GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Human machine interaction methods, PG_00053331		
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering		
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	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Tomasz Kocejko	
	Teachers	dr inż. Tomasz Kocejko	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	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	50.0	100

Subject objectives	To introduce students to the principles of Human-Machine interaction and interface design. To introduce students to basic techniques used for human-computer and human-machine interaction. To introduce the trend of changes in technology connected with new interfaces as well as with the use of artificial intelligence in human-machine and human-computer interfaces. To teach students design assumptions and rapid prototyping techniques for effective human-computer interfaces

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W05] Knows and understands, to an increased extent, methods of process and function support, specific to the field of study.		[SW1] Assessment of factual knowledge
[K7_U03] can design, according to required specifications, and make a complex device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment		[SU4] Assessment of ability to use methods and tools
[K7_K02] is ready to provide critical evaluation of received content and to acknowledge the importance of knowledge in solving cognitive and practical problems		[SK2] Assessment of progress of work
[K7_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of advanced technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment		[SU4] Assessment of ability to use methods and tools

Subject contents

Interface prototyping methods
Interface evaluation methods
The role of AI in human-machine interaction
Methods of data acquisition and processing for human-machine and human-computer interaction
Use of gestures in human-computer interaction
Posture estimation methods for human-computer, human-machine interaction
Face and emotion detection
Hybrid interfaces

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	60.0%	50.0%
	60.0%	50.0%

Recommended reading

Basic literature	1. Rogers, Yvonne, Helen Sharp, and Jenny Preece. *Interaction design: beyond human-computer interaction*. John Wiley & Sons, 2011.2. Bush, Vannevar. "As we may think." *The atlantic monthly* 176.1 (1945): 101-108.3. Allen, James F., et al. "Toward conversational human-computer interaction." *AI magazine* 22.4 (2001): 27-27.4. Zhang, Kaipeng, et al. "Joint face detection and alignment using multitask cascaded convolutional networks." *IEEE Signal Processing Letters* 23.10 (2016): 1499-1503.5. Biocybernetyka i Inżynieria Biomedyczna,Akademicka Oficyna Wydawnicza Exit, Warszawa 2000, tom 1, tom 7, tom 8
Supplementary literature	1. Moggridge, Bill, and Bill Atkinson. *Designing interactions*. Vol. 17. Cambridge, MA: MIT press, 2007.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Static gestures based interaction design and prototyping

Work placement

Not applicable