

Prospective supervisor's form

Name of the supervisor: Marcin Kulawiak

Academic title: GUT Professor

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Gdańsk University of Technology Faculty of Electronics, Telecommunications and Informatics

Department of Geoinformatics

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Discipline: technical informatics and telecommunicator none

Optional

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

Web-GIS

visual analytics

remote sensing

hazard management

Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 29/30

2. Citations excluding self-citations WoS 141 Scopus 147

3. Hirsch index WoS 9 Scopus 9

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

I welcome PhD candidates interested in researching the world around them through dedicated algorithms, computer systems and applications. My work involves programming Geographic Information Systems (GIS), which are computer systems designed for processing geographic data of nautical, land and aerial origin. During my career I have realized several international R&D projects oriented around dynamic data dissemination and analysis by means of Desktop, Web as well as Mobile GIS. For prospective PhD candidates I can offer a selection of research subjects, including:

- Interactive multidimensional visualization of marine pollution data (eg. oil spill simulation data, underwater noise).
- Design of task-efficient GIS architectures (Desktop / Server / Mobile).
- Detection, monitoring, analysis and simulation of the coastal zone (eg. shoreline and bathymetry changes).
- Implementing algorithms for spatial data analysis according to the paradigms of Geovisual Analytics.
- Interpolation, multidimensional visualization and analysis of air quality monitoring data.
- Monitoring, mapping and analysis of infectious diseases.
- Flood mapping based on data fusion from optical sensors and SAR time series.
- Modeling distributed processes with the use of remote sensing (eg. detection of changes in estuary water levels by means of image classification; estimation of land surface parameters such as Leaf Area Index).

Prospective PhD researchers will be granted access to a satellite ground station, an airborne LiDAR scanner, a 3D printer, and a cluster of high-performance PC's. Moreover, if you are interested in researching the world through programming GIS applications, and you have your own ideas for a research subject, I am always open for discussion.

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.	Kulawiak, M., Dawidowicz, A. and Pacholczyk, M.E., 2019. Analysis of server-side and client-side Web-GIS data processing methods on the example of JTS and JSTS using open data from OSM and geoportal. <i>Computers & Geosciences</i> , 129, pp.26-37.	100	2019
2.	Kulawiak, M., Kulawiak, M. and Lubniewski, Z., 2019. Integration, Processing and Dissemination of LiDAR Data in a 3D Web-GIS. <i>ISPRS International Journal of Geo-Information</i> , 8(3), p.144.	70	2019

Prospective supervisor's form

3.	Dawidowicz, A. and Kulawiak, M., 2018. The potential of Web-GIS and geovisual analytics in the context of marine cadastre. Survey Review, 50(363), pp.501-512.	70	2018
4.	Kulawiak, M. and Chybicki, A., 2018. Application of Web-GIS and geovisual analytics to monitoring of seabed evolution in South Baltic Sea coastal areas. Marine Geodesy, 41(4), pp.405-426.	70	2018
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.	Development, testing, demonstration and dissemination of innovative Web-based Geographical Information System for threat monitoring, prediction, and risk analysis for the municipal area (Safe City GIS). European Space Agency.	2012-2014	PI
2.	HortiSat: Integrated satellite applications for high value horticultural production. European Space Agency.	2011-2013	Co-I
3.	Voice Maps: a Geographic Information System supporting the navigation of visually impaired in municipal areas. Polish Centre for Research and Development.	2010-2013	R

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

Distinguished Ph.D students will be eligible for international internships and research stays at partner universities in several European countries.

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)