CS6208 : Advanced Topics in Artificial Intelligence
Graph Machine Learning

Administrative (Week 2)

Semester 2 2022/23

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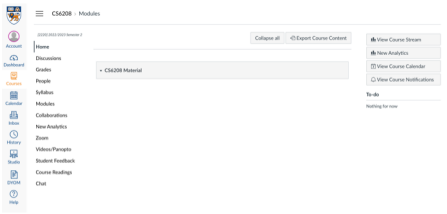
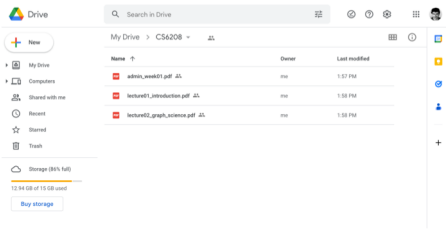
Material

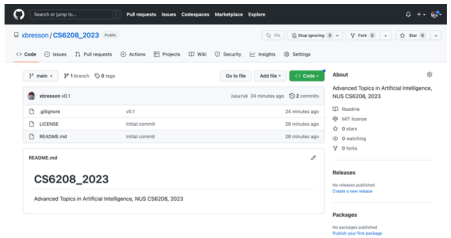
- Canvas : https://canvas.nus.edu.sg/courses/38857
- Slides : https://drive.google.com/drive/folders/16sqBbQXl8Sq-DL5dfSwvmAmSm69Ae8dI

  Note: I reserve the right to change the slides until the lecture.
- Python notebooks : https://github.com/xbresson/CS6208_2023

  Note: You will need to a Gmail account to use Google Colab.







Evaluation

- This module is 100% CA, i.e., there is no final exam.
- There are 2 components:
  - Individual assessment (50%) / 1 paper review : One-page latex report (one or two columns), write a prototype from scratch (no copy-paste with e.g. GitHub) on a dataset not used in the paper and upload on GitHub for reproducibility, identify the paper limitations, innovate and propose improvement(s). Paper is not given – select one GNN paper of interest. Deadline is Week 13.
  - Group assessment (50%) / 1 project : A group size of at most 3 people (1-3). Choose your group wisely (avoid conflict) -- each teammate must contribute equally to the project. Project is not given – select an original project that matches your interest/research. Project must demonstrate understanding, insights and innovation(s). Deliveries are one report (up to 2 latex pages, one or two columns), a GitHub repo to reproduce the results and a short recorded video presentation (each student will present her/his contribution to the project). Deadline is Week 14.
  - More details provided on Week 6 (before recess week).

Class attendance

- Students are expected to attend in-person the lectures
  https://www.comp.nus.edu.sg/covid19

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Update: 16 Aug 2022

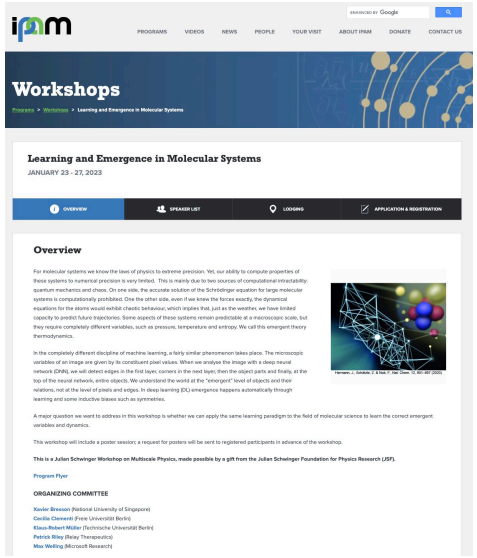
University activities to resume

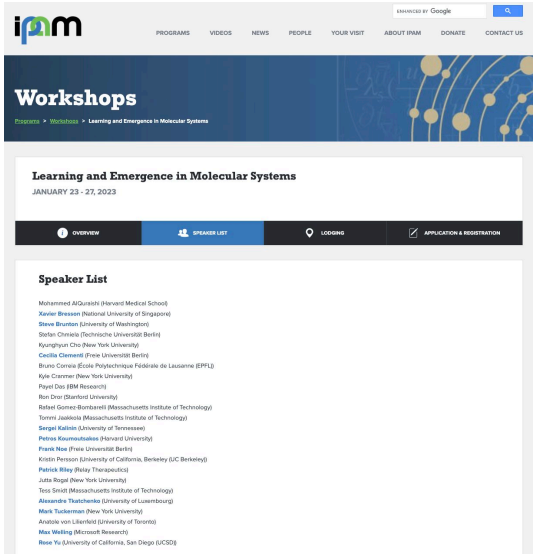
- As Singapore is transitioning to a new normal of living with COVID-19, university activities will resume.
- Students should expect to participate fully in university life and come back for face-to-face classes for all their modules. This excludes the lectures for courses in which instructors are developing Blended Learning as part of the university's plan to create high-quality, integrated e-learning materials to enhance learning flexibility and effectiveness.
- Instructors are also no longer obligated to make video recordings of their classes or to set up hybrid arrangements. The university has discussed and explained the key considerations for this to the NUS Students' Union (NUSSU) previously. Thus, if students are not able to attend classes due to valid reasons including COVID-19, they should discuss with their course instructor on the next steps.
- Students should continue to be responsible for their health and upload their self-administered Antigen Rapid Test (ART) to uNivUS, should they test positive for COVID-19.
  - If the first self-administered ART result is positive, students will be excused from classes (including lectures, tutorials and other academic activities) and assessment(s) from Days 1 to 7 inclusive, where Day 1 refers to the day that students first test positive.
  - If students are still COVID-19 positive from Day 8 onwards, they will need to upload a self-administered ART showing that they are still testing positive, to uNivUS. This will then serve as a valid excuse from classes and assessment(s).
- For the most up-to-date information on COVID-19 Safe Management Measures and related NUS circulars, please visit emergency.nus.edu.sg

Next week

- No lecture for week 3 : Chinese New Year ☺

- If interested in AI+Biology, watch the video talks of the workshop in “Learning and Emergence in Molecular Systems” at UCLA: http://www.ipam.ucla.edu/programs/workshops/learning-and-emergence-in-molecular-systems





Tentative Outline

- This module focuses on the foundations of graph machine learning.
  - Introduction to Graph Deep Learning
  - Introduction to Graph Science
  - Graph Analysis Techniques without Feature Learning
  - Graph Convolutional Networks (spectral and spatial)
  - Benchmarking GNNs
  - Graph Positional Encoding
  - Graph ViT/MLP-Mixer
  - Generative GNNs and biology
  - Combinatorial optimization
  - GNNs for Recommendation
  - GNNs for knowledge graphs
  - Theory of GNNs

NUS Course Materials: Ethical Behaviour and Respecting Copyright

Examples of Disallowed Things

No Posting on any websites (except for the materials explicitly allowed by your lecturer in the respective module)

No selling of material

No sharing of questions/answers which could lead to cheating/plagiarism

Questions?