COMP 4900A, Fall 2020
Introduction to Machine Learning

Lectures

Mondays, Wednesdays 10:05-11:25 am
Start date: September 9

Instructor

Majid Komeili
HP 5436, majid.komeili AT carleton.ca

Course Description

Machine learning (ML) is the scientific study of algorithms and statistical models that computers use in order to perform a specific task effectively without using explicit instructions, relying on patterns and inference instead. It is seen as a subset of artificial intelligence. This course provides a broad introduction to some of the most commonly used ML algorithms.

Topics

This is a tentative list of topics the course will cover.

- Linear regression
- Linear classification
- Performance evaluation
- Regularization
- Decision trees
- Dimension Reduction
- KNN
- Ensemble methods
- Support vector machines
- Neural Networks
- Unsupervised learning and clustering

Prerequisite

COMP 2404, COMP 2804, and one of MATH1104 or MATH 1107. You are expected to be familiar with probability, statistics, linear algebra and calculus and have basic knowledge of a programming language.

Evaluation

- Mini-projects (40%)
- Quizzes (10%)
- Class participation – polling (5%)
- Final Exam (45%)

Method of Delivery

Course materials will be posted on CuLearn. Lectures will be recorded (subject to any technical difficulty) and will be posted on CuLearn. We will use cuLearn for submitting assignments. Visit the course page on CuLearn for more details.

Academic Integrity

As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Suspected cases of plagiarism will be reviewed by the Office of the Dean of Science. Every student should be familiar with the Faculty of Science academic integrity policy. A student found in violation of academic integrity standards will receive a penalty from the Office of the Dean of Science; the standard penalty for a first offense is a grade of F in the course, with more severe penalties levied against repeat offenders. Further information on this policy may be found at the ODS website: https://science.carleton.ca/academic-integrity/

Intellectual Property

All lecture and course materials (including all PowerPoint presentations, course notes, handouts, and similar materials) are protected by copyright. Sharing assignment or quiz specifications or posting them online is considered academic misconduct. You are never permitted to post, share, or upload course materials without explicit permission from your instructor. Academic integrity offences are reported to the office of the Dean of Science. Penalties for such offences can be found on the ODS webpage: https://science.carleton.ca/academic-integrity/."

Information on Academic Accommodations

Requests for Academic Accommodation
You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

Pregnancy obligation
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more

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details, visit the Equity Services website: **carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf**

Religious obligation
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: **carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf**

Academic Accommodations for Students with Disabilities
If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or **pmc@carleton.ca** for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. **carleton.ca/pmc**

Survivors of Sexual Violence
As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: **carleton.ca/sexual-violence-support**

Accommodation for Student Activities
Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. **https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf**

For more information on academic accommodation, please contact the departmental administrator or visit: **students.carleton.ca/course-outline**