GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00042366		
Field of study	Automation, Robotics and Control Systems		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
Education level	second-cycle studies	Subject group	
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Controlled Electric Drives -> Faculty of Electrical and Control Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Daniel Wachowiak	
	Teachers	dr inż. Daniel Wachowiak	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	0.0	10.0	0.0	0.0	20

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	20	20.0	85.0	125

Subject objectives

The goal of the subject is to familiarize students with algorithms used in data mining.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_U04	Students can find uses of data mining in fields of automatic control and robotics.	[SU5] Assessment of ability to present the results of task
K7_W11	Students can create or use existing tools to process data and implement this in advanced control systems.	[SW1] Assessment of factual knowledge
K7_W06	Students can create or use existing tools to process data and implement this in advanced control systems.	[SW3] Assessment of knowledge contained in written work and projects
K7_W07	Students are aware of dangers of abuse of usage of data mining techniques	[SW2] Assessment of knowledge contained in presentation

Subject contents

- Introduction to data mining and usage of data mining in the industry.

- Algorithms for finding binary association rules.

- Algorithms for finding multilevel and multidimensional association rules.

- Introduction to data classification algorithms. Forming decision trees using Gini Index and Information gain splits.

- Introduction to clustering methods. K-means algorithm.

- Introduction to data mining tools

<table>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td></td><td>60.0%</td><td>50.0%</td></tr>
<tr><td></td><td>60.0%</td><td>50.0%</td></tr>
</table>
</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Morzy T.: Eksploracja danych, Wydawnictwo Naukowe PWN, Warszawa 2013.
2. Osowski S.: Metody i narzędzia eksploracji danych, Wydawnictwo BTC, Legionowo 2013.</td></tr>
<tr><td>Supplementary literature</td><td>1. Witten I. H., Frank E.: Data Mining: Practical Machine Learning Tools and Techniques, Second Edition, Morgan Kaufmann Publishers, 2005.
2. Han J., Kamber M., Pei J.: Data Mining Concepts and Techniques, Third Edition, Morgan Kaufmann Publishers, 2012</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">1. Find groups of products that commonly appear together in shopping baskets
2. Based on patients casebooks determine illness symptoms
3. Propose a classifier to determine a risk of car owner causing a damage based on data from insurance company
4. Find text documents that relate to similar subjects</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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