

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Multimedia processing, PG_00031931							
Field of study	Technical Physics							
Date of commencement of studies	February 2024		Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies		Subject group			Optional 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			3.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Katedra Fizyki Teoretycznej i Informatyki Kwant> Faculty Of Applied Physics And Mathematics -> Wydziały Politechniki Gdańskiej							
Name and surname	Subject supervisor		dr inż. Marcin					
of lecturer (lecturers)	Teachers		dr inż. Marcin Nowakowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0		0.0	45
	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	45		5.0		25.0		75
Subject objectives	The main goal of the course is to introduce student into the field of multimedia processing especially based on digital images and video. During the course students will be able to basic and intermediate concepts of image processing, data compression (including images and video) and content based image processing.							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	[K7_W04] Has enhanced knowledge of mathematical, numerical and simulation methods applied in the description and modelling of physical phenomena.		Student can fluently move in the field of multimedia processing and can apply basic methods and algorithms.			[SW1] Assessment of factual knowledge		
	[K7_U05] Can plan and conduct theoretical calculations, experimental research and computer simulations, critically analyze their results, draw conclusions and form reasoned opinions.		Student is able to independently choose the right method to solve posed problem.Student is able to implement basic algorithms in programming languages.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		

Subject contents	nts 1. Statistical description of digital images and video streams.						
	 Digital image processing: algebraic operations, histogram based operations, piecewise functions, point operations 						
	3. Scalar and vector quantization						
	4. Introduction do data mining and content based image retrieval						
	5. Context operations. Image filters.						
	6. Multimedia compression: Huffmann coding, dictionary methods, special methods, RLE, JPEG.						
	7. Vector filters.						
Prerequisites and co-requisites	1. Students have competence in computer programming (at least one language including programming in mathematical packages)						
	2. Student knows basic notions in the field of statistics.						
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria	Total score lecture + lab	51.0%	100.0%				
Recommended reading	Basic literature	1. R. C. Gonzalez, R. E. Woods, Digital Image Processing, Prentice Hall, 2007					
		2. A. Przelaskowski, Kompresja danych obrazowych, BTC, 2005					
		ne, skrypt do wykładu, ach www przedmiotu					
	Supplementary literature	1. K. Sayood, Introduction to Data Compression, Morgan Kaufmann, 2012					
	eResources addresses	s Adresy na platformie eNauczanie:					
Example issues/ example questions/ tasks being completed		·					
Work placement	Not applicable						

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