GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Knowledge Discovery and Recommendation Systems, PG_00063918		
Field of study	Informatics		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2026/2027
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	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Software Engineering -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Aleksandra Karpus	
	Teachers	dr inż. Aleksandra Karpus	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	15.0	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	8.0	47.0	100

Subject objectives

The aim of the course is to acquire knowledge and skills in the field of Knowledge Discovery and Recommender Systems as well as metrics and methods for the verification and validation of algorithms.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W10] knows and understands, to an increased extent, the basic processes occurring in the life cycle of equipment, objects and technical systems, as well as methods of supporting processes and functions, specific to the field of study	The student knows different recommendation algorithms.	[SW1] Assessment of factual knowledge
[K7_W101] is able to make an in-depth identification of key objects and phenomena related to the field of study, as well as theories that describe them and applicable analytical and design methods	The student has knowledge of broadly understood data analysis including time series analysis and social network analysis. The student understands the role of known methods in application of anomaly detection as well as in the process of items recommendation.	[SW1] Assessment of factual knowledge
[K7_U12] is able, to an increased extent, to analyze the operation of components and systems related to the field of study, as well as to measure their parameters and study their technical characteristics, and to plan and carry out experiments related to the field of study, including computer simulations, interpret the obtained results and draw conclusions	The student is able to plan a research experiment related to Knowledge Dicsovery and Recommender Systems. Student can select a data and parameters as well as model evaluation measures, interpret the results as well as introduce changes to the experiment or the developed model.	[SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>Course content – lecture
• Basics of data mining
• Time series analysis
• Definition and types of recommendation systems
• User modeling
• Networks and recommendations in networks
• Evaluation of recommendation systems
• Application of deep learning methods in recommendation systems</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>• Knowledge of the basics of linear algebra, mathematical analysis and the theory of probability.
• Programming skills in Python.
• Programming skills in R.
• Ability to use scientific literature.</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>Project</td><td>51.0%</td><td>30.0%</td></tr>
<tr><td>Lecture</td><td>51.0%</td><td>40.0%</td></tr>
<tr><td>Laboratory</td><td>51.0%</td><td>30.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>1. Francesco Ricci, Lior Rokach, Bracha Shapira, and Paul B. Kantor. 2010. Recommender Systems Handbook (1st. ed.). Springer-Verlag, Berlin, Heidelberg
2. Dietmar Jannach, Markus Zanker, Alexander Felfernig, and Gerhard Friedrich. 2010. Recommender Systems: An Introduction (1st. ed.). Cambridge University Press, USA.
3. John P. Scott. 2017. Social Network Analysis. 4th Edition. Sage Publications Ltd.</td></tr>
<tr><td>Supplementary literature</td><td>Charu C. Aggarwal. 2016. Recommender Systems: The Textbook (1st. ed.). Springer Publishing Company, Incorporated.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Analyze the given time series.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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