Prospective supervisor's form

Name of the supervisor: Tomasz Stefański

Academic title: Dr hab. inż

Orcid ID number: https://orcid.org/0000 0002-3952-5731

Faculty of Electronics, Telecommunications and Informatics

Gdańsk University of Technology **Department of** Decision Systems and Robotics

Phone: **+48** 3486323

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Personal web page: https://pg.edu.pl/ 86e0a60b84_tomasz.stefanski

Discipline[i] control, electronic and electrical engineering none

Optional

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

electromagnetics

fractional-order systems

finite-difference time-domain methods

parallel processing

Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 28
2. Citations excluding self-citations WoS 84 Scopus 118
3. Hirsch index WoS 8 Scopus 10

1. The number of PhD students who have graduated under your supervision: 0
2. The number of PhD students currently supervised:
   a. within the current doctoral school 0
   b. within doctoral studies (previous system 0
3. Are you currently accepting new PhD students:
   a. Polish *Yes/No* Yes
   b. Foreign *Yes/No* Yes

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

Topics offered are as follows:

1/ New computing architectures based on FPGA technology, currently coprocessor of multiple precision arithmetic is developed which will support scientific-computing community in the future.

2/ Applications of the control engineering methods in electromagnetism, recently new circuit theory was developed from fractional-order electromagnetism which includes supercapacitors. Furthermore, new phenomena are investigated resulting from extension of Maxwell's equations with fractional-order derivatives.

3/ Electromagnetic cloaking, how make objects invisible and how to control electromagnetic field to obtain perfect invisibility.

4/ Stability testing, new tests are developed which allows one to evaluate stability of systems and computations.

5/ Artificial intelligence methods for various scientific and engineering problems.

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

1. Is funding available for experimental work: *Yes/No/not needed* — not needed
2. Is the equipment needed to complete a PhD project available in your lab/department: *Yes/No/not needed* — 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.	K. L. Tsakmakidis, Y. You, T. Stefański, and L. Shen, "Nonreciprocal cavities and the time-bandwidth limit: comment," OSA Optica (accepted, in print)	200	2020
2.	T. P. Stefański, J. Gulgowski, "Signal propagation in electromagnetic media described by fractional-order models," Communications in Nonlinear Science and Numerical Simulation, Volume 82, 2020, 105029	100	2020

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3.	T. P. Stefański, J.Gulgowski, "Electromagnetic-based derivation of fractional-order circuit theory," Communications in Nonlinear Science and Numerical Simulation, Volume 79, 2019, 104897	100	2019
4.	W. Kordalski, T. Stefański, D. Trofimowicz, "Time-and-frequency domain quasi-2d small-signal MOSFET models," Gdańsk: Wydawnictwo Politechniki Gdańskiej, 2019. ISBN 978-83-7348-773-4	80	2019
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 [i]
1.	Analysis of Large Scale Problems of Radiation and Scattering Enhanced by the Discrete Green's Function, T. Stefański, NCN	2013-2016	PI
2.	Advanced Simulation Methods for Electromagnetic Exposure Assessment, T. Stefański, FNP	2011-2013	PI
3.			PI

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

Rector's diploma (2018) for the publication contribution to the parameterization of the Faculty (A+).

Outstanding Paper Award at 24th International Conference Mixed Design of Integrated Circuits and Systems (MIXDES) 2017 for the paper entitled "FPGA Implementation of the Multiplication Operation in Multiple-Precision Arithmetic."

Outstanding Paper Award at 25th International Conference Mixed Design of Integrated Circuits and Systems (MIXDES) 2018 for the paper entitled "A New Approach to Stability Evaluation of Digital Filters."

[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)