

Applied Machine Learning

Syllabus and logistics

Reihaneh Rabbany



COMP 551 (winter 2020)

Outline

- Teaching team introduction
- Overview of the class components
- Information on the deliverables and evaluation
- Pointers to the reference materials

Instructors

Section one: Tuesday & Thursday, 11:30 am - 12:55 pm

Location: Strathcona Anatomy & Dentistry M-1

Instructor: Reihaneh Rabbany <rrabba@cs.mcgill.ca>

Office hours: Thursday, 1:30 pm - 2:30 pm @ MC 232

Website: <http://www.reirab.com/comp55120.html>

Section two: Tuesday & Thursday, 4:30 pm - 5:30 pm

Location: Maass Chemistry Building 10

Instructor: Siamak Ravanbakhsh <siamak@cs.mcgill.ca>

Office hours: Wednesdays 4:30 pm-5:30 pm, ENGM 325

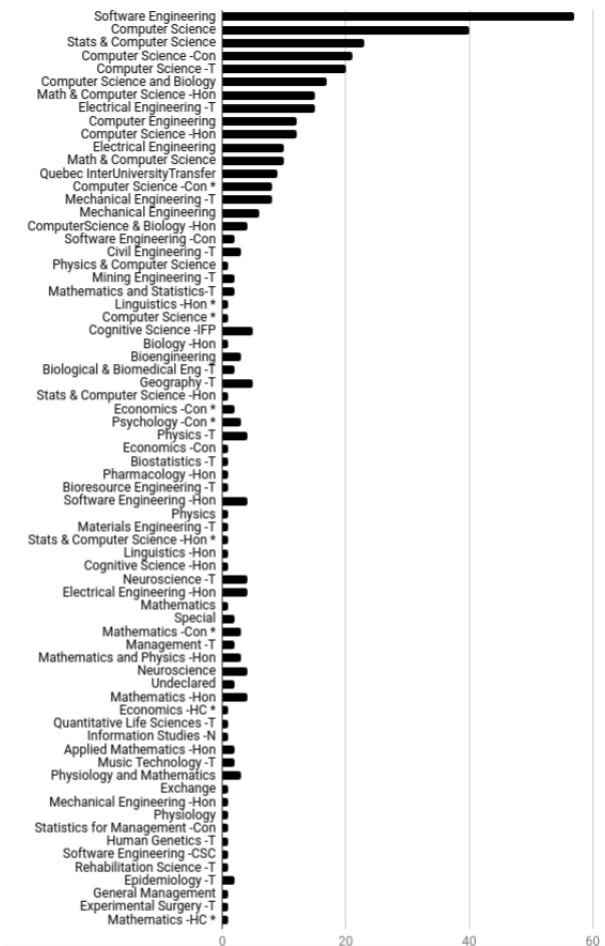
Website: <https://www.cs.mcgill.ca/~siamak/COMP551/index.html>

Teaching Assistants

Name	Contact { @mail.mcgill.ca }	Office hours
Jin Dong	jin.dong	TBD
Yanlin Zhang	yanlin.zhang2	TBD
Haque Ishfaq	haque.ishfaq	TBD
Martin Klissarov	martin.klissarov	TBD
Kian Ahrabian	kian.ahrabian	TBD
Arnab Kumar Mondal	arnab.mondal	TBD
Samin Yeasar Arnob	samin.arnob	TBD
Tianzi Yang	tianzi.yang	TBD
Zhilong Chen	zhilong.chen	TBD
David Venuto	david.venuto	TBD

FAQ

- Will there be **recordings**? No, but you can refer to the slides and assigned readings
- Will the **two sections** offer the same materials? That is the plan and assignments and mid-term will be jointly held, **but** the materials might or might not be covered in the same order, depth or pace.
- How can I refresh my background knowledge to follow the lectures better? refer to these reviews on [probability](#) and [linear algebra](#), and/or the [first four tutorials here](#), or any other resource that covers the similar content.

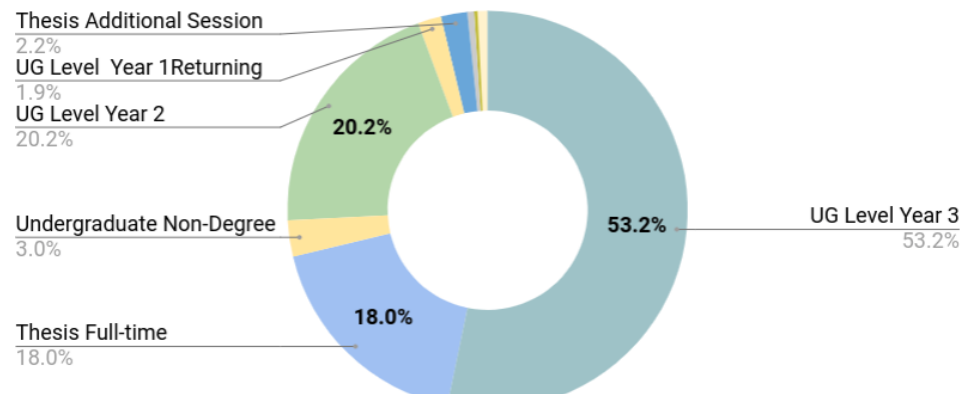


Who is in this class? You

399 registered

Mostly undergraduates year 3

Mostly with Computer background



Who is in this class? Me

Reihaneh Rabbany

Canada CIFAR AI Chair and core member at Mila

Assistant Professor in the School of Computer Science

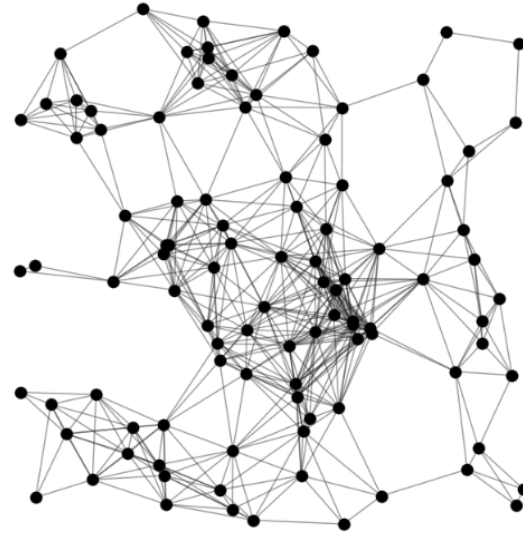
<http://www.reirab.com/>

Had CMPUT 551 Winter 2009 with Enrl of 9!

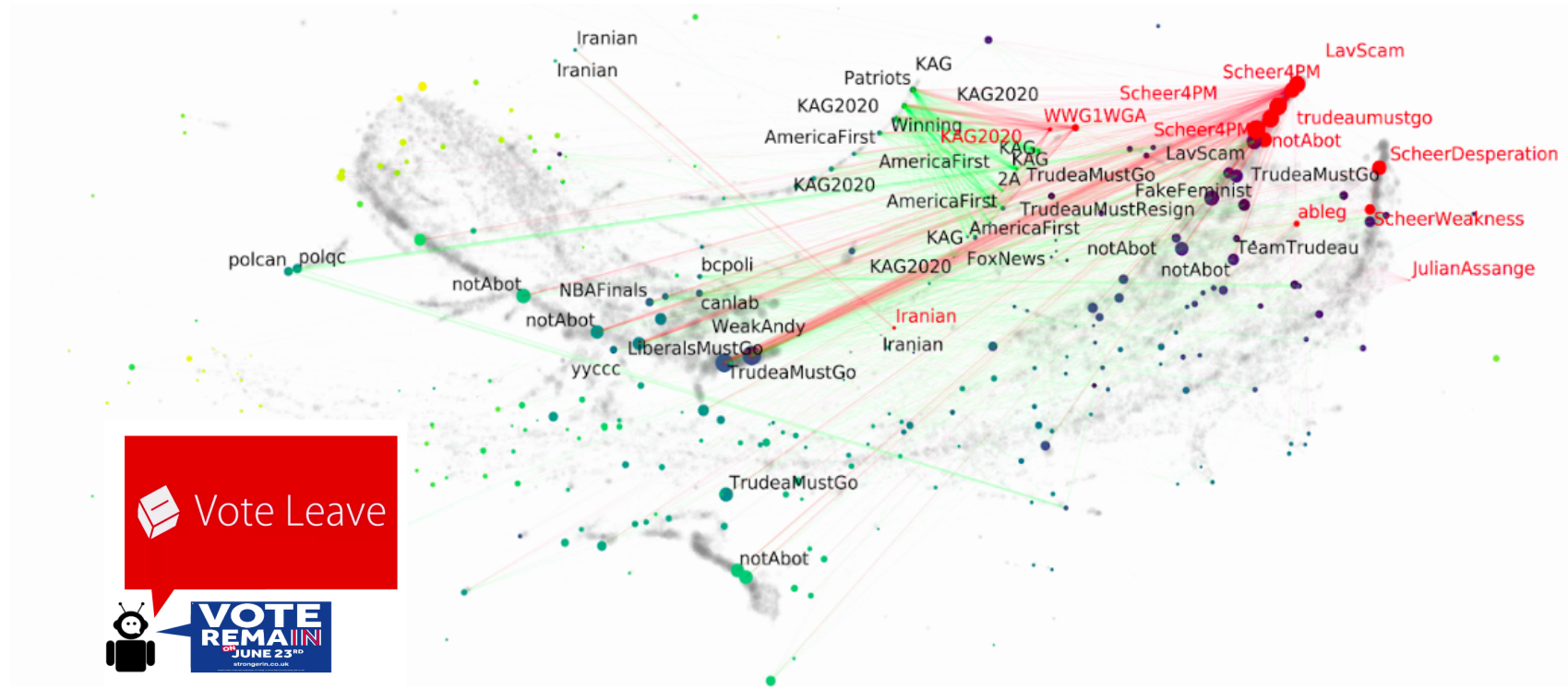


Who is in this class? Me

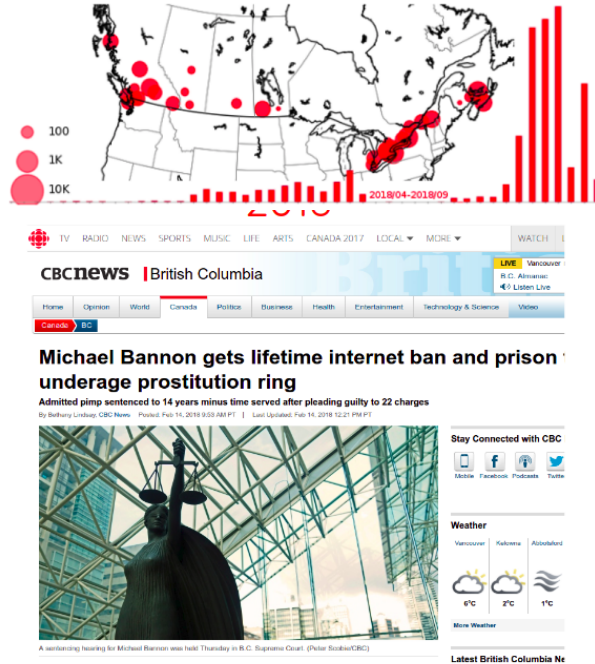
My research is on Network science, data mining and machine learning, with a focus on analyzing real-world interconnected data, and social good applications.



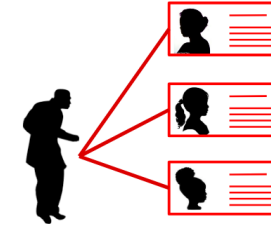
Example Project: Online Societies and Politics



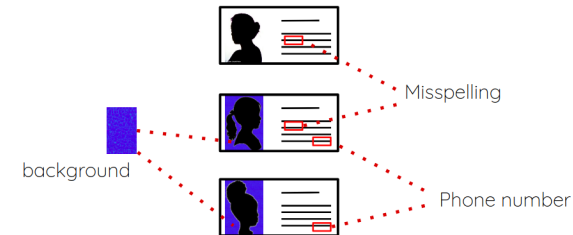
Example Project: Online Markets and Trafficking



June 2014 and July 2015



Given millions of ads, 100K per day,
How can we detect such organized activity



Who is in this class? TAs

Name	
Jin Dong	graph representation and NLP at Mila
Yanlin Zhang	computational biology
Haque Ishfaq	RL theory and bandits
Martin Klissarov	RL
Kian Ahrabian	software engineering and machine learning
Arnab Kumar Mondal	
Samin Yeasar Arnob	
Tianzi Yang	DL on computer vision and network
Zhilong Chen	
David Venuto	Deep RL at Mila

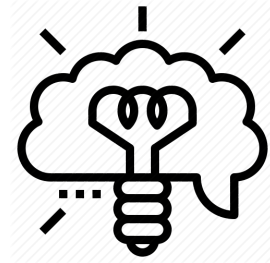
About this course

Knowledge

Lectures

Weekly Quizzes

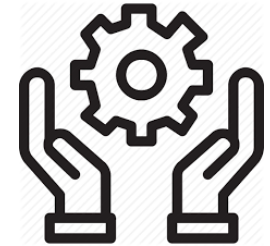
Midterm



Skills

Hands-on Tutorials [optional]

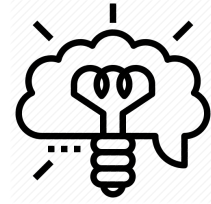
Mini-projects



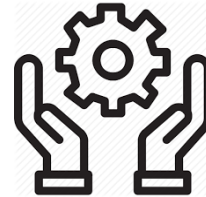
About this course:

complementary components

Understand the theory behind
learning algorithms



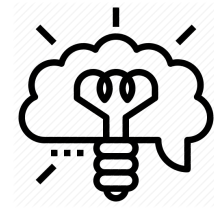
Practice applying them in real-world



About this course:

Evaluation and grading

Weekly quizzes - **15%** {online on Mondays}
Midterm examination - **35%** {written}



Mini-projects - **50%** {group assignments}



About this course:

Evaluation and grading

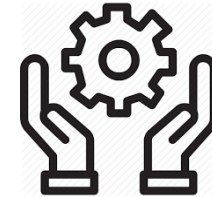
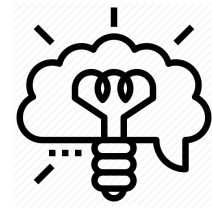
Weekly quizzes - **15%** {online on Mondays}

Midterm examination - **35%** {written}

March 30th 18:05-20:55

Let us know immediately if you can not attend

Mini-projects - **50%** {group assignments}



Late submissions

All due dates are **11:59 pm** in Montreal unless stated otherwise. **No make-up quizzes** will be given. For mini-projects, late work will be automatically subject to a **20% penalty** and can be submitted up to **5 days** after the deadline.

If you experience barriers to learning in this course, submitting the projects, etc., please do not hesitate to discuss them with me. As a point of reference, you can reach the Office for Students with Disabilities at 514-398-6009.

Prerequisites

Python programming skills, we will have a tutorial
Basic knowledge of **probabilities, linear algebra**
and calculus provided by courses similar to MATH-323 or
ECSE-305.

- How can I refresh my background knowledge to follow the lectures better? you can refer to these reviews on [probability](#) and [linear algebra](#), and/or the [first four tutorials here](#), or any other resource that covers the similar content.

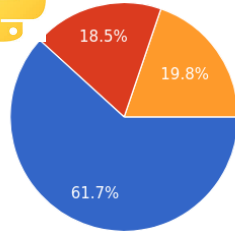
For more information see the course prerequisites and restrictions at [McGill's webpage](#).

Tutorials

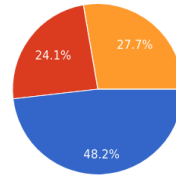
{tentative and subject to change, exact dates TBD}

1	mid Jan.	Python	https://www.python.org/
2	end of Jan.	Scikit-learn	https://scikit-learn.org/
3	end of Feb.	Pytorch	https://pytorch.org/

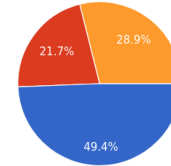
No plan on tutorials on math [but please fill out this poll](#), to see if there is enough demand for organizing one, and help with planning the space for the current ones.



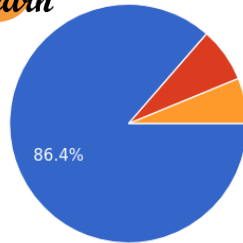
● Yes
● No
● Maybe



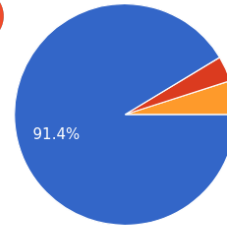
● Yes
● No
● Maybe



● Yes
● No
● Maybe



● Yes
● No
● Maybe

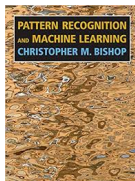


● Yes
● No
● Maybe

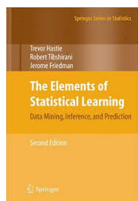
No plan on tutorials on math but please fill the poll from MyCourses to see if there is enough demand for organizing one, and help with planning the space for the current ones.

Relevant Textbooks

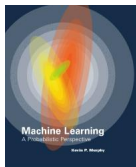
No required textbook but slides will cover chapters from the following books, all available online, which can be used as reference materials.



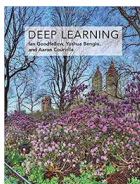
[Bishop] Pattern Recognition and Machine Learning by Christopher Bishop (2007), available online



[HTF] The Elements of Statistical Learning: Data Mining, Inference, and Prediction (2009) by Trevor Hastie, Robert Tibshirani and Jerome Friedman, available online



[Murphy] Machine Learning: A Probabilistic Perspective by Kevin Murphy (2012), available online through the library



[GBC] Deep Learning (2016) by Ian Goodfellow, Yoshua Bengio, and Aaron Courville, available online

Online Resources

Metacademy

<https://metacademy.org/browse>

Lots of online lectures

- MacKay's: http://videolectures.net/course_information_theory_pattern_recognition/
- Hinton's: https://www.youtube.com/playlist?list=PLoRI3Ht4JOcdU872GhiYWf6jwrk_SNhz9
- Dive into Deep Learning: d2l.ai/

More provided on a lecture by lecture basis.

Important pointers

Course website

to find the schedule, readings, slides, etc.

<http://www.reirab.com/comp55120.html>

MyCourses

to check for announcements, form groups for projects, submit weekly quizzes, grades, discussions

<https://mycourses2.mcgill.ca/d2l/home/431208>