

**Name of the advisor:** Rafał Szlapczyński

**Academic title:** PhD, DSc, Eng, associate professor

Orcid ID number: <https://orcid.org/0000-0002-5985-4006>

**Department of** Marine Mechatronics

**Faculty of** Ocean Engineering and Ship Technology

**Gdańsk University of Technology**

**Phone:** 58 347 2745

**E-mail:** rafal.szlapczynski@pg.edu.pl

**Personal web page:** [https://www.researchgate.net/profile/Rafal\\_Szlapczynski](https://www.researchgate.net/profile/Rafal_Szlapczynski)

**Discipline<sup>i</sup>** technical informatics and telecommunications; control, electronic and electrical engineering

**Bibliometric indicators**

1.	Number of journal publications in WoS/ Scopus	27 (WoS)/29 (Scopus)
2.	Citations (WoS/Scopus) excluding self-citations	239 (WoS)/285 (Scopus)
3.	Hirsch index (WoS/Scopus)	11(WoS)/11 (Scopus)
4.	Hirsch index in Google Scholar	13
5.	Citations in Google Scholar	534

1. The number of PhD students who have graduated under your supervision: 1 (an employee, not a student)
2. The number of PhD students currently supervised: 1 PhD student + 2 employees (assistants under my supervision)
3. Are you currently accepting new PhD students:
  - a. Polish Yes
  - b. Foreign Yes

**Research interests or topics offered for PhD research (no more than 2000 characters)<sup>ii</sup>**

Artificial Intelligence and optimisation:

1. Evolutionary Multi-objective Optimisation (EMO) and other Multi-objective Optimisation Meta-Heuristics
2. Preference-based approach to EMO and Multi-Criteria Decision Making (MCDM)

\*

AI methods and optimisation algorithms in marine transport, especially applied to autonomous ships

1. Routing, collision avoidance and control of Marine Autonomous Surface Ships (MASS)
2. Ship collision risk measures and methods of assessing or visualizing ship collision risk
3. Planning or determining collision avoidance manoeuvres
  - a) by means of deterministic algorithms (graph-based algorithms, maze routing algorithms etc.)
  - b) by means of AI-based meta-heuristics - evolutionary computation methods (evolutionary algorithms, genetic algorithms, ant colony algorithms etc.), other AI tools (neural networks, reinforcement learning etc.)
4. Ship Weather routing
  - a) by means of deterministic algorithms
  - b) by means of AI-based meta-heuristics
5. Applying various other AI tools and methods in related marine navigation problems (especially in solving optimisation tasks)

PhD Advisor form

**Funding or special equipment needed to carry out a PhD project<sup>iii</sup>:**

1. Is funding available for experimental work: Not applicable
2. Is the equipment needed to complete a PhD project available in your lab/department: Yes

**Most recent publications in WoS/SCOPUS journal – no more than 5 published after 1.01.2017**

No	Authors/title/journal	Journal IF/Quartile – for WoS and SNIP/ CiteScore for SCOPUS	Publication year
1.	Szłapczyński R., Krata P., Szłapczyńska J. / Ship domain applied to (...) / Ocean Engineering	WOS: 2.412, Q1 SCOPUS: 1.929 / 2.70	2018
2.	Szłapczyński R., Krata P. / Determining and visualizing safe motion parameters of a ship (...) / Ocean Engineering	WOS: 2.412, Q1 SCOPUS: 1.929 / 2.70	2018
3.	Szłapczyński R., Szłapczyńska J. / Review of ship safety domains: Models and applications / Ocean Engineering	WOS: 2.412, Q1 SCOPUS: 1.929 / 2.70	2017
4.	Szłapczyński R., Szłapczyńska J. / A method of determining and visualizing safe motion parameters of a (...) / Ocean Engineering	WOS: 2.412, Q1 SCOPUS: 1.929 / 2.70	2017
5.	Szłapczyński R., Krata P., Szłapczyńska J. / A Ship Domain-Based Method of Determining (...) / JOURNAL OF ADVANCED TRANSPORTATION	WOS: 1.382, Q3 SCOPUS: 0.747/ 1.39	2018

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

No	Project title, the name of the Princ. Investigator (PI) and the institution the project was carried out	Year awarded	Role in the project
1.	“Ship Routing Accounting for Changable Sea Conditions”, umowa: MARTERA-1/ROUTING/3/2018 (ERA-NET Cofund), Rafał Szłapczyński, Gdańsk University of Technology	2018	PI
2.	„Evolutionary sets of safe ship trajectories in solving collision situations at sea”, umowa: 1867/B/T02/2009/37 (KBN), Rafał Szłapczyński, Gdańsk University of Technology	2009	PI
3.	(Please fill in here)	(fill in)	Wybierz element.

## PhD Advisor form

### **Additional relevant information – (no more than 1600 characters)<sup>iv</sup>**

The doctoral dissertation prepared under my supervision by Marcin Łyczkowski has been nominated for the award of the Polish Navigational Forum (the results will be announced in April).

In general, I am interested in artificial intelligence (particularly soft computing) applied to wide array of technical problems. A PhD candidate might work on its own or may join young, multidisciplinary team, whose members graduated in computer science, robotics and ocean engineering. A new research topic may be related to our current or envisaged projects, but I am also open to any new ideas related to modelling and solving optimisation, prediction and classification problems. As for now, we have one ongoing grant project, two grant proposals in review and one more to be submitted this spring.

---

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

<sup>ii</sup> Observe the limit of not more than 300 words

<sup>iii</sup> Leave only one answer

<sup>iv</sup> Add any other relevant information eg. awards for PHD students whom you supervised (no more than 200 words)