer at AGH-UST, "Computer programming" 2010 - to date, Lecturer at AGH-UST, "Programming Basics" 2010 - to date, Lecturer at AGH-UST, "Telemedicine" 2010 - to date, AGH-UST, supervision of 2 PhD candidates, 18 Master's, 25 BSc students, with their thesis/diploma *didactic recognition* 2nd place laureate in the crystal cursor competition (2021) for teaching achievements (biomedical engineering) at the faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering Member of Executive Academic Council of the Fulbright and Top500 TopMinds Mentoring Program (2021-2022) – mentoring of 1 PhD candidate and 1 MD student

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

academic mobility

- Stanford University (2011)
- Fraunhofer Leipzig (2013)
- IBM Thomas J. Watson Research Center (2013)
- University College London (2018)

major grants (as Project Director)
Title: Investigation of using wearable technologies for human monitoring
Period: 2011-2014
Centre: AGH University of Science and Technology
Number of persons: 5
Funds: National Research Centre: EUR 30.000

Number of persons: 5
Title: Investigation of application of wearable sensors to provide telemedicine services
Period: 2015-2017
Centre: AGH University of Science and Technology
Funds: National Centre for Research and Development: EUR 50.000
Number of persons: 7

major grants (as Investigator)
Title: Investigation of multimodal sensing of selected physiological parameters in human with assessment of their utility in the premise infrastructure of disabled
Period: 2008-2012
Centre: AGH University of Science and Technology (N N518 426736)
Funds: State Committee for Scientific Research: EUR 212.000
Number of persons: 15

invited lectures, professional recognition

- Lecture by the invitation of the Director of National Science Center entitled "TANGO PI - best practices in research and research results commercialization", POLONEZ Fellows' Forum Krakow, 11th - 12th June 2018, Kraków
- Roundtable Experts during the IMPACT'17 conference in the Biotechnology & Digital Health session, 31.05 - 1.06. 2017, ICE Kraków Congress Center
- Invited lecture entitled "Telemedicine system for monitoring patients with chronic diseases - from basic research to applied research" during Med*meets*Tech conference, Warsaw
- Invited lecture entitled "Application of modern ICT technologies in medicine", 2nd Intelligent Development Forum, panel Healthy Society - Health Safety of Poles (NCBR patronage), Rzeszów.

patents (granted)

- P.418874 - The method of acquisition of measurement signals, a sensor sticker and a measurement and control system.
- PL 236937 B1 Roller of a belt conveyor or a roller conveyor.

organized conferences

- 20-th Polish Conference on Biocybernetics and Biomedical Engineering 2017
- Computing in Cardiology 2012

02.04.19

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Tomasz Pięciak**
Title (year degree obtained) / Prof. status	Ph.D. CS. (2016)
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Kraków, Poland Building C3, Room 202 pieciak@agh.edu.pl, http://home.agh.edu.pl/pieciak
Area of expertise[2]	neuroimaging, magnetic resonance imaging, diffusion MRI, quantitative MRI, digital signal processing, estimation theory, probability theory, medical imaging
Relevant (best) publications[3]	**1.** T. Pieciak, F. Bogusz, A. Tristán-Vega, R. de Luis García, S. Aja-Fernández, "*Single-Shell Return-To-The-Origin Probability Diffusion MRI Measure under a Non-Stationary Rician Distributed Noise*", IEEE International Symposium on Biomedical Imaging (ISBI), 2019, Venice **2.** S. Aja-Fernández, A. Tristán Vega, M. Molendowska, T. Pieciak, R. de Luis García, "*Return-to-axis probability calculation from single-shell acquisitions*", Medical Image Computing and Computer Assisted Interventions Conference (MICCAI), CDMRI Workshops, 2019, Granada, Spain **3.** T. Pieciak, I. Rabanillo Viloria, S. Aja-Fernández, "*Bias correction for non-stationary noise filtering in MRI*", IEEE International Symposium on Biomedical Imaging (ISBI), 2018, 307-310, Washington, D.C. **4.** S. Sanz-Estébanez, T. Pieciak, C. Alberola-López, S. Aja-Fernández, "*Robust Estimation of the Apparent Diffusion Coefficient Invariant to Acquisition Noise and Physiological Motion*", Magnetic Resonance Imaging, vol. 53, 2018, 123-133, **IF: 2.564** **5.** S. Aja-Fernández, T. Pieciak, A. Tristán Vega, G. Vegas-Sánchez-Ferrero, V. Molina, R. de Luis García, "*Scalar diffusion-MRI measures invariant to acquisition parameters: A first step towards imaging biomarkers*", Magnetic Resonance Imaging, vol. 54, 2018, 194-213, **IF: 2.564** **6.** T. Pieciak, S. Aja-Fernández, and G. Vegas Sánchez-Ferrero. "*Non-Stationary Rician Noise Estimation in Parallel MRI using a Single Image: A Variance-Stabilizing Approach.*" IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 39, no. 10, 2017, 2015-2029, **IF: 9.455** **7.** T. Pieciak, G. Vegas-Sánchez-Ferrero, S. Aja-Fernández, "*Variance Stabilization of Noncentral-Chi Data: Application to Noise Estimation in MRI*", IEEE International Symposium on Biomedical Imaging (ISBI), 2016, 1376-1379, Prague **8.** S. Aja-Fernández, T. Pieciak, G. Vegas-Sánchez-Ferrero. "*Spatially variant noise estimation in MRI: A homomorphic approach.*" Medical image analysis, vol. 20, no. 1, 2015, 184-197, **IF: 5.356**
Publications statistics:	**Google Scholar:** Citations: 94, H-index: 5 **Scopus:** Citations: 43, H-index: 4 (without self-citations) **Web of Science:** Citations: 29, H-index: 3 (without self-citations)

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10

Other[4]	Supervision of 8 Master's, 9 BSc students, with their thesis/diploma *major grants (as Principal Investigator)* Title: Non-stationary signal-dependent noise modelling in parallel magnetic resonance imaging Period: 2016-2018 Centre: AGH University of Science and Technology (2015/19/N/ST7/01204) Funds: National Science Centre EUR 22.500 *memberships* • IEEE Signal Processing Society *reviewer of papers submitted to* • IEEE Transactions on Image Processing, • Medical Image Analysis (Elsevier), • Magnetic Resonance in Medicine (Wiley), • PLOS ONE, • IEEE International Symposium on Biomedical Imaging (ISBI), • IEEE Conference on Computer Vision and Pattern Recognition (CVPR).

[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

29.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Adam Piórkowski**	ORCID: 0000-0003-4773-5322
Title (year degree obtained) / Prof. status	Ph. D. (2005) / computer science DSc. (2015) / biocybernetics and biomedical engineering Prof. AGH (2019)	
Address	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 6174656 pioro@agh.edu.pl, http://home.agh.edu.pl/pioro	
Area of expertise	medical informatics, image processing	
Relevant (best) publications	**1.** Piórkowski A., Nurzyńska K., Gronkowska-Serafin J., Selig B., Boldak C., Reska D.: Influence of applied corneal endothelium image segmentation techniques on the clinical parameters. *Computerized Medical Imaging and Graphics*, *55*, 13-27, 2017. **IF (2017) = 2.435** **2.** Nurzyńska, K., Mikhalkin A., Piórkowski A.: CAS: Cell Annotation Software – Research on Neuronal Tissue Has Never Been so Transparent. *Neuroinformatics*, *15*(4), 365-382, **2017**. **IF (2017) = 3.852** **3.** Szostek K., Piórkowski A.: Real-time simulation of ultrasound refraction phenomena using ray-trace based wavefront construction method. *Computer Methods and Programs in Biomedicine*, 2016 vol. 135, s. 187–197. **IF (2016) = 2.503** **4.** Oszust M., Piórkowski A., Obuchowicz R.: No-reference image quality assessment of magnetic resonance images with high-boost filtering and local features. *Magnetic Resonance in Medicine*, Vol. 84 Iss. 3, **2020**, pp. 1648-1660, **IF=3.858**(2019) **5.** Obuchowicz, R., Urbanik, A., Piórkowski, A.: Novel Technique for Growth Plate Analysis Based on the Superposition of T1-and T2-weighted MR Imaging of Adolescent Wrists. *Magnetic Resonance in Medical Sciences*, 2020; 19(3): 259–267, **IF=1.890** (2019) **6.** Obuchowicz, R., Oszust, M., Bielecka, M., Bielecki, A., Piórkowski, A.: Magnetic Resonance Image Quality Assessment by Using Non-Maximum Suppression and Entropy Analysis. *Entropy*, 22(2), 220, 2020, **IF (2019) = 2.419** **7.** Stępień, I., Obuchowicz, R., Piórkowski, A. Oszust, M.: Fusion of Deep Convolutional Neural Networks for No-Reference Magnetic Resonance Image Quality Assessment. Sensors, 2021, 21(4), 1043, **IF (2019) = 3.275** **8.** Obuchowicz, R., Nurzynska, K., Obuchowicz, B., Urbanik, A., Piórkowski, A.: Use of Texture Feature Maps for the Refinement of Information Derived from Digital Intraoral Radiographs of Lytic and Sclerotic Lesions. *Applied Sciences*, 9(15), 2968, 2019, **IF (2019) = 2.217** **9.** Obuchowicz, R., Piórkowski, A., Urbanik, A., Strzelecki, M.: Influence of Acquisition Time on MR Image Quality Estimated with Nonparametric Measures Based on Texture Features. *BioMed Research International*, Article ID 3706581 DOI: 10.1155/2019/3706581, 2019. **IF (2019) = 2.197**	
Publication statistics:	Web of Science: 380 cities, (303 non-self), h-index = 11 Scopus: 451 cities, (353 non-self), h-index = 12	
Patents:	Kempny A., **Piórkowski A**., Piątek P., Gackowski A.: System and method for transesophageal echocardiography simulations. **European Patent Application**, EP 2 538 398 A1, Application number: 11461521.4, Date of filing: 19.06.2011, date of publication: 26.12.2012, granted: 24.03.2015	

Awards	*2018 – Polski Produkt Przyszłości* *2019 – wyróżnienie Teraz Polska – Nowatorski system do symulacji w obszarze echokardiografii przezprzełykowej MrTEEmothy*
Other	*didactic responsibilities* - Image Processing, - Data Bases in Biology and Medicine, - Operating Systems, - Data Bases, - Advanced Data Bases, - Formal Languages And Automata Theory - Compilers Construction, - Component Technologies. *reviewer of papers submitted to* • International Journal of Applied Mathematics and Computer Science • Computers and Geosciences • Computerized Medical Imaging and Graphics • Computer Methods and Programs in Biomedicine (outstanding review award) • JSM Ophthalmology • Journal of Medical Informatics and Technologies • Pattern Recognition • Journal of Digital Imaging • IEEE Transactions on Biomedical Engineering • Computers in Biology and Medicine • IEEE Transactions on Information Technology in BioMedicine • Journal of King Saud University - Computer and Information Sciences • Expert Systems With Applications • Electronics • Computers & Electrical Engineering • Expert Systems • Sensors • Applied Mathematics and Computer Science

14.04.20

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Elżbieta Pociask** / 1985
Title (year degree obtained) / Prof. status	Ph. D. Eng. (2019) / research scientist
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 6175065, mobile: +48 668006813 epociask@agh.edu.pl, http://home.agh.edu.pl/~epociask ORCID: 0000-0001-8938-1089
Area of expertise[2]	image processing, biomedical signal processing
Relevant (best) publications[3]	1. Tomasz Roleder,**Elzbieta Pociask,** Wojciech Wanha,Pawel Gasior,Magdalena Dobrolinska, Magdalena Garncarek, Przemyslaw Pietraszewski, Radoslaw Kurzelowski, Grzegorz Smolka, Wojciech Wojakowski / *Multimodality intravascular imaging of bioresorbable vascular scaffolds implanted in vein grafts* / Adv Interv Cardiol 2019; 15, 2 (56): 151–157, DOI:https://doi.org/10.5114/aic.2019.86010, (**IF= 1.16)** 2. Zasada W, Slezak M, **Pociask E**, Malinowski KP, Proniewska K, Buszman P, Milewski K, Granada JF, Kaluza GL. *„In vivo comparison of key quantitative parameters measured with 3D peripheral angiography, 2D peripheral quantitative angiography and intravascular ultrasound"* / Int J Cardiovasc Imaging. 2019 Feb;35(2):215-223. doi: 10.1007/s10554-019-01529-5. Epub 2019 Feb 22.(**IF 2.036)** 3. **E. Pociask**, K.P. Malinowski, M.Ślęzak, J. Jaworek-Korjakowska, W. Wojakowski, T.Roleder, *Fully Automated Lumen Segmentation Method for Intracoronary Optical Coherence Tomography*. / Journal of Healthcare Engineering, Volume 2018, Article ID 1414076, 13 pages https://doi.org/10.1155/2018/1414076. (**IF= 1.295**) *4.* **E. Pociask**, J. Jaworek-Korjakowska, K.P. Malinowski, T.Roleder ,W. Wojakowski, / *Fully Automated Lipid Pool Detection Using Near Infrared Spectroscopy* / Computational and Mathematical Methods in Medicine, Volume 2016, Article ID 1487859, 9 pages http://dx.doi.org/10.1155/2016/1487859 (**IF= 1.563)** 5. S. Nakatani; K. Proniewska; **E. Pociask**; G. Paoletti; S. de Winter; T. Muramatsu; N. Bruining *How Clinically Effective is Intravascular Ultrasound in Interventional Cardiology? Present and Future Perspectives*, / Expert Rev. Med. Devices 10(6), 735–749 (2013), (**IF = 2.094**)
Publications statistics:	**Google Scholar:** Publications: 12, Citations: 52, H-index: 3 **Web of Science**: Publications: 15, Citations: 20, H-index: 2
Other[4]	*didactic responsibilities* 2014-2018, teacher at AGH-UST , "Algorithms and data structures" and "Computer Programming" 2017 – to date, teacher at AGH-UST, " Statistics and Probability"

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

	conference responsibilities: • 20-th Polish Conference on Biocybernetics and Biomedical Engineering PCBBE 2017, in Krakow • Workshops of intravascular imaging durig conferences : NFIC 2016 and NFIC 2017 in Krakow • Computing in Cardiology 2012, in Krakow *memberships* • Polish Society of Cardiology - since 2013

15.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Jaromir Przybylo** / 1975
Title (year degree obtained) / Prof. status	MSc. CS. (2000) research assistant Ph. D. CS. (2008) / associate professor
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 6173873 przybylo@agh.edu.pl, http://home.agh.edu.pl/przybylo/
Area of expertise[2]	biomedical signal and image processing, human-computer interaction, mixed-reality computer vision, machine and deep learning.
Relevant (best) publications[3]	1. Przybyło, J. (2022). A deep learning approach for remote heart rate estimation. Biomedical Signal Processing and Control, 74, 103457. **IF: 3.880** 2. Przybyło, J. (2019). Continuous Distant Measurement of the User's Heart Rate in Human-Computer Interaction Applications. Sensors, 19(19), 4205. **IF: 3.576** 3. Przybyło, J., Kańtoch, E., & Augustyniak, P. (2019). Eyetracking-based assessment of affect-related decay of human performance in visual tasks. Future Generation Computer Systems, 92, 504-515. **IF : 4.639** 4. Przybyło, J., & Jabłoński, M. (2019). Using Deep Convolutional Neural Network for oak acorn viability recognition based on color images of their sections. Computers and Electronics in Agriculture, 156, 490-499. **IF : 2.427** 5. Przybyło, J., Kańtoch, E., & Augustyniak, P. (2018). A concept of bimodal visual emotion recognition in computer users. AfCAI 2018 - proceedings of the 2nd workshop on Affective Computing and Context Awareness in Ambient Intelligence, ed. by Grzegorz J. Nalepa, [et al.]. ISSN 1613-0073 ; vol. 2166. 6. Jabłoński, M., & Przybyło, J. (2017). Evaluation of MoG video segmentation on GPU-based HPC system. Computing and Informatics, 35(5), 1141-1159. IF **0.488** 7. Przybylo, J., & Dobosz, P. (2017, September). Functional Endoscopic Sinus Surgery with Head Mounted Display and Video Analysis. In Polish Conference on Biocybernetics and Biomedical Engineering (pp. 182-191). Springer, Cham. 8. Przybyło, J., Kańtoch, E., Jabłoński, M., & Augustyniak, P. (2016). Distant Measurement of Plethysmographic Signal in Various Lighting Conditions Using Configurable Frame-Rate Camera. Metrology and Measurement Systems, 23(4), 579-592. **IF: 1.598** 9. Przybyło, J. (2012). Vision based facial action recognition system for people with disabilities. In Information Technologies in Biomedicine (pp. 577-588). Springer, Berlin, Heidelberg.
Publications statistics:	**Google Scholar:** Publications: 38, Citations: 194, H-index: 9 **Web of Science**: Publications: 14, Citations: 68, H-index: 5
Other[4]	*didactic responsibilities* 2000 - to date Lecturer at AGH-UST, " Human-computer Interfaces" Lecturer at AGH-UST, " Multimodal Interfaces"

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

	Lecturer at AGH-UST, " Sensors and machine intelligence” Lecturer at AGH-UST, " Telemedicine” Lecturer at AGH-UST, " Virtual Reality and Stereovision Systems” 2000 - to date, AGH-UST, supervision of 24 Master's, 28 BSc students, with their thesis/diploma *major grants (as Investigator)* Tile: Functional model of automaton, comprising machine vision system, for scarification and assessment of acorn viability by means of automatic recognition of topography of mummification changes Period: 2015-2018 Centre: AGH University of Science and Technology (BS3/A8/134/2015) Funds: National Centre of Research and Development of the Republic of Poland (NCBiR): 2 370 600 PLN Title: Intelligent surveillance system for monitoring of important public spaces and buildings SIMPOZ Period: 2010-2013 Centre: AGH University of Science and Technology (0128/R/T00/2010/12) Funds: State Committee for Scientific Research: 2 086 980,00 PLN Title: Investigation of multimodal sensing of selected physiological parameters in human with assessment of their utility in the premise infrastructure of disabled Period: 2008-2012 Centre: AGH University of Science and Technology (N N518 426736) Funds: State Committee for Scientific Research: EUR 212.000 Number of persons: 15 *reviewer of papers submitted to* • Sensors (ISSN 1424-8220) • Applied Optics Journal • Information Sciences • Image Processing & Communications Journal • others *cooperation with industry:* * 1999 – to date: ONT Oprogramowanie Naukowo-Techniczne (MathWorks distributor) *science popularization:* • Managing YouTube channel: https://www.youtube.com/c/StrefaInżynieriiBiomedycznej/ • Organization and participation in the presentation of the results of students’ master's thesis “*The use of augmented reality techniques to support human perception*” in regional television (TVP3 Krakow) • Article in PAP Science in Poland : “*Augmented Reality*” • 22nd Science Picnic of Polish Radio and the Copernicus Science Centre 2018. Demonstration title: Remote heart rate detection using ordinary camera. • 2019r ITHACA Demonstration title: Remote heart rate detection using ordinary camera

15.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Krzysztof Rzecki** / 1978
Title (year degree obtained) / Prof. status	Ph. D. in Computer Science (2009) / assistant professor M.Sc. in Marketing and Management (2004) M.Sc. Eng. in Computer Science (2002)
Address	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland krz@agh.edu.pl, http://rzecki.pl ResearcherID: AAV-3862-2020 ORCID: 0000-0002-6834-2344
Area of expertise	natural language processing cybersecurity & biometry machine & deep learning
Relevant (best) publications	**1.** O. Bar,, et al., ”Zernike Moment Based Classification of Cosmic Ray Candidate Hits from CMOS Sensors”, *Sensors*, vol. 21, no. 22,2021. **IF = 3.576** **2.** K. Rzecki, et al., ”Fully automated algorithm for the detection of bone marrow oedema lesions in patients with axial spondyloarthritis - Feasibility study”, Biocybernetics and Biomedical Engineering, vol. 41, no. 2, 2021. **IF = 2.537** **3.** K. Rzecki and M. Baran, ”Application of Elastic Shape Analysis to User Authentication and Identification”, *IEEE Transactions on Emerging Topics in Computing*, 2021. (early access). **IF = 6.043** **4.** K. Rzecki, ”Classification Algorithm for Person Identfication and Gesture Recognition Based on Hand Gestures with Small Training Sets”, *Sensors*, vol. 20, no. 24, 2020. **IF = 3.275** **5.** M. Baran et al., “Statistical approach to the selection of the tolerances for distance to agreement improves the quality control of the dose delivery in radiotherapy”, *Physics in Medicine & Biology*, 2020. **IF = 3.030** **6.** M. Baran et al., “A simulation-based method for evaluating geometric tests of a linac c-arm in quality control in radiotherapy,” *Journal of Applied Clinical Medical Physics*, vol. 20, no. 9, pp. 133–142, 2019. **IF = 1.544** **7.** K. Rzecki et al., ”Application of Computational Intelligence Methods for the Automated Identification of Paper-Ink Samples Based on LIBS,” *Sensors*, vol. 18, no. 11, Oct. 2018. **IF = 3.031** **8.** K. Rzecki et al, ”Person recognition based on touch screen gestures using computational intelligence methods”, Information Sciences, vol. 415-416, 2017. **IF = 4.305**
Publications statistics:	**Google Scholar:** Publications: 52, Citations: 267, H-index: 8 **Web of Science**: Publications: 22, Citations: 158, H-index: 5
Other	*didactic responsibilities* 2002 – 2022 Lecturer at CUT and AGH UST • Algorithms and data structures • Network services programming • Natural language processing • Security of computer systems nad networks • Service-oriented architectures • Operating systems Supervision of over 90 M.Sc. and B.Sc. students with their thesis/diploma.

professional recognitions

- Since 2021 Member of management team in a project “Reconfigurable scintillator based full 3D detector for evaluating patient-specific dose distribution”, POIR.04.04.00-00-15E5/18.
- 2018 - 2019 Participant of the project “A phantom for exploitation tests of medical radiotherapy devices”, POIR.04.01.04-00-0014/16.
- 2009 - 2019 Assistant Professor (2002-2009 Assistant) of Computer Science in Institute of Telecomputing, Faculty of Mathematics Physics and Computer Science, Cracow University of Technology.
- 2016-2017 Participant of the project “Develop a system supporting bronchofiberoscope navigation within a peripheral bronchial tree”, PBS3/A9/31/2015.
- Since 2015 Co-founder and Shareholder/Director of Live-Docs Sp. z o.o., http://live-docs.com.
- 2013 Leader of the R&D project “Context Data Management” for Orange Labs Poland.
- 2012-2013 Participant of the project “Developing innovative integrated platform for the financial area”, UDA-POIG.01.04.00-12-106/12-00.
- 2012 Leader of the R&D project “Context Awareness Stack - The New Approach for Context Data Structure” for Orange Labs Poland.
- 2012 Participant of the project “Development of an innovative utility and maintenance platform”, VSoft SA, UDA-POIG.01.04.00-12-075/11-00.
- 2009-2011 Participant of the project „Asynchronous Agent System for Monitoring Communication and System States Based on the SOA Paradigm”, IPI PAN, POIG.01.03.01-00-008/08, 2009-2013.
- 2011 Participant of the project “User interface based on natural gestures for exploration of virtual 3D spaces”, IITiS PAN, NN516405137.
- 2004-2011 Leader of Software Department in CCNS SA in Cracow:
- 2000-2004 One year long internship in Siemens AG/Mönchen/Germany.

open source projects

- 2006-2007 K.Rzecki et al., RFC 5222 contribution, „ECRIT – Emergency Context Resolution with Internet Technologies”, with Nokia-Siemens-Networks AG, http://ecrit.sourceforge.net/.
- 2005-2006 K.Rzecki et al., RFC 5106 contribution, „EAP-IKEv2 Extensible Authentication Protocol with Internet Key Exchange Protocol version 2”, with Siemens AG, http://eap-ikev2.sourceforge.net/.

certificates

- TOP 500 Innovators Program, UC Berkeley, CA/USA, Center for Executive Education, September 28 – November 27, 2015.
- ITIL Foundation, APMG-International, 2013.
- PRINCE2 Foundation, APMG-International, 2011.

reviewer of papers submitted to

- IEEE Transactions on Industrial Informatics
- PLOS ONE

reviewer of research project applications to:

- National Centre for Research and Development

15.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Magdalena Smoleń**
Title (year degree obtained) / Prof. status	Ph. D. BME. (2013) / assistant professor
Address[1]	AGH University of Science and Technology, 30 Mickiewicza Ave., 30-059 Krakow, Poland phone: (+4812) 6174370 msmolen@agh.edu.pl
Area of expertise[2]	registration and processing of human biomedical signals (during different mental and physical states), medical electronic equipment
Relevant (best) publications[3]	1. Magdalena Smoleń, Piotr Augustyniak *"Assisted living system with adaptive sensor's contribution"*, Sensors, vol. 20(18), 5278, https://www.mdpi.com/1424-8220/20/18/5278/pdf, 2020. 2. Piotr Augustyniak, Magdalena Smoleń, Zbigniew Mikrut, Eliasz Kańtoch *"Seamless Tracing of Human Behavior using Complementary Wearable and House-Embedded Sensors"*, Sensors, vol. 14(5), 7831-7856, 2014. 3. Magdalena Smoleń, *"Consistency of outputs of the selected motion acquisition methods for human activity recognition"*, Journal of Healthcare Engineering, http://downloads.hindawi.com/journals/jhe/2019/9873430.pdf, 2019.
Publications statistics:	**BPP AGH:** Publications: 19
Other[4]	*didactic responsibilities* 2013 - to date, Teacher at AGH-UST, "Medical electronic equipment" – laboratory and project classes 2020 - to date, Teacher at AGH-UST, "Multimodal Interfaces" – laboratory classes 2013 - to date, AGH-UST, supervision of Master's and BSc students, with their thesis/diploma *major grants (as Investigator)* Title: Investigation of multimodal sensing of selected physiological parameters in human with assessment of their utility in the premise infrastructure of disabled Period: 2008-2012 Centre: AGH University of Science and Technology (N N518 426736) Funds: State Committee for Scientific Research: EUR 212.000 Number of persons: 15 *reviewer of papers submitted to* • IEEE Transactions on Biomedical Engineering • Medical Engineering & Physics • Bio-Algorithms and Med-Systems • IEEE Journal of Biomedical and Health Informatics

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

11.02.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Tomasz Sośnicki** / 1987
Title (year degree obtained) / Prof. status	MSc. In Computer Science (2011)
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland sosnicki@agh.edu.pl, https://sites.google.com/view/tomasz-sosnicki/ ORCID: 0000-0001-7059-7971
Area of expertise[2]	Machine learning, Data mining, Experiments modelling, Pipeline and parallel processing.
Relevant (best) publications[3]	1. O. Bar,, et al., ”Zernike Moment Based Classification of Cosmic Ray Candidate Hits from CMOS Sensors”, Sensors, vol. 21, no. 22,2021. **IF = 3.576** 2. Baran, M, Tabor, Z, Tulik, M, et al. Are gamma passing rate and dose–volume histogram QA metrics correlated? Med Phys. 2021; 48: 4743– 4753. **IF: 4.071** 3. Baran M, Kabat D, Tulik M, Rzecki K, Sośnicki T, Tabor Z. Statistical approach to the selection of the tolerances for distance to agreement improves the quality control of the dose delivery in radiotherapy. Phys Med Biol. 2020 Jul 13;65(14):145004, **IF: 3.609** 4. K.Rzecki, P.Pławiak, M.Niedźwiecki, T.Sośnicki, M.Król, T.Łojewski, “Application of computational intelligence methods for the automated identification of paper-ink samples based on LIBS”, 10/2018, MDPI; MDPI Sensors. **IF: 2.475** 5. Krzysztof Rzecki, Paweł Pławiak, Michał Niedźwiecki, Tomasz Sośnicki, Jacek Leśkow, Maciej Ciesielski, “Person recognition based on touch screen gestures using computational intelligence methods”, Information Sciences, Volumes 415–416, November 2017, Pages 70-84, ISSN 0020-0255, **IF: 4.305** 6. P. Plawiak; T. Sosnicki; M. Niedzwiecki; Z. Tabor; K. Rzecki, "Hand Body Language Gesture Recognition Based on Signals From Specialized Glove and Machine Learning Algorithms," in IEEE Transactions on Industrial Informatics, vol.PP, no.99, pp.1-1, **IF: 6.674**
Publications statistics:	**Google Scholar:** Publications: 18, Citations: 178, H-index: 5 **Web of Science**: Publications: 8, Citations: 119, H-index: 4
Other[4]	*didactic responsibilities* 2019 - 2020, assistant at AGH UST, "Object Oriented Programming" 2019 - 2020, assistant at AGH UST, "Operating Systems" 2019 - 2020, assistant at AGH UST, "Multimodal Interfaces" 2011 - 2019, assistant at CUT, "Parallel and Distributed Programming" 2011 - 2013, assistant at CUT, "Computer Systems Security" 2012 - 2016, assistant at CUT, "IT security" 2012 - 2019, assistant at CUT, "System Administration" Technical consultant of 15 M.Sc., 14 B.Sc. students, with their thesis/diploma.

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

	project participant • 2018-2019 System designer “A phantom for exploitation tests of medical radiotherapy devices”, POIR.04.01.04-00-0014/16. • 2016-2017 System designer “Develop a system supporting bronchofiberoscope navigation within a peripheral bronchial tree”, PBS3/A9/31/2015. • 2009-2014 System designer and developer of Cracow Cloud One project. „The use of elastic computing in distributed networks in research and economy” in POIG 02.03.03-00-033/09-04 for Institute of Nuclear Physics Polish Academy of Sciences. • 2013 “Context Data Management”, developer in R&D project for Orange Labs Poland. • 2012-2013 “Developing innovative integrated platform for the financial area”, R&D project developer for VSoft S.A. in UDA-POIG.01.04.00-12-106/12-00. • 2013 “Modeling cooperation of agents by multivalued logic and parallel processing”, designer and developer for Institute of Fundamental Technological Research Polish Academy of Sciences in UMO-2012/05/B/ST6/03094 and UMO-2012/05/B/ST6/03094. • 2012 “Context Awareness Stack - The New Approach for Context Data Structure”, developer in R&D project for Orange Labs Poland. • 2012 “Development of an innovative utility and maintenance platform”, R&D developer for VSoft S.A. in UDA-POIG.01.04.00-12-075/11-00. • 2009 Participant of the CERN Summer Student Programme. *professional recognitions* • Since 2015 Co-founder and Shareholder/Director of Live-Docs Sp. z o.o., http://live-docs.com. • 2011 “FilesOnline - Document Management System”, system designer and developer for Trusca Business Solutions Ltd, Potters Bar, United Kingdom. • 2015 Developer of Virtual Diagnostician for mobile platform for Emedico Sp. z o.o. • 2009-2010 System designer and developer to visualize a laboratory to store umbilical cord blood for Cledar Sp. z o.o.

15.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Magdalena Szymczyk** / 1964
Title (year degree obtained) / Prof. status	Ph. D. EE. (1999) / research scientist
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 6173946 Magdalena.Szymczyk@agh.edu.pl, http://home.agh.edu.pl/mszymcz
Area of expertise[2]	parallel computing programming of embedded systems, reliability and security of embedded systems
Relevant (best) publications[3]	1. Szymczyk M., Szymczyk P.: Automatic processing of Z-transform artificial neural networks using parallel programming, Neurocomputing; ISSN 0925-2312. - 2020 Vol. 379, s. 74-88 (LF) (IF2019 4.072) (Pkt. MNiSW 2019 = 100) 2. Szymczyk P., Szymczyk M.: Identification of dynamic object using Z-Transform artificial neural network, Neurocomputing; ISSN 0925-2312. - 2018 vol. 312, s. 382-389 (LF) (IF2017 3.241) (Pkt. MNiSW = 30) 3. Szymczyk M., Szymczyk P.: Neural networks based method for automatic classification of GPR data , COMPUTATIONAL TECHNOLOGIES IN ENGINEERING (TKI'2018): Proceedings of the 15th Conference on Computational Technologies in Engineering, AIP Conference Proceedings ISBN: 978-0-7354-1806-6, 2019 vol. 2078, s. 020014-1 - 020014-8 (WoS) (Pkt. MNiSW = 15) 4. Szymczyk P., Szymczyk M.: Classification of geological structure using ground penetrating radar and Laplace transform artificial neural networks, Neurocomputing ; ISSN 0925-2312. - 2015 vol. 148, s. 354-362. (LF) (IF2014 2.083) (Pkt. MNiSW = 30) 5. Szymczyk P., Szymczyk M.: Supervised learning Laplace transform artificial neural networks and using it for automatic classification of geological structure, Neurocomputing ; ISSN 0925-2312. - 2015 vol. 154, s. 70-76. (LF) (IF2014 2.083) (Pkt. MNiSW = 30) 6. Szymczyk P., Szymczyk M.: Non-destructive building investigation through analysis of GPR signal by S-transform, Automation in Construction ; ISSN 0926-5805. - 2015 vol. 55, s. 35-46. (LF) (IF2014 1.812) (Pkt. MNiSW = 40) 7. Szymczyk P., Tomecka-Suchoń S., Szymczyk M.: Neural networks as a tool for georadar data processing, Int. J. Appl. Math. Comput. Sci., 2015, Vol. 25, No. 4, 955-960; ISSN: 1641-876X (print), 2083-8492 (online) (IF2014 1,227) (Pkt. MNiSW = 25) 8. Szymczyk M., Szymczyk P.: Reliability of Cluster System with a Lot of Software Instances Lecture Notes in Computer Science, Computational Science - ICCS2004, Part 1, str. 417-420, Springer-Verlag Berlin 2004. (IF2004 0.513)
Publications statistics:	**Google Scholar:** Publications: 83, Citations: 126, H-index: 6

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10

Other[4]

Work experience at research institutions

Data (from – to)	Institution	Position	Activities and responsibilities
From 01.05.1999	AGH University of Science and Technology, The Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering, Department of Automatics and Biomedical Engineering	Assistant professor (adiunkt)	Research in the field of automatics and computer science
2004 - 2009	Bielsko-Biała School of Banking and Finances	Assistant professor (adiunkt)	Research in the field of computer science
01.10.1995 - 30.04.1997	AGH University of Science and Technology, The Faculty of Electrical Engineering, Automatics and Electronics Department of Automatics	Assistant (asystent)	Research in the field of automatics and computer science
01.10.1991 - 30.09.1995	AGH University of Science and Technology, The Faculty of Electrical Engineering, Automatics, and Electronics	Doctorate studies (unpaid leave of absence, scholarship)	Research in the field of computer science

Participation in projects:

- Analiza cyfrowych danych georadarowych przy użyciu komputerowego przetwarzania i rozpoznawania obrazów dla oceny stanu technicznego wałów przeciwpowodziowych oraz wykrywania niebezpiecznych zmian w strefach przypowierzchniowych ośrodka geologicznego (Analysis of digital ground-penetrating radar data using computer processing and image recognition for the evaluation of technical conditions of river embankments and detecting of dangerous changes in near-surface zones of geological medium.) (NCN - no UMO-2011/01/B/ST7/06178)
- Inteligentne, energooszczędne systemy sterowania orientowanymi systemami solarnymi (Smart, energy-efficient systems controlled by oriented solar systems) (NCN – no 6693/B/T02/2011/40)
- System inteligentnego monitoringu przestrzeni i obiektów szczególnego znaczenia – SIMPOZ (Intelligent surveillance system for monitoring of important public spaces and buildings – SIMPOZ) (MNiSW no 0128/R/t00/20

Teaching – list of regular courses:

- Informatyka (Computer Science)
- Grafika komputerowa (Computer Graphics)
- Architektury komputerów (Computer Architecture)
- Algorytmy i struktury danych (Algorithms and Data Structures)
- Programowanie Komputerów (Computer Programming)
- Bazy danych (Database)

[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

15.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Piotr Szymczyk** / 1963
Title (year degree obtained) / Prof. status	Ph. D. EE. (1997) / research scientist DSc. (2017)
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 6173946 Piotr.Szymczyk@agh.edu.pl, http://home.agh.edu.pl/~piotrs
Area of expertise[2]	real time computer systems, embedded systems, medical electronic equipment, artificial neural networks
Relevant (best) publications[3]	1. Szymczyk M., Szymczyk P.: Automatic processing of Z-transform artificial neural networks using parallel programming, Neurocomputing; ISSN 0925-2312. - 2020 Vol. 379, s. 74-88 (LF) (IF2019 4.072) (Pkt. MNiSW 2019 = 100) 2. Szymczyk P., Szymczyk M.: Identification of dynamic object using Z-Transform artificial neural network, Neurocomputing; ISSN 0925-2312. - 2018 vol. 312, s. 382-389 (LF) (IF2017 3.241) (Pkt. MNiSW = 30) 3. Szymczyk M., Szymczyk P.: Neural networks based method for automatic classification of GPR data , COMPUTATIONAL TECHNOLOGIES IN ENGINEERING (TKI'2018): Proceedings of the 15th Conference on Computational Technologies in Engineering, AIP Conference Proceedings ISBN: 978-0-7354-1806-6, 2019 vol. 2078, s. 020014-1 - 020014-8 (WoS) (Pkt. MNiSW = 15) 4. Szymczyk P.: Z-transform artificial neural networks, Neurocomputing ; ISSN 0925-2312. - 2015 vol. 168, s. 1207-1210. (LF) (IF2014 2.083) (Pkt. MNiSW = 30) 5. Szymczyk P., Szymczyk M.: Classification of geological structure using ground penetrating radar and Laplace transform artificial neural networks, Neurocomputing ; ISSN 0925-2312. - 2015 vol. 148, s. 354-362. (LF) (IF2014 2.083) (Pkt. MNiSW = 30) 6. Szymczyk P., Szymczyk M.: Supervised learning Laplace transform artificial neural networks and using it for automatic classification of geological structure, Neurocomputing ; ISSN 0925-2312. - 2015 vol. 154, s. 70-76. (LF) (IF2014 2.083) (Pkt. MNiSW = 30) 7. Szymczyk P., Szymczyk M.: Non-destructive building investigation through analysis of GPR signal by S-transform, Automation in Construction ; ISSN 0926-5805. - 2015 vol. 55, s. 35-46. (LF) (IF2014 1.812) (Pkt. MNiSW = 40) 8. Szymczyk P., Tomecka-Suchoń S., Szymczyk M.: Neural networks as a tool for georadar data processing, Int. J. Appl. Math. Comput. Sci., 2015, Vol. 25, No. 4, 955-960; ISSN: 1641-876X (print), 2083-8492 (online) (IF2014 1,227) (Pkt. MNiSW = 25)
Publications statistics:	**Google Scholar:** Publications: 86, Citations: 181, H-index: 8

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10

Other[4]

Work experience at research institutions

Data (from – to)	Institution	Position	Activities and responsibilities
From 01.10.2021	AGH University of Science and Technology, The Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering, Department of Automatics and Biomedical Engineering	professor	Research in the field of automatics and computer science
01.10.1997 30.09.2021	AGH University of Science and Technology, The Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering, Department of Automatics and Biomedical Engineering	Assistant professor (adiunkt)	Research in the field of automatics and computer science
2005 - 2008	Bielsko-Biała School of Banking and Finances Faculty of Banking and Finances Department of Informatics and Quantity Methods	Head of the Department	Managing the department

Project management:

- Analiza cyfrowych danych georadarowych przy użyciu komputerowego przetwarzania i rozpoznawania obrazów dla oceny stanu technicznego wałów przeciwpowodziowych oraz wykrywania niebezpiecznych zmian w strefach przypowierzchniowych ośrodka geologicznego (Analysis of digital ground-penetrating radar data using computer processing and image recognition for the evaluation of technical conditions of river embankments and detecting of dangerous changes in near-surface zones of geological medium.) (NCN - no UMO-2011/01/B/ST7/06178)

Participation in projects:

- Inteligentne, energooszczędne systemy sterowania orientowanymi systemami solarnymi (Smart, energy-efficient systems controlled by oriented solar systems) (NCN – no 6693/B/T02/2011/40)
- System inteligentnego monitoringu przestrzeni i obiektów szczególnego znaczenia – SIMPOZ (Intelligent surveillance system for monitoring of important public spaces and buildings – SIMPOZ) (MNiSW no 0128/R/t00/2010/12)

Teaching – selected regular courses:

- Systemy operacyjne czasu rzeczywistego (Real Time Operating Systems)
- Podstawy użytkowania systemów operacyjnych (The basic use of operating systems)
- Komputerowe systemy sterujące (Computer control systems)

[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

15.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Zbisław Tabor** / 1970
Title (year degree obtained) / Prof. status	Ph. D. Physics (1999) / research scientist DSc. Biocybernetics and Biomedical Engineering (2011) / associate professor Professor in technical sciences (2018)
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland ztabor@agh.edu.pl ORCID: 0000-0002-9688-9718
Area of expertise[2]	image analysis physics in medicine
Relevant (best) publications[3]	M. Baran, **Z. Tabor**, M. Tulik, D. Kabat, K. Rzecki, T. Sośnicki, M. Waligórski: Are Gamma Passing Rate and Dose-Volume Histogram QA Metrics Correlated? Med. Phys. 2021 48: 4743-4753. **Z. Tabor**, D. Kabat, A. Waligórski: DeepBeam – A Machine Learning Framework For Tuning The Primary Electron Beam of The PRIMO Monte Carlo Software. Radiation Oncology 2021, 16:124. K. Rzecki, I. Kucybała, D. Gut, A. Jarosz, T. Nabagło, **Z. Tabor**, W. Wojciechowski: Fully automated algorithm for the detection of bone marrow oedema lesions in patients with axial spondyloarthritis – feasibility study. Biocybernetics and Biomedical Engineering 2021: 41: 833-853. M. Baran, D. Kabat, M. Tulik, K. Rzecki, T. Sośnicki, **Z. Tabor**: Statistical approach to the selection of the tolerances for distance to agreement improves the quality control of the dose delivery in radiotherapy. Physics in Medicine and Biology 2020, 65: 145004. I. Kucybała, **Z. Tabor**, S. Ciuk, R. Chrzan, A. Urbanik, W. Wojciechowski: A fast graph-based algorithm for automated segmentation of subcutaneous and visceral adipose tissue in 3D abdominal computed tomography images. Biocybernetics and Biomedical Engineering 2020 in print. I. Kucybała, **Z. Tabor**, J. Polak, A. Urbanik, W. Wojciechowski: The semi-automated algorithm for the detection of bone marrow oedema lesions in patients with axial spondyloarthritis . Rheumatology International 2020, 40: 625-633. M. Baran, K. Rzecki, D. Kabat, M. Tulik, A. Wydra, Z. Derda, A. Sochaczewska, **Z. Tabor**: A simulation-based method for evaluating geometric tests of a linac c-arm in quality control in radiotherapy. Journal of Applied Clinical Medical Physics 2019, 20: 133-142. M. Tulik, D. Kabat, M. Baran, R. Kycia, **Z. Tabor**: Use of statistical approaches to improve the quality control of the dose delivery in radiotherapy. Physics in Medicine and Biology 2019, 64: 145018.
Publications statistics:	**Google Scholar**: Publications: 114, Citations: 1066, H-index: 17

1 Organisation, street address, telephone, email, web page
2 With keywords characterising your field(-s) of expertise
3 Max. 10

Other[4]	*didactic responsibilities* Machine Learning Design and Analysis of Experiments Statistics *major grants* *Title: X-rAI: Diagnostic browser for radiology with computer aided engineering using Artificial Intelligence* Responsibility: leader at AGH Period: 2021-2022 Centre: AGH University of Science and Technology Funds*:* National Centre for Research and Development*, :POIR.01.01.01-00-1666/20* *Title: A reconfigurable detector for measuring the spatial distribution of radiation dose for applications in the preparation of individual patient treatment plans* Responsibility: managing committee member Period: 2019-2023 Centre: Cracow University of Technology *Funds:* Foundation for Polish Science*, POIR.04.04.00-00-15E5/18* Title: Phantom for exploitation tests of radiotherapeutic devices in teleradiotherapy Responsibility: project leader Period: 2017-2020 Centre: Cracow University of Technology Funds: National Centre for Research and Development, POIR.04.01.04-00-0014/16 Title: Research on spatial navigation methods in endoscopic diagnostics of the peripheral lung nodule Responsibility: project leader Period: 2015-2018 Centre: Cracow University of Technology Funds: National Centre for Research and Development, PBS3/A9/31/2015

[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

15.03.22

Qualifications of the individual for defining area of expertise

Name/ Birth year	**Ryszard Tadeusiewicz** / 1947
Title (year degree obtained) / Prof. status	Ph. D. EE. (1975) / research scientist DSc. (1980) / associate professor Professor (1993)
Address[1]	AGH University of Science and Technology, 30, Mickiewicza Ave. 30-059 Krakow, Poland phone: (+4812) 6172095 rtad@agh.edu.pl, http://www.agh.edu.pl/uczelnia/tad/
Area of expertise[2]	Biocybernetics / Biomedical Engineering, Automatic Control and Robotics
Relevant (best) publications[3]	1. Abdar M., Fahami M.A., Chakrabar- S., Khosravi A., Pławiak P., U Rajendra A,, Tadeusiewicz R., Nahavandi S.: BARF: A New Direct and Cross-based Binary Residual Feature Fusion with Uncertainty-Aware Module for Medical Image Classifica-on, Informa-on Science, vol. 577, pp. 353-378, 2021 2. Hammada M., Rajeshb K.N.V.P.S., Abdelateyc A., Abdard M., Zomorodit M., San Tano R., Acharya R.U., Pławiak J., Tadeusiewicz R., Fzadegang N.S., Khosravid A., Makarenkov V., Nahavandid S., EL-La-fl A.A.A., Pławiak P.: Automated detec-on of Shockable ECG signals: A Review, Informa-on Science, vol. 571, September 2021, pp. 580-604, 3. Behesh-Roui M., Zomorodi M., Sarvelaya- M., Abdar M., Noori H., Pławiak P., Tadeusiewicz R., Zhou X., Khosravi A., Nahavandi S., Acharya R.U.: A Novel Approach based on Genetic Algorithm to Speed up the Discovery of Classifica-on Rules on GPUs. Knowledge-Based Systems, Volume 231, 14 November 2021, 107419 4. Alqahtani S., Habib R., Zaffar M., Quraishi K.S., Altaf O., Irfan M., Glowacz A., Tadeusiewicz R., Huneif M.A., Abdulwahab A., Alduraibi S.K., Alshehri F., Alduraibi A.K., Almushay- Z.: Analyzing the Features Affec-ng the Performance of Teachers during Covid-19: A Mul-level Feature Selec-on, Electronics, 2021, vol. 10, issue 13, 1673, 5. Głowacz A., Tadeusiewicz R., Legutko S., Caesarendra W., Irfan M., Liu H., Brumercik F., Gutten M., Sulowicz M., Daviu J.A.A., Sarkodie-Gyan T., Fracz P., Xiang J.: Fault diagnosis of angle grinders and electric impact drills using acous-c signals, Applied Acoustics, No. 179, 2021, 108070, 6. Gondal A.U., Sadiq M.I., Ali T., Irfan M., Shaf A., Aamir M., Shoaib M., Glowacz A., Tadeusiewicz R., Kantoch E.: Real Time Mul-purpose Smart Waste Classification Model for Efficient Recycling in Smart Ci-es using Mul-layer Convolutional Neural Network, and Perceptron, Sensors 2021, vol. 21(14), 4916
Publications statistics:	**Scopus:** Publications: 244, Citations: 1887 H-index: 23 **Web of Science**: Publications: 228, Citations: 1565, H-index: 23
Other[4]	**Doctor Honoris Causa / Honorary Doctorate from 14 universities** • ANSTED University (Kuala Lumpur) – June 2001 • National Mining University of Ukraine (Dnepropetrovsk) – February 2002 • Czestochowa University of Technology (Czestochowa) – October 2002 • Wroclaw University of Technology (Wroclaw) – November 2002 • National University of Petrol and Gas (Ivano-Frankovsk) - November 2003

[1] Organisation, street address, telephone, email, web page
[2] With keywords characterising your field(-s) of expertise
[3] Max. 10
[4] List didactic, major grants, conference responsibilities, professional recognitions, memberships, journals, patents, etc.

- Kosice University of Technology (Kosice) – March 2005
- Lodz University of Technology (Lodz) – April 2005
- University of Zielona Gora (Zielona Gora) – June 2005
- Silesian University of Technology (Gliwice) – June 2005
- Pedagogical University (Krakow) – May 2008
- Economic University (Krakow) – May 2008
- Lublin University of Technology (Lublin) – May 2008
- Agricultural University (Krakow) – Mart 2015
- University of Science and Technology (Bydgoszcz) – February 2020

didactic responsibilities and service
1980 - 1998 to date, Lecturer at AGH-UST, "Biomedical signal processing", "Electronic medical equipment" etc.
1993 - to date, Lecturer at AGH-UST, "Artificial intelligence", "Pathological speech analysis", "Medical image processing" etc.
1980 - to date, AGH-UST, supervision of 76 PhD,
1998 – 2005 Rector of the AGH University of Science and Technology
2000 – 2015 President of the Polish Academy of Sciences, Krakow Branch
1995 – 2016 Head of the Automatic Control and Biomedical Engineering Institute

patents:
Tadeusiewicz R., Jabłoński M., Piłat A., Mikrut Z., Turnau A., Przybyło J.: System for Automatic Seed Scarification and Viability Assessment and Manner of Automatic Seed Scarification and Viability Assessment. Application to the Patent Office of the Republic of Poland No P-414 969, effective from 2015-11-29

Tadeusiewicz R., Jabłoński M., Mikrut Z., Przybyło J., Piłat A., Turnau A., Klocek J., Walczyk J., Tylek P., Juliszewski T., Kiełbasa P., Szczepaniak J., Adamczyk F., Frąckowiak P., Wąchalski G.: A system for automatic scarification and assessment of vitality of seeds and a method for automatic scarification and assessment of vitality of seeds, Application to the European Patent Office, EP15196982.1, 2015

member of Editorial Boards (selected):

- *Neurocomputing,* 1994-present
- *IEEE Transactions on Neural Networks,* 2004 – 2006
- *Applied Mathematics and Computer Science,* 1996 – present
- *Information Sciences,* 2016 – present
- *Archives of Civil and Mechanical Engineering,* 2004 – present
- *Automation in Construction,* 2005 – present
- *Archives of Mining Sciences,* 2015 – present
- *Biocybernetics and Biomedical Engineering,* 1996 – present

member of International Program Committees in over 50 International Scientific Conferences every year

reviewer of hundreds of grant proposals, journal and conference papers, Ph.D. dissertations as external reviewer