1.	Field of study	Computer Science
2.	Academic year of entry	2017/2018 (summer term), 2018/2019 (summer term)
3.	Level of qualifications/degree	second-cycle studies
4.	Degree profile	general academic
5.	Mode of study	full-time

Module: Machine learning algorithms

Module code: 08-IN-IJO-S2-AUM

1. Number of the ECTS credits: 3

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
AUM _K10	Is able to work in several person team and properly divide tasks into subtasks.	K_2_A_I_K03 K_2_A_I_K04 K_2_A_I_K05	1 1 1
AUM _U09	Can independently formulate a problem.	K_2_A_I_U01	1
AUM _U5	Can use the methods and formalized models to modeling tasks and algorithms of machine learning, including techer=? participated and unsupervised learning in IT systems and in software.	K_2_A_I_U01 K_2_A_I_U13 K_2_A_I_U15 K_2_A_I_U16 K_2_A_I_U18 K_2_A_I_U22	1 1 1 1 1 1
AUM _U6	Can assess utility of various paradigms and machine learning methods and programming environments connected with them to solve practical conceptual and technical problems of different types.	K_2_A_I_U01 K_2_A_I_U08 K_2_A_I_U10 K_2_A_I_U15	1 1 1 1
AUM _U7	Is able to construct algorithms using algorithmic techniques from the field of machine learning, including symbolic and numeric representations.	K_2_A_I_U04 K_2_A_I_U15 K_2_A_I_U16 K_2_A_I_U17	1 1 1 1

AUM _U8	Can analyse facultative system concerning appropriately used machine learning algorithm.	K_2_A_I_U08 K_2_A_I_U10 K_2_A_I_U15 K_2_A_I_U16	1 1 1 1
AUM _W1	Has knowledge in the field of mathematics covering linear algebra, elements of probability calculus, discrret mathematics and numerical methods necessary to modeling problems in the sphere of machine learning.	K_2_A_I_W01 K_2_A_I_W02 K_2_A_I_W03	1 1 1
AUM _W2	Has widened knowledge about various paradigms, methods and algorithms of machine learning, including teacher?participated learning and unsupervised learning.	K_2_A_I_W01 K_2_A_I_W09 K_2_A_I_W12 K_2_A_I_W14	1 1 1 1
AUM _W3	Has deepened and structured knowledge in the field of programming in declarative, imperative and functional programming languages used to implement machine learning algorithms.	K_2_A_I_W01 K_2_A_I_W09 K_2_A_I_W10 K_2_A_I_W18	1 1 1 1
AUM _W4	Understands the current state and newest achievements and IT developmental trends including artificial intelligence, artificial life and methods of machine learning in the areas of their use in IT and technology.	K_2_A_I_W14 K_2_A_I_W17 K_2_A_I_W18	1 1 1

3. Module description	
Description	Lecture is destined for IT students. Its aim is to familiarize the students with algorithms of machine learning. Presented will be various methods of learning with supervision and without it with special emphasis on reinforced learning methods Using time differences in reinforcements updates is to be verified in application prepared by the students, dedicated to artificial life technology.
Prerequisites	

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
AUM _w_1	Exam	Solving tasks of content, one after each section discussed during the lecture.	AUM _W1, AUM _W2, AUM _W3, AUM _W4
AUM _w_2	Control tests	Tests after each topic discussed during classes including control of theoretical knowledge from the lecture.	AUM _U5, AUM _U6, AUM _U7, AUM _U8
AUM _w_3	Group reports	Solving tasks given in thematic sets, grouped into 5, 7 tasks in each set.	AUM _K10, AUM _U09

5. Forms of teaching

code	form of teaching			required hours of student's own work		assessment of the learning outcomes of the module
	type	description (including teaching methods)	number of hours	description	number of hours	
AUM _fs_1	lecture	Presenting educational content in verbal form, using content visualization. Focusing on conceptually complex material and indicating additional material – own elaborations. These will constitute basis for credit tests.	15	Familiarizing with lecture content using the existing methods packets: individual elaborations, websites.	15	AUM _w_1
AUM _fs_2	laboratory classes	Students get acquainted with mathematical models of machine learning and solve tasks from this field.	30	Solving tasks of subsequent topics together with the existing solutions analyses – in elaborations and on websites. Analysis and electronic description of the learning system, it s verification in an environment specified by the teacher.	30	AUM _w_2, AUM _w_3