

Prospective supervisor's form

Name o

Academic title:

Orcid ID number: [https://orcid.org/0000-](https://orcid.org/0000-0002-4918-9196)

Gdańsk University of Technology Faculty of

Department of

Phone: +48

E-mail:

Personal web page: [https://pg.edu.pl/](https://pg.edu.pl/82cbf6c40b_pawel.czarnul)

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 system)

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

High performance computing (HPC) systems, distributed systems, cluster computing, parallel and distributed processing, parallelization using multi-core and many-core CPUs, accelerators e.g. GPUs, coprocessors, hybrid CPU+GPU systems, grids, SOA, agent-based architectures, cloud systems, parallelization of (especially compute intensive) algorithms, optimization of algorithms, optimization of application execution with consideration of performance and energy consumption, application of HPC techniques/parallelization to application codes, artificial intelligence, artificial intelligence + HPC, multi-objective optimization, simulations, persistent memory/non-volatile RAM, multithreading, big data processing, large scale parallel systems, scientific and business oriented workflows/workflow applications, scheduling algorithms, data streaming applications, modeling performance, energy consumption and reliability of systems, IoT, mobile systems, volunteer computing, power capping in HPC systems, various applications that can benefit from parallelization e.g. crowd/weather/phenomena simulations, checkpointing, modeling and development of (parallel) software frameworks that hide parallelization details and offer a high-level and efficient programming APIs for selected classes of computations, computational complexity

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

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

Yes

2. Is the equipment needed to complete a PhD project

available in your lab/department: *Yes/No/not needed*

Yes

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.	Pawel Czarnul: Parallel Programming for Modern High Performance Computing Systems. Chapman and Hall/CRC Press/Taylor & Francis 2018, ISBN 9781138305953	200	2018
2.	Artur Malinowski, Pawel Czarnul: Multi-agent large-scale parallel crowd simulation with NVRAM-based distributed cache. J. Comput. Sci. 33: 83-94 (2019)	100	2019

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3.	<p>Marcin Knap, Pawel Czarnul: Performance evaluation of Unified Memory with prefetching and oversubscription for selected parallel CUDA applications on NVIDIA Pascal and Volta GPUs. The Journal of Supercomputing 75(11): 7625-7645 (2019)</p>	70	2019
4.			
5.			

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.	<p>Development of efficient implementation of a get_range function for a key value store, financed by Intel Technology Poland, performed at Gdańsk University of Technology</p>	2018-2019	PI
2.	<p>Optimization of persistent memory MPI I/O API and assessment of suitability of persistent memory for selected parallel applications, financed by Intel Technology Poland, performed at Gdańsk University of Technology</p>	2016-2017	PI
3.	<p>Modeling efficiency, reliability and power consumption of multilevel parallel HPC systems using CPUs and GPUs, financed by National Science Center (NCN)</p>	2013-2016	PI

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

Paweł Czarnul is an author of over 90 publications in the area of parallel and distributed processing, including HPC systems. Laureate of national (6) and international (3) prizes. He was a PI or participated in 16 research, didactic or organizational projects – national and international.

He is a member of Smart Specialisations of Pomerania region council in the area of „Interactive technologies in an environment saturated with information”, from 2016.

PhD theses supervised by Paweł Czarnul:

Artur Malinowski:

Applying byte-addressable NVRAM memory to increase the performance of selected parallel applications based on MPI I/O, 2019

https://mostwiedzy.pl/pl/publication/download/0/zastosowanie-bajtowo-adresowanej-pamieci-nvram-do-zwiekszenia-wydajnosci-wybranych-aplikacji-rownoole_202004030956039732671.pdf

Paweł Rościszewski:

Optimization of hybrid parallel application execution in heterogeneous high performance computing systems considering execution time and power consumption, 2018

<https://arxiv.org/pdf/1809.07611>

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)