

Prospective supervisor's form

Name of the supervisor:

Academic title:

Orcid ID number: [https://orcid.org/0000-](https://orcid.org/0000-0001-6288-2908)

Faculty of

Gdańsk University of Technology Department of

Phone: +48

E-mail:

Personal web page: https://pg.edu.pl/48042b1dae_bozena.kostek; <http://audioakustyka.org/head-of-laboratory/>

Discipline:

Optional

Key words (obligatory four key words describing research interests / expertise):

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Bibliometric indicators

1. Number of journal publications in WoS/ Scopus

2. Citations excluding self-citations WoS Scopus

3. Hirsch index WoS Scopus

1. The number of PhD students who have graduated under your supervision:

2. The number of PhD students currently supervised:

a. within the current doctoral school

b. within doctoral studies (previous syst

3. Are you currently accepting new PhD students:

a. Polish Yes/No

b. Foreign Yes/No

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Research interests or topics offered for PhD research (no more than 2000 characters)ⁱⁱ

Research studies are carried out in the fields of: technical informatics, telecommunications, bioengineering, acoustics, audio engineering and multimedia.

The main scientific interest lies within the areas of audio signal analyzing and processing, i.e. speech processing (e.g., differentiation between native and non-native speakers, cross-language applications, discovering automatically accents); Music Information Retrieval, e.g., intelligent music processing and retrieval, recognition and music recommendation, social music recommendation systems; perception of hearing and vision applied to bio-engineering and medical informatics; biosignal such as e.g. EEG signal analyzing and processing; multimodal computer interfaces; studio technology, acoustical measurements, application of deep learning as well as classical machine learning methods to multimedia and related areas.

The research studies are designed to reinforce the applicability of the obtained results to speech and music processing areas well as medical informatics.

Examples of Ph.D. works carried on:

Musical Instrument Sound Separation Methods Supported by Artificial Neural Network Decision System;
 Objectivization of singing voice quality evaluation;
 Methods of Forming and Ranking Rhythmic Hypotheses in Musical Pieces ;
 Gesture-based system for sound mixing;
 Multi-Instrumental Automatic Recognition of Musical Genres;
 Automatic Mood Indexing of Music Excerpts based on Correlation between Subjective Evaluation and Feature Vector;
 Deep learning applied to speech classification;
 Reverberation Time of rectangular Rooms with Non-uniformly Distributed Absorption;
 Fuzzy logic applied to animation creation;
 Gaze-tracking system as a research support for visual and auditory correlation examination;
 Simulation of the hearing process of a person with a cochlear implant;
 Designing acoustic scattering elements using machine learning methods.

Funding or special equipment needed to carry out a PhD project ⁱⁱⁱ:

1. Is funding available for experimental work: *Yes/No/not needed*

2. Is the equipment needed to complete a PhD project
 available in your lab/department: *Yes/No/not needed*

Most important publications – no more than 5 published after 1.01.2018

| No | Authors/title/journal | Number of points according to the current list of the Ministry of Science and Higher Education | Publication year |
|----|--|--|------------------|
| 1. | Piotrowska M., Korvel G., Kostek B., Ciszewski T., Czyżewski A., Machine Learning-Based Analysis of English Lateral Allophones; Int. J. Appl. Math. Comput. Sci., 2019. | 100 | 2019 |
| 2. | Korzekwa D., Barra-Chicote R., Kostek B., Drugman T., Łajszczak M., Interpretable Deep Learning Model for the Detection and Reconstruction of Dysarthric Speech; Detekcja i rekonstrukcja mowy dyzartrycznej za pomocą uczenia głębokiego; INTERSPEECH 2019, Graz, Austria, DOI:10.21437/Interspeech.2019. | 140 | 2019 |

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| 3. | Browarczyk J., Kurowski A., Kostek B., Analyzing the Effectiveness of the Brain–Computer Interface for Task Discerning Based on Machine Learning, <i>Sensors</i> , 2020, 20, 2403; doi:10.3390/s20082403. | 100 | 2020 |
| 4. | Koszewski D., Kostek B., Musical Instrument Tagging Using Data Augmentation and Effective Noisy Data Processing, <i>Journal of the Audio Engineering Society</i> w, vol. 68, no. 1/2, 57 – 65, https://doi.org/10.17743/jaes.2019.0050 . | 70 | 2020 |
| 5. | Kurowski A., Mrozik K., Kostek B., Czyżewski A., Comparison of the effectiveness of automatic EEG signal class separation algorithms; <i>Journal of Intelligent & Fuzzy Systems</i> , pp. 1 - 7, 10.2019, DOI: 10.3233/JIFS-179360. | 70 | 2020 |

Most recent externally funded projects you were involved in – no more than 3

| No | Project title, the name of the Principal Investigator (PI) and the institution the project was carried out | Years | Role in the project ^{iv} |
|----|---|-----------|-----------------------------------|
| 1. | INSPACE - Innowacyjny system nagłośnieniowo-komunikacyjny, finansowany w ramach umowy: POIR.01.01.01-00-0089/17-00, NCBiR, PG, Gdańsk University of Technology | 2018-2020 | Co-I |
| 2. | Metody komunikacji człowiek-komputer do diagnozowania i stymulacji pacjentów z ciężkimi urazami mózgu - projekt finansowany przez Narodowe Centrum Nauki, umowa nr UMO-2014/15/B/ST7/04724, PG, Gdańsk University of Technology | 2015-2017 | R |
| 3. | Metodyka i technologia polimodalnej alofonicznej transkrypcji mowy - projekt finansowany przez Narodowe Centrum Nauki w ramach konkursu OPUS, nr umowy: UMO-2012/05/B/ST7/02151, PG, Gdańsk University of Technology | 2016-2018 | R |

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Additional relevant information – (no more than 1600 characters)^v

14 Ph. D. students graduated with honors. Moreover, my Ph.D. students received many prestigious awards, i.e., prize for young scientists received from the President of the Republic of Poland (2006); prize of the Prime Minister (2009; 2014); prize of the Minister of Science and Higher Education (2010); three 1st prizes of the Foundation for the Development of Radio Comm. and Multimedia Technologies (2005, 2013, 2016); scholarship funded by Lotos (2003), two scholarships by INTEL (2004); gold, silver and bronze medals obtained in the Student Design competitions at the Audio Eng. Soc. Conventions; gold, silver and bronze medals received in the Student Recording competitions at the Audio Engineering Society Conventions, Best paper conference awards: KES'2004, IEEE MCSS'2010, IEEE MCSS'2017, OSA'2008, OSA'2010, ISSET'2013, ISSET'2015, MISSI'2016, GAMBIT'2018, IEEE SPA'2017, IEEE SPA'2019, 1st and 2nd prizes in OSKA '2019; best paper award of the Polish Artificial Intelligence Society (2013), AES Foundation Grant (2014), Harman Scholar Educational Grant scholarship (2017), best paper award granted by the Polish Society for Theoretical and Applied Electrical Engineering (2016).

B. Kostek is a corresponding member of PAN, Fellow of the Audio Eng. Soc., Editor-in-Chief of the J. Audio Eng. Soc.; she got two prizes of the Prime Minister (individual and collaborative), the prize of the Polish Academy of Sciences, 32 prizes received for scientific achievements and education from the President of Gdańsk Univ. of Technology; Google Scholar: h 22, cyt. 2502, Semantic Scholar: 54.

ⁱ You may select up to two disciplines out of 12 disciplines represented in the Doctoral School

ⁱⁱ Observe the limit of not more than 2000 characters

ⁱⁱⁱ Leave only one answer

^{iv} Select the role in the project: PI stands for principal investigator (refers to the holder of an independent grant and the lead researcher for the grant project), Co-I for co-investigator (Co-I assists the principal investigator in the management and leadership of the research project), R for researcher

^v Add any other relevant information e.g. awards for PhD students whom you supervised (no more than 1600 characters)