University of Gdańsk

Subject card

Subject name and code	Machine Learning, PG_00157400		
Field of study	Information Science and Econometrics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	postgraduate 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	2	Language of instruction	English
Semester of study	4	ECTS credits	5.0
Learning profile	academic	Assessment form	
Conducting unit	Katedra Informatyki Ekonomicznej -> Faculty of Management		
Name and surname of lecturer (lecturers)	Subject supervisor	mgr inż. Dawid Jereczek	
	Teachers		

Lesson types	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	20.0	60.0	125

Subject objectives	The aim of the course is to introduce students to the basic concepts and techniques related to machine learning, which are widely used in various fields of computer science. Students will acquire skills in designing, implementing and evaluating learning models using a variety of algorithms and tools. The aim of the course is to develop competences in data analysis and the application of machine learning to solve practical problems such as prediction, classification or pattern recognition.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[IiEMU2_U04] The student is able to plan, design, and program information systems at an advanced level, supporting the operation of business entities.	The student is able to indicate the role of artificial intelligence in making strategic decisions, automating tasks and building a competitive advantage on the market.	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU6] demonstration of practical skills
[IiEMU2_U02] The student is able to proficiently acquire detailed information about economic processes and phenomena through direct observation, planned experimentation or database queries, as well as collect and process it using modern information technology tools.	The student is able to use elements of artificial intelligence in practice to solve a simple problem task.	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU6] demonstration of practical skills
[IiEMU2_K05] The student can think and act in an entrepreneurial manner and flexibly adapt to changing environmental conditions. Thinks creatively and can go beyond the usual patterns.	The student is aware of the key role played by artificial intelligence in making strategic decisions, automating tasks and building a competitive advantage on the market.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report
[IiEMU2_W02] The student has an in-depth knowledge of economic structures and institutions, the processes taking place in them, the connections between them and their dynamics, and has an in-depth knowledge of the phenomena and processes taking place in their environment.	the student understands the importance of artificial intelligence, including machine learning, in the functioning of a modern enterprise. is able to assess how AI affects the optimization of business processes, personalization of marketing activities and improvement of management efficiency.	[SW1] oral statement/ conversation/discussion

Subject contents

. Definitions of artificial intelligence (AI). Objectives of artificial intelligence. Natural vs. artificial AI.2. Threats associated with artificial intelligence. Requirements for creating and using artificial intelligence.3. Machine learning scheme. Planning activities and making decisions. Division of machine learning methods.4. Artificial neural networks. Types of networks.5. Decision trees.6. Rule-based systems. Fuzzy logic.7. Review of applications of AI methods, machine learning8. Genetic algorithms. Fundamentals and characteristics of genetic algorithms.

Prerequisites and co-requisites

The student should have a basic understanding of mathematics, including knowledge of linear algebra, calculus, and statistics. Competencies in critical thinking and problem analysis will also be valuable when working on projects related to machine learning.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
own work during classes	51.0%	50.0%
final project	51.0%	50.0%

Recommended reading

Basic literature	Rutkowski L. (2012), Metody i techniki sztucznej inteligencji, PWN
Supplementary literature	Ton J. Cleophas, Aeilko H. Zwinderman, Machine Learning in Medicine - a Complete OverviewLee D. Kent., Hubbard S.,, Data Structures and Algorithms with PythonKisielewicz A. (2015), Sztuczna inteligencja i logika, WNT,Russell S., Norvig P. (2014), Artificial Intelligence: A Modern Approach, Prentice Hall
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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