

## **COMP 5900F, Fall 2021**

### **Advanced Machine Learning**

#### **Meetings**

Friday 2:35-5:25 pm

Start date: September 10

Location: Over Zoom

#### **Instructor**

Majid Komeili

majid.komeili AT carleton.ca

#### **Course Website**

<http://people.scs.carleton.ca/~majidkomeili/Teaching/COMP5900-F21/home.html>

Note: We also use Brightspace for posting assignments and some other materials.

#### **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 will cover advanced topics in machine learning such as deep learning including CNNs, RNNs, GANs, Deep clustering, transfer learning and domain adaptation, and Interpretability of ML methods. The format of the course will be a mix of lectures and paper presentations.

#### **Topics**

This is an overview of the kinds of topics the course could cover.

- Convolutional Neural Networks,
- Recurrent Neural Networks,
- Generative Adversarial Networks,
- Transfer Learning,
- Few-shot Learning,
- Zero-shot Learning
- Deep Clustering,
- Interpretability of ML

## Prerequisite

You are expected to have a reasonable background in machine learning and be familiar with probability, statistics, linear algebra and calculus.

## Evaluation

- Two assignments (A1=10%, A2=15%)
- Paper presentations (20%)
- Class participation and discussion (5%)
- Final Project (5% proposal, 5% in class presentation, 40% Report)

## 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 details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://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](https://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](mailto: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](https://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](https://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.

Carleton University / School of Computer Science

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](https://students.carleton.ca/course-outline)