COURSE DESCRIPTION CARD - SYLLABUS

Course name
AI for social good

Course

Field of study
Computing

Year/semester
1/2

Area of study (specialization)
Artificial Intelligence

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
16	16	
Tutorials	Projects/seminars	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
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Responsible for the course/lecturer:

Prerequisites

A student beginning this course should have basic familiarity with machine learning and data processing. He should have the skills to design and develop information systems (requirements gathering, architecture and selection of tools, versioning, testing and continuous integration of computer programs). Knowledge of at least one modern programming language (Python, javascript, C #, Go) is required. The student should be able to use external programming APIs. They should also understand the need to expand their competences and be ready to cooperate within a team. In terms of social competences, the student must present such attitudes as responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people and teamwork.

Course objective

The main goal of the course is to awaken the spirit of social entrepreneurship in the student and provide him with knowledge and competences to implement digital products or initiatives supported by digital tools, the aim of which is generally understood social good.

The subject consists of seven modules of thematically inter-linked lectures and laboratories.

The first two modules deal with methods of quickly acquiring domain knowledge, creatively recognizing and solving design problems of a digital product (in particular, the determination and measurement of the objective function for machine learning methods), techniques for introducing change in customer behavior and the associated responsibility.

The remaining modules are organized in the "problem study" formula and focus on specific social problems, a thorough analysis of their domain, the role of digital products in their formation, duration (fortification) and decay. As part of these analyzes students will discuss methods for identifying problems of existing digital products and designing new ones that are potentially better from the perspective of social good.

The student will develop his practical skills by preparing a report with the analysis of a selected social problem and the currently available selection of its solutions and a detailed design or implementation of a prototype of a digital product being a response to a selected social problem.

Course-related learning outcomes

Knowledge

The student has a structured and in-depth knowledge of machine learning and practical aspects of implementing solutions using machine learning.

The student has knowledge of good practices related to the development and practical implementation of machine learning solutions in information systems, in particular, about the need for a thorough analysis of the objective functions and related pitfalls.

The student has knowledge of the new achievements of computer science in the context of solving social problems.

The student has knowledge of the social risks associated with errors in the design assumptions of a digital product, especially in the domain of machine learning.

Skills

The student is able to assimilate broad domain knowledge related to a selected social problem and, as a result of its in-depth analysis, present a digital product design to mitigate it.

The student is able to use methods of obtaining requirements, determining problems and creative search for solutions in the process of designing and producing a digital product based on the Design Thinking methodology.

The student is able to evaluate the existing digital product in the context of design errors and negligence through the prism of social good and protection of the well-being of system users, can propose a solution to the identified problems, and correctly (in accordance with the values adopted in the evaluation process) determine the objective functions for artificial intelligence methods.

The student is able to use a variety of APIs and documentation of complex IT systems for the purposes of: reducing the programming workload in the process of preparing a digital product, accelerating analysis and acquiring domain knowledge.

The student is able to communicate effectively with the project group, stakeholders and field experts as well as perform a literature analysis in Polish and English.

Social competences

The student understands the extremely dynamic nature of the machine learning area and is aware of the multitude of available tools. He understands the necessity of life-long learning in the field of software tools due to the volatile and dynamic nature of this field.

The student is able to use the latest IT achievements in designing innovative solutions to social problems.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lectures is verified on the basis of a report prepared by students individually or in pairs. The report concerns the analysis of a selected social problem and initiatives to solve it based on digital tools existing on the market or in the public space, and is presented in the form of a seminar during the last lecture.

The knowledge acquired during the laboratories is verified on an ongoing basis by implementing group design exercises as part of the Design Thinking methodology. Additionally, at the end of the exercises, students prepare one group project in groups of 3 to 5 people. The project includes a detailed design or implementation of a digital product prototype being a response to a selected social problem.

Programme content

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Teaching methods

Lecture: multimedia presentation, seminar with student presentations, information retrieval and problem analysis followed by a report

Laboratory: design team exercises (design thinking), discussions, student presentations, small independent exercises

Project: solving a practical problem, teamwork, design thinking, documenting

Bibliography

Basic

1. Virginia Diginum. Responsible Artificial Intelligence: How to Develop and Use AI in a Responsible Way. Springer, 2019

2. Poradnik Design Thinking - czyli jak wykorzystać myślenie projektowe w biznesie. Helion, 2019.

Additional

1. Gabriel Weinberg, Lauren McCann. Superthinking. Portfolio/Penguin, 2019.

2. Steve Blank, Bob Dorf. Podręcznik Startupu: Budowa wielkiej firmy krok po kroku. Helion S.A., 2013.

Breakdown of average student's workload

	Godzin	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	32	1,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests, project preparation)[1]	18	1,0

[1] niepotrzebne skreślić lub dopisać inne czynności