

Prospective supervisor's form

Name of the supervisor: Leszek Jarzębowicz

Academic title: Ph.D., D.Sc., GUT Professor

Orcid ID number: <https://orcid.org/0000-0001-9710-1913>

Gdańsk University of Technology Faculty of Electrical and Control Engineering

Department of Electrified Transportation

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Discipline: control, electronic and electrical engineerin none

Optional

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

electric drives

electric vehicles

control algorithms

voltage modulation

Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 11 / 16

2. Citations excluding self-citations WoS 95 Scopus 117

3. Hirsch index WoS 8 Scopus 8

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 s 1

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

Prospective supervisor's research areas include: control and modeling of electric drives, diagnostics of railway vehicles, analysis of energy efficiency in electrified transport, and microprocessor implementation of control algorithms. His teaching interests focus on: electric vehicles, electrical engineering in transport, teleinformatics, and electromobility.

Precise topic of the Ph.D. thesis is to be settled after discussion and after obtaining some initial (simulation) results. However, the prospective supervisor is most interested in a project of a novel control method that:

- is dedicated for vehicles' Permanent Magnet Synchronous Motor (PMSM) drives;
- enables precise and fast control of motor's torque and flux;
- uses inverter's overmodulation and six-step operational modes;
- uses quasi-discrete motor modelling approach (recently proposed by the supervisor) combined with a Model Predictive Control (MPC) algorithm.

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.	Jarzewicz L., Quasi-discrete modelling of PMSM phase currents in drives with low switching-to-fundamental frequency ratio. IET Power Electronics, vol. 12, issue 12, pp. 3280-3285, 2019.	70	2019
2.			

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3.			
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.	Development of high reliability motor drives for next generation propulsion applications (DORNA); PI: Leszek Jarzebowicz; H2020-MSCA-RISE-2019; Gdansk University of Technology	2020-2024	PI
2.	Analysis of impact of motor model discretization on properties on torque and flux control in high-speed PMSM drive; PI: Leszek Jarzebowicz; 2018/02/X/ST7/00488; Gdansk University of Technology	2018-2019	PI
3.	Innovative solutions for optimizing operation of heating network - complex system for monitoring heat meters, climate controllers, temperature and pressure sensors, based on NarrowBand transmission and Internet of Things; PI: Piotr Partyka; ABARO	2017-2019	R

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

None

- 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)