COURSE DESCRIPTION CARD - SYLLABUS

Course name
Problem classes I: artificial intelligence [S1SI1E>PRAC1SI]

Course

Field of study
Artificial Intelligence

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
English

Form of study
full-time

Requirements
elective

Number of hours

Lecture
0

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
30

Number of credit points

3,00

Coordinators

dr hab. inż. Dariusz Brzeziński prof. PP
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Lecturers

Prerequisites

The student should have basic programming skills (Python, R) and basic knowledge of statistics, machine learning, and data mining. The student should also be capable of finding information on his own and be willing to work as part of a team.

Course objective

Practical team work on macine learning oriented projects. Helping develop practical skills of data mining and machine learning for other people and learning to productize data analysis software. Introduction to scientific presentations and scientific writing.

Course-related learning outcomes

Knowledge:
1. The student has well-grounded knowledge of fundamental computer science problems within the scope of machine learning, data analysis, and data mining;
2. has basic knowledge of key directions and the most important successes of artificial intelligence understood as an essential sub-domain of computer science, making use of the achievements of other scientific disciplines and providing solutions with a practical impact;

3. has basic knowledge of the machine learning product lifecycle.

Skills:
1. The student is capable of formulating and solving complex data analysis problems;
2. can efficiently plan and carry out experiments, including computer measurements and simulations, interpret the obtained results and draw conclusions based on the outcomes of experiments;
3. has necessary preparation for working in a team environment, including cooperation with an external industrial partner;
4. can adapt the existing algorithms as well as formulate and implement the novel algorithms, including the algorithms typical for different streams of AI, by using at least one popular tool;
5. can retrieve, analyze and process different types of data, protect it against undesired access, and convert data analysis results to actionable insights;
6. can adapt existing and make custom machine learning models;
7. can employ information and communication tools at different stages of realizing IT projects, including elaborating a well-document problem study, giving an oral presentation, and communicating using specialized terms;
8. can plan and organize his/her work when carrying out the engineering tasks as a team member.

Social competences:
1. The student knows the impact that data analysis can have on solving practical tasks in companies, and its potential effect on entire societies;
2. can work with others and cooperate in a group, while taking different roles and appropriately defining the priorities for either realizing the self-defined tasks or attaining the targets defined by others;
3. can think and act in an entrepreneurial way, finding commercial applications to the systems being created while also taking into account the social and legal aspects of AI systems.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
On-going project assessment during the semester, mid-term presentation showcasing each groups project, scientific paper draft summarizing the project at the end of the semester.

Programme content

Team projects on interdisciplinary research topics.

Course topics

1. Project market: project description, team formation, communicator set-up, initial project kanbans
2. Weekly meetings with each group, backlog analysis, planning
3. Mid-term presentations
4. Course on sceintific writing, selecting potential journals/conferences for each project
5. Scientific paper draft for each project

Teaching methods

Team work, multimedia presentations, case studies, scientific writing

Bibliography

Basic
Ng, Andrew. Machine Learning Yearning, 2019.
Additional
Mathis, Lukas. Designed for use: Create usable interfaces for applications and the web. Pragmatic Bookshelf, 2016.
Tufte, Edward R. The visual display of quantitative information. Vol. 2. Cheshire, CT: Graphics press, 2001.

Breakdown of average student's workload

	Hours	ECTS
Total workload	80	3,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	50	2,00