



Subject card

Subject name and code	Image Processing in Robotics, PG_00064529						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2024/2025		
Education level	second-cycle studies		Subject group		Optional subject group Specialty subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Decision Systems and Robotics -> Faculty of Electronics Telecommunications and Informatics -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Krzysztof Oliński				
	Teachers		dr inż. Krzysztof Oliński				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		4.0		16.0	50
Subject objectives	The participants should learn about the process of image acquisition from a video camera, all the problems connected with a proper image acquisition for image processing. Students should know the algorithms of image transformation, filtration, feature detection (image descriptors) and image processing algorithms used in industrial robotic systems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K02] is ready to provide critical evaluation of received content and to acknowledge the importance of knowledge in solving cognitive and practical problems		The student is able to modify appropriate algorithms in order to implement a vision system with given properties.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W01] knows and understands, to an increased extent, mathematics to the extent necessary to formulate and solve complex issues related to the field of study		Student knows and understands the mathematical foundations of image processing algorithms used in robotics.		[SW1] Assessment of factual knowledge		
	[K7_W03] knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum		Student understands the principles of operation of image processing systems in robotics.		[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
Subject contents	The content of the subject includes problems of video image perception and acquisition, recording and methods of image processing for robotic applications. Processing concerns stereovision images as well as single image. The prospects of applying processing algorithms are discussed for industrial and mobile robots.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	100.0%
Recommended reading	Basic literature	Davies E.R. (2012), <i>Computer and Machine Vision: Theory, Algorithms, Practicalities</i> , Elsevier 2005	
	Supplementary literature	Gonzalez R. C. Woods R. E., Digital Image Processing (3rd Edition), Prentice Hall 2008	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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