Course Information

ML with Graphs

Department of Computer Science
University of Massachusetts, Lowell
Spring 2021

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Introductions

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Target Students

1. Junior graduate students.

2. Senior undergraduate students who have background in ML and are interested in conducting/learning how to conduct research.

Course Homepage

https://amirieb.github.io/MLGraph/

Please read all details on class webpage! The subsequent slides are not comprehensive.

Textbooks

- **[GRL] Graph Representation Learning**
  William L. Hamilton

- **[NCM] Networks, Crowds, and Markets: Reasoning About a Highly Connected World**
  David Easley and Jon Kleinberg

Syllabus

Week	Lecture
W1	Course Overview and Basics
W2	Node Embeddings 1
W3	Node Embeddings 2
W4	Graph Neural Networks
W5	Graph Properties and Features
W6	Paper review 1
W7	Paper review 2
W8	Paper review 3
W9	Exam
W10	Link Prediction
W11	Cascade Prediction
W12	Popularity Prediction
W13	Curriculum Learning with Graphs
W14	Project Presentations!

Grading

- 3 Homework (25%)
- 2 Assignments (25%)
- Midterm Exam (20%)
- Final project (30%)

- Optional
  - Extra credit

- Grades to be returned within 3 weeks of due dates:
  - You can question the grading within 3 days of the return of the preliminary grades by email.

Policies & Requirments

- Attendance
  - Please come to class prepared and be on time.
- Collaboration
  - Always follow Facebook Rule & UML's honor code.
  - Write name(s) of your collaborators on submissions.
- Academic Accommodation
  - Provide a letter from DS office during W01-W03.
- Religious Observance
  - Let me know, no due dates during these times.
- Anti-Harassment
  - In any form is unwelcome in this course.

Homework Assignments

- Focus: scientific articles

- Should be completed individually
- Due time 3:30pm on Thu classes
- Specific submission format (see course page)

Method Assignments

- Focus: Practical aspects of implementing, training, and evaluating ML systems.

- Should be completed individually
- Due time 3:30pm on Thu classes
- Specific submission format (see course page)

- Grading based on:
  - code correctness
  - model performance on *unseen* test data.

Final Project

- A ML problem formulated and evaluated on real or synthetic graph datasets.
- Individual or Team of 2 students.
- 2-page proposal in provided template.
- Class discussion and feedback.
- 8-page final report in provided template.
- Class presentation.

- Final project is a substantial part of this course!
  - Start working on ideas *now*!
  - Talk to me for ideas, help, advice, etc.

Important Dates

- Check the course page, Assignments in the menu.

Late-ness!

- Late homework asst. is not allowed
  - late after due date/time: zero mark
- Late method asst. and projects are allowed
  - late within 3 days: 30% reduction in grade
  - after that: zero mark.

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Note: Submit Early. Submission links will be
automatically disabled after due date/time.
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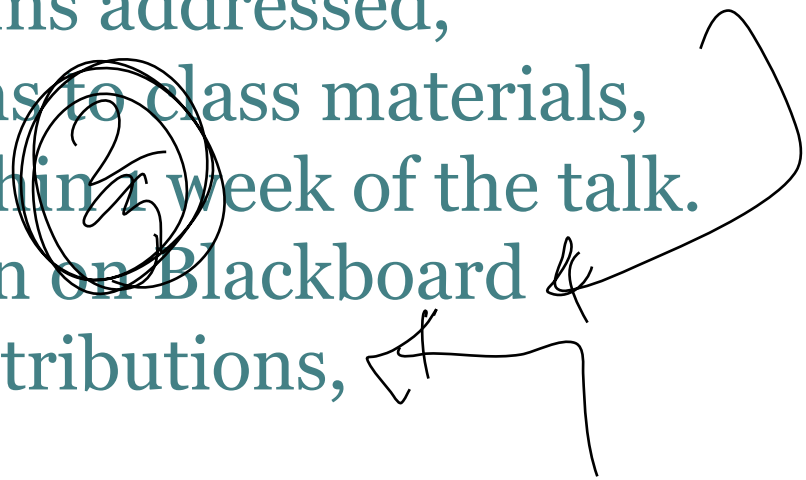
Exam

- Open-book.

- Format: Virtual.

Extra Credit

- Can be earned by relevant contributions to the course:
  - Concisely summarize a CS Colloquium:
    - Research problems addressed,
    - Draw connections to class materials,
    - Email report within a week of the talk.
  - Effective participation on Blackboard
  - Code and dataset contributions,
  - etc.



https://cs.uml.edu/~hadi/cstalks.html

Blackboard

- Link on course page

- All announcements and important updates will be will be posted on Blackboard.

Course Evaluations

- 1-2 surveys
  - I try to take student comments seriously.

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- 1-2 surveys
  - I try to take student comments seriously.
    - Well, most of them – won't change a few things!

Peer Evaluation

- Peer evaluation for final project
  - After proposals are submitted.
  - Each student should:
    - clearly report his/her duties in the project
    - actively contribute to the project, and
    - if group, try to help the other team members.
  - Report dysfunctional group situations ASAP.

Questions?

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