Introduction to Machine Learning

Fall semester, 2020

Department of Artificial Intelligence

IP-18KVSZBGTE

Wednesdays 4.00PM-5.00PM

Room: 0-803 Szabó József, South Building

Instructor(s) Name(s): András Lőrincz

Office location: North Building Room 7.14/A

E-mail: Use Neptun – code: CM4GRK

Office hours, location, and what to expect: Due to Covid, I use emails

Course Staff/Teaching Assistant’s names, contact info, and office hours:

Instructor(s) Name(s): Zoltán Milacski

Office location: North Building Room 7.13

E-mail: Use Neptun – code: CHAB64

Office hours: Wednesday 3PM-4PM MS Teams

Credits Number grades, Excellent (A:=5), Good (B:=4) Mediocre (C:=3), Sufficient (D:=2), Insufficient (F:=1)

Prerequisites: Basic concepts of Probability Theory, Linear Algebra, and Calculus are needed. HomeWorks and auxiliary materials help to refresh knowledge.

Course Materials: Videos will be provided for each talk. Presentations in the videos will have detailed explanations. Presentations of the previous year – in non-Covid online style – are available [here](https://drive.google.com/drive/folders/1Fcw8P7RRx0uQeX7Hak3CXGt6bgdiShye?usp=sharing). Most of the material was already in English that time. This year, the course will differ a bit, since three different courses are compressed into this lecture.

Course Description: Advances in machine learning (ML) are astonishing. The course barely touches on the basic methods of ML. Instead of digging deep into the ML technology, the course is about the key questions, key pitfalls, key strengths, and key weaknesses of ML as of today. In addition, the course provides insight into the achievements expected to occur soon without giving specific prediction when those may occur.

Compared to the material of the previous year, there will be changes due to new achievements in the field

Student Learning Outcomes: In turn, the course is for those, (a) who would like to position themselves within AI and need to know what to study, (b) who would like to have a general insight into what is happening in hardware, GPUs, TPUs, and robotics, in image and video processing, in human-machine interaction, and so on. You will understand cognitive concepts from deep learning methods to the concept of consciousness.

Expectations and Resources for Student Success

You are expected to do and submit your homework before each class. New HomeWorks will be made public after each lecture. HomeWorks of previous year are available at the above link (in Hungarian).

*Mental Health and Stress Management Resources*

If you are feeling overwhelmed, or worried about a friend, please reach out to one of your instructors or your academic advisor.

*Class Participation Expectations:* The course is unique and assume a high level of desire to understand the ongoing revolutionary changes in the field of Machine Learning. You are expected to take part in all lectures. If you can’t make it due to unexpected events, then use the videos and work out the HomeWorks.

Course Management and Policies

*We shall have Hybrid Teaching*

*Course Management:* The ELTE faculty senate requires all instructors to describe in detail all information concerning students work and processing of resources within the syllabus of the LMS (Moodle or Canvas) to function as a contract between faculty and students. Thus, students are required to fulfill and account for (and only those) elements that are accessible through the LMS, let that be any resource or lecture/activity recording.

*Academic Integrity:*

Each student in this course is expected to abide by the ELTE University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work.

Students with disabilities needing accommodations in this class should connect with the Student Disability Services office. Expected issues are dyslexia and dysgraphia. Due to online materials, other types are not expected. In the case of dyslexia, the auditory information may not be sufficient for you. Try to find a student partner, who can work with you. In case of dysgraphia, you can type your responses to the questions during your exam. HomeWorks are mandatory for both cases.

*Attendance and Absences:* Regulations are unclear. I require the homeworks from you. In case of detectable plagiarism, related students will have to appear in front of the Ethical Committee of the Faculty. Plagiarism is strictly forbidden.

Assessment Methods

*During the exams* we shallcheck your understanding of the HomeWorks. You will have a written exam that has similar questions to the original HomeWorks themselves. You will be safe if you did all the HomeWorks in time, or in case of problems with those, if you discussed your problems during office hours.

Course Grading

*Grading is simple:*

*There will be 10 questions. If you can answer more than 50% of the questions then you pass, provided that you can explain your HomeWorks during the oral exam. This oral part if optional. Grading considers HomeWorks as well.*

*51%-60%: sufficient, if you solved 50% of the HomeWorks*

*61%-70%: mediocre, if you solved 60% of the HomeWorks*

*71%-80%: good, if you solved 70% of the HomeWorks*

*81%-100%: excellent, if you solved 80% of the HomeWorks*

Course Schedule

Lectures are on Wednesdays and they start at 4PM, sharp.

(It is not expected, but please note that this schedule may be subject to change if needed during the semester.)

Tentative content of the lectures can be downloaded from the link provided above. Due to recent achievements in the field during last year, expect considerable changes.

HomeWorks will be extended with exercises related to probability theory, linear algebra, and calculus to make sure that you can pass the exam.