



## ACADEMIC TEACHER PROFESSIONAL EXPERIENCE

### DOCTORAL SCHOOL OF WROCLAW UNIVERSITY OF SCIENCE AND TECHNOLOGY

#### 1. Basic information

Name, surname:	Krzysztof Walkowiak
Grade / Title:	Prof. dr hab. inż.
Scientific discipline	<b>informatyka techniczna i telekomunikacja / information and communication technology</b>
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Link to home page and/or research profiles (Google Scholar, ResearchGate, etc.)	<a href="https://www.kssk.pwr.edu.pl/users/walkowiak">https://www.kssk.pwr.edu.pl/users/walkowiak</a> <a href="https://scholar.google.com/citations?user=cnLc7u4AAAAJ&amp;hl=pl">https://scholar.google.com/citations?user=cnLc7u4AAAAJ&amp;hl=pl</a> <a href="https://www.researchgate.net/profile/Krzysztof-Walkowiak">https://www.researchgate.net/profile/Krzysztof-Walkowiak</a>

#### 2. Publication record

*Up to 10 most important papers published over the period of previous 10 years.*

No.	Description (authors, publication title, journal / conference, DOI)	Publication year
1.	Lechowicz P., Goścień R., Rumipamba-Zambrano R., Perello J., Spadaro S., Walkowiak K., Greenfield Gradual Migration Planning toward Spectrally-Spatially Flexible Optical Networks, IEEE Communications Magazine, Vol. 57, No. 10, pp. 14-19, 2019	2019
2.	Klinkowski M., Walkowiak K., On Advantages of Elastic Optical Networks for Provisioning of Cloud Computing Traffic, IEEE Network, Vol. 27, No. 6, pp. 44-51, 2013	2013
3.	Goścień R., Walkowiak K., Klinkowski M., Rak J., Protection in Elastic Optical Networks, IEEE Network, Vol. 29, No. 6, pp. 88-96, 2015	2015
4.	Walkowiak K., Lechowicz P., Klinkowski M., Dynamic Routing in Spectrally-Spatially Flexible Optical Networks with Back-to-Back Regeneration, IEEE/OSA Journal of Optical Communications and Networking, Vol. 10, No. 5, pp. 523-534, 2018	2018
5.	Knapińska A., Lechowicz P., Węgier W., Walkowiak K., Long-term prediction of multiple types of time-varying network traffic using chunk-based ensemble learning, Applied Soft Computing, Vol. 130, 2022	2022
6.	Klinkowski M., Lechowicz P., Walkowiak K., Survey of resource allocation schemes and algorithms in spectrally-spatially flexible optical networking, <i>Optical Switching and Networking</i> , Vol. 27, No. 1, pp. 58-78, 2018	2018
7.	Przewoźniczek M., Walkowiak K., Sen A., Lechowicz P., Komarnicki M., Splitting the fitness and penalty factor for temporal diversity increase in practical problem solving, Expert Systems with Applications, Vol. 145, 2020	2020
8.	Przewoźniczek M., Walkowiak K., Aibin M., The Evolutionary Cost Of Baldwin Effect in the Routing And Spectrum Allocation Problem in Elastic Optical Networks, Applied Soft Computing, vol. 52, pp. 843-862, 2017	2017



9.	Klinkowski M., Ksieniewicz P., Jaworski M., Zalewski G., Walkowiak K., Machine Learning Assisted Optimization of Dynamic Crosstalk-Aware Spectrally-Spatially Flexible Optical Networks, IEEE Journal of Lightwave Technology, Vol. 38, No. 7, pp. 1625-1635, 2020	2020
10.	Goścień R., Walkowiak K., Klinkowski M., Distance-adaptive transmission in cloud-ready elastic optical networks, IEEE/OSA Journal of Optical Communications and Networking, Vol. 6, No. 10, pp. 816-828, 2014	2014

### 3. Projects and grants

List of the most important 5 projects/grants with basic description including: title, source(s) of funding, name of the call, role in the project (e.g., principal investigator).

1.	Role in the project (e.g., principal investigator, work package leader, etc.)	principal investigator
	Project title	"Algorithms for Optimization of Flows and Channel Capacity in Network Distributed Systems"
	Sources of funding	Polish Ministry of Science and Higher Education
	Name of the call	
	Implementation period	2008-2021
2.	Role in the project (e.g., principal investigator, work package leader, etc.)	principal investigator
	Project title	"Algorithms for optimization of routing and spectrum allocation in content oriented elastic optical networks"
	Sources of funding	National Science Centre Poland
	Name of the call	OPUS
	Implementation period	2013-2016
3.	Role in the project (e.g., principal investigator, work package leader, etc.)	principal investigator
	Project title	"Advanced methods for optimization of optical networks with spatial flexibility"
	Sources of funding	National Science Centre Poland
	Name of the call	OPUS
	Implementation period	2016-2019
4.	Role in the project (e.g., principal investigator, work package leader, etc.)	principal investigator
	Project title	"Optimization of cognitive optical networks"
	Sources of funding	National Science Centre Poland
	Name of the call	OPUS
	Implementation period	2018-2022
5.	Role in the project (e.g., principal investigator, work package leader, etc.)	principal investigator
	Project title	"Advanced methods for optimization of multilayer application-aware networks"
	Sources of funding	National Science Centre Poland



Name of the call	OPUS
Implementation period	2020-2024

#### 4. International experience

*Brief description of international cooperation and experience (e.g., research stays, cooperation with foreign entities, coordination or participation in international projects or programmes, keynote speeches and presentations delivered at renowned international conferences, visiting professor stays, invited lectures).*

No.	Description	Year(s)
1.	Invited talk at School of Computing Science, University of Newcastle upon Tyne, UK in colloquia series on the topic of "New Challenges in Network Optimization - P2P-based Systems"	2009
2.	Invited talk at The Vienna University of Technology (TU Vienna), Austria in FTW Telekom Forum series, "Modeling and Optimization of Network Flows in P2P-based Systems"	2009
3.	Invited talk at the RWTH Aachen University, Germany on the topic of "Modeling and optimization of survivable P2P multicasting"	2010
4.	Keynote lecture "Content Delivery Networking: Modeling, Optimization and Survivability" at conference ICUMT 2011, Budapest, Hungary	2011
5.	Keynote lecture "Survivable Content-Oriented Networks – Modeling and Optimization" at conference 4th International Workshop on Reliable Networks Design and Modeling RNDM 2012, St Petersburg, Russia	2012
6.	Tutorial „Flow and Capacity Design in Content-Oriented Networks" at conference Networks 2012, Rome, Italy	2012
7.	Tutorial on the topic of "Metaheuristic Algorithms for Optimization of Content-Oriented and Cloud Computing Networks" at the Second International Cybernetics Summer School (CSS 2013), Technical University of Ostrava, Ostrava, Czech Republic	2013
8.	Invited talk at Department of Computer Architecture, Universitat Politècnica de Catalunya (UPC), Barcelona, Spain, on the topic of "Optimization of Elastic Optical Networks for Content-Oriented Networks and Cloud Computing"	2013
9.	Keynote lecture at IBICA 2013 – The 4th International Conference on Innovations in Bio-Inspired Computing and Applications, Ostrava, Czech Republic, „Recent Trends in Communication Networks"	2013
10.	Visiting professor and invited talk at Department of Electronics and Information, Politecnico di Milano, Milan, Italy, on the topic of "Optimization of Cloud-Ready and Content-Oriented Elastic Optical Networks"	2014
11.	Invited talk at Post-OFC Workshop, UC Davis, CA, USA, on the topic of "Metaheuristic Algorithms for Optimization of Elastic Optical Networks"	2014
12.	Invited talk at Chair of Communication Networks, Institute of Computer Science, University of Wuerzburg, Germany, on the topic of "Design and Evaluation of Elastic Optical Networks for Inter-Data Center Traffic"	2014
13.	Tutorial on the topic of "Optimization Strategies and Modelling of Networks" at the Summer School for Master and PhD Students on NFV meets Big Data, April 8th - April 15th 2015 in University of Wuerzburg, Germany.	2015
14.	Invited lecture in School of Computing, Informatics and Decision Systems Engineering, Arizona State University (ASU), Tempe, Arizona, USA „Various Approaches for Optimization of Elastic Optical Networks"	2016



15.	Invited lecture in School of Engineering Science at Simon Fraser University (SFU), Vancouver, British Columbia, Canada, „How to cope with the capacity crunch – new challenges in optical networks”	2016
16.	Invited lecture in Soochow University, Suzhou, China, “How to solve the Internet capacity crunch – new challenges in optical networks”	2016
17.	Tutorial on the topic of “Spectrally-spatially flexible optical networks: technology and optimization”, 9th International Conference on Networks of the Future NoF 2018 in Poznan, Poland	2018
18.	Invited talk at Post-OFC Workshop, UC Davis, CA, USA, on the topic of “Optimization of Spectrally-Spatially Flexible Optical Networks with Back-to-Back Regeneration”	2019

## 5. Experience in teaching doctoral students

*Brief description of experience in teaching doctoral students (e.g., courses in doctoral schools and PhD studies, summer/winter schools for doctoral students, tutorials, trainings, etc.).*

No.	Description	Year(s)
1.	Developing and conducting course for doctoral students “Practical aspects of research work and scientific achievements presentation” (30h)	2015-2019
2.	Developing and conducting course for doctoral students “Research skills” (30h)	2020-2023
3.	Developing and conducting part of course for doctoral students “The latest research directions in information and communication technology” (6h)	2021-2023
4.	31 reviews of doctoral dissertations (Poland, Italy, Spain, Ireland, USA, India)	2009-2023
5.	Tutorial „Flow and Capacity Design in Content-Oriented Networks” at conference Networks 2012, Rome, Italy	2012
6.	Tutorial on the topic of “Metaheuristic Algorithms for Optimization of Content-Oriented and Cloud Computing Networks” at the Second International Cybernetics Summer School (CSS 2013), Technical University of Ostrava, Ostrava, Czech Republic	2013
7.	Tutorial on the topic of “Optimization Strategies and Modelling of Networks” at the Summer School for Master and PhD Students on NFV meets Big Data, April 8th - April 15th 2015 in University of Wuerzburg, Germany.	2015
8.	Tutorial on the topic of “Spectrally-spatially flexible optical networks: technology and optimization”, 9th International Conference on Networks of the Future NoF 2018 in Poznan, Poland	2018
9.	Director of Ph.D. Studies, Faculty of Electronics, Wrocław University of Science and Technology	2013-2021
10.	Director of Ph.D. Studies, Faculty of Information and Communication Technology, Wrocław University of Science and Technology	2021-2024
11.	Vice-dean of Doctoral School of Wrocław University of Science and Technology	2019-2020
12.	Dean of Doctoral School of Wrocław University of Science and Technology	2020-2024

## 6. List of supervised doctoral students

*List of all supervised doctoral students that defended the PhD including: name of the student, dissertation title, year of awarding PhD.*



No.	Name, surname	Dissertation title	Year of awarding PhD
1.	Grzegorz Chmaj	Modeling and optimization of P2P computing systems	2010
2.	Adam Smutnicki	Optimization of survivable networks based on p-Cycles	2012
3.	Agnieszka Rudek	Scheduling problems with the aging effect and maintenance cost – algorithms and complexity	2014
4.	Maciej Szostak	Joint optimization of flow and capacity in survivable multicast systems	2014
5.	Wojciech Kmiecik	Joint optimization of flow and capacity in survivable multicast systems	2015
6.	Michał Kucharzak	Modeling and optimization of flows in P2P systems	2016
7.	Róża Goścień	Optimization algorithms for survivable elastic optical networks	2016
8.	Michał Aibin	Dynamic algorithms for optimization of elastic optical networks	2017
9.	Piotr Lechowicz	Algorithms for Flow Assignment and Resource Allocation in Spectrally-Spatially Flexible Optical Networks	2019
10.	Daniel Szostak	Machine learning for traffic prediction in optical networks	2023

## 7. Prizes and awards

*The most important national and international prizes and awards related to research, development and teaching activities.*

No.	Description	Year
1.	Best Paper Award of DRCN 2009, The 7th International Workshop on the Design of Reliable Communication Networks, (Washington, USA, October 25-28, 2009) for paper: "Survivability of P2P Multicasting"	2009
2.	Best Paper Award of AP2PS 2010, The Second International Conference on Advances in P2P Systems, (Florence, Italy, October 25-30, 2010), for paper: "Optimization of Flows in Level-Constrained Multiple Trees for P2P Multicast System"	2010
3.	National Education Committee Medal	2011
4.	Award in 2011 Smarter Planet Innovation Award - Smarter Communication. Sponsored by the IBM Academic Initiative	2011
5.	Fabio Neri Best Paper Award 2014 in Elsevier Journal of Optical Switching and Networking for paper "Routing and Spectrum Allocation Algorithms for Elastic Optical Networks with Dedicated Path Protection"	2014
6.	Best Paper Award of RNDM 2015, 7th International Workshop on Reliable Networks Design and Modeling, (Munich, Germany, October, 5-7, 2015) for paper: "Comparison of Different Data Center Location Policies in Survivable Elastic Optical Networks"	2015
7.	Wrocław University of Science and Technology scholarship for best researchers	2017



8.	Docendo Discimus Award by Rector of Wrocław University of Science and Technology	2020
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## 8. Other significant achievements

*Information on other significant achievements related to research, development and teaching activities.*

Short Term Scientific Mission (STSM) Manager of COST Action CA15127 “RECODIS - Resilient communication services protecting end-user applications from disaster-based failures”, 2016-2020  
Leader of project “Internationalisation of Wrocław University of Science and Technology Doctoral School”, NAWA STER – Internationalisation of doctoral schools, 2021-2023