GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Image Processing in Robotics, PG_00064550		
Field of study	Automatic Control, Cybernetics and Robotics		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2025/2026
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_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_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 defined properties.	[SK5] Assessment of ability to solve problems that arise in practice
[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 procpects of applying processing algorithms are discussed for industrial and mobile robots.

Prerequisites and co-requisites

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Exam</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Davies E.R. (2012), Computer and Machine Vision: Theory, Algorithms, Practicalities, Elsevier 2005</td></tr>
<tr><td>Supplementary literature</td><td>Gonzalez R. C. Woods R. E., Digital Image Processing (3rd Edition), Prentince Hall 2008</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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