Introduction and Logistics

Advanced Social Computing

Department of Computer Science
University of Massachusetts, Lowell
Spring 2020

Hadi Amiri
hadi@cs.uml.edu

Instructor

- Hadi Amiri
  - Office:Dandeneau Hall 334
  - Office hours
    - Mons 3:30-4:30, or
    - by appointment

  - Hobbies: Sports that are hard on the feet!

hadi@cs.uml.edu
www.cs.uml.edu/~hadi

TA(s)

- TBA
  - PhD student ___
  - Office: ___
  - Office hours:
    - ___, or
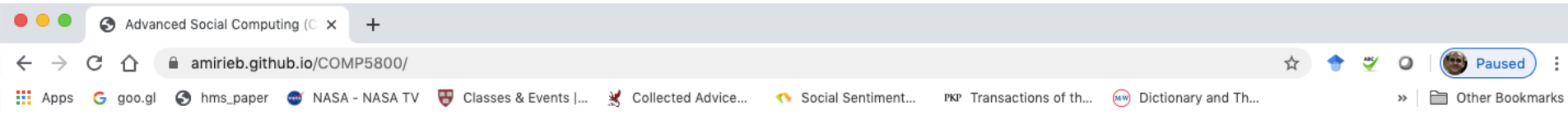   - by appointment.
  - Contact: ___

Target Students

1. Junior graduate students.

2. Senior undergraduate students who are interested in conducting/learning how to conduct research.
   - Prerequisite:
     - Introduction to ML
     - Introduction to NLP
     - Introduction to AI

Course Homepage

Advanced Social Computing (COMP5800)

COMP5800

- Home
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- Resources

This course is an introduction to Machine Learning (ML) and Natural Language Processing (NLP) for Social Computing. It introduces the background and current states of social networks and their analysis in terms of content, users, social relations and applications, and covers the fundamentals of graph and text processing. The course has a particular emphasis on key advancements in the area of representation learning on graph and text data - with bias toward the latter, reflecting instructor biases. Students are expected to research innovative ideas in this context and practically investigate them on real world datasets. At the end of this course, students should have good understanding of the background, design, analysis and implementation of social media analysis systems, as well as hands-on experience on a range of tasks from identifying important nodes to detecting communities to tracing information diffusion in social networks. Special emphasis will be given to understanding novel ML and NLP techniques and using them in practice. Guest lectures by distinguished researchers and course projects emphasize subtleties of translating ML and NLP into practical applications in social networks. In order to succeed in this course, students should have a strong interest in conducting (or learning how to conduct) research. Prior exposure to ML or (statistical) NLP is recommended but not strictly required. Familiarity with linear algebra, (basic) calculus, and probability will be assumed throughout the course.

Course Information

Time: Weds 3:30-6:20 PM (Spring 2020)
Midterm Exam: Wed, March 4, 2020, 3:30-6:20 PM
Location: TBA
Piazza: TBA
Instructor: Hadi Amiri, office: Dandeneau Hall - 334, hours: Mons 3:30-4:30
TA: TBA, office: TBA, hours: TBA

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https://amirieb.github.io/COMP5800/

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

Textbooks

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

- **[MMD] Mining of Massive Datasets**
  - Jure Leskovec, Anand Rajaraman, Jeffrey D. Ullman

- **[SNA] Social Network Data Analytics**
  - Editor: Charu C. Aggarwal

Syllabus

Week	Lecture
W1	Course Overview and Network Basics
W2	Strong and Weak Ties
W3	Node Analysis & Homophily
W4	Web Graph and Network Popularity
W5	Information Cascading
W6	Small-world Phenomenon
W7	Midterm Exam
W8	*spring break*
W9	Text Representation
W10	Graph Representation
W11	Health Informatics
W12	Network Analysis of Language
W13	Social Search & Moment Retrieval
W14	Topic Detection & Tracking
W15	Project Presentations!

Textbook-oriented

Research-oriented

Grading

- 4 Homework   (20%)
- 2 Assignments   (20%)
- Midterm Exam   (25%)
- 5 Paper reviews   (10%)
- Final project   (25%)

- Optional
  - Extra credit   (5%)

- 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

- Focus: Lecture materials

- Should be completed individually
- Due time 3:30pm on Wed classes
- Hand in your HW in class, NO emails!

Assignments

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

- Should be completed individually
- Due time 3:30pm on Wed classes
- Specific submission format (see assignments)

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

Spotlight Papers

- Papers relevant to specific topics in social computing.

- Choose one of these papers and provide a concise summary/review of the paper before the class.

- Grading based on:
  - quality of the review and analysis of paper

Final Project

- Innovative idea that is evaluated on real or synthetic datasets.
- Team of 3 students (required).
- 2-page proposal in provided template.
- 4-page progress report in provided template.
- 8-page final report in provided template.
- All projects will be presented in class.

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

Important Dates

Important dates for homework (HW), assignments (AST), spotlight papers (SP), project proposal (PRP), progress (PRO), Midterm exam, and course (CEval) and peer evaluations (PEval).

Materials	Due Dates	Credits	Instructions	Notes
HW1	2/05, 3:30 PM	5%	hand in HW in class.	-
HW2	2/12, 3:30 PM	5%	hand in HW in class.	-
AST1	2/12, 3:30 PM	10%	submit ZIP file link TBA.	-
HW3	2/19, 3:30 PM	5%	hand in HW in class.	-
CEval1	2/19, 3:30 PM	-	submit responses here.	-
HW4	2/26, 3:30 PM	5%	hand in HW in class.	-
Midterm exam	3/04, 3:30 PM	25%	-	-
AST2	3/18, 3:30 PM	10%	submit ZIP file link TBA.	-
PRP	3/25, 3:30 PM	5%	submit the PDF link TBA.	LaTeX template
SP1	3/25, 3:30 PM	2%	submit the PDF link TBA.	-
SP2	4/01, 3:30 PM	2%	submit the PDF link TBA.	-
SP3	4/07, 3:30 PM	2%	submit the PDF link TBA	Tue deadline - religious holiday
PEval	4/07, 3:30 PM	-	submit responses here.	-
CEval2	4/07, 3:30 PM	-	submit responses here.	-
PRO	4/07, 3:30 PM	5%	submit the PDF link TBA	LaTeX template, note Tue deadline
SP4	4/17, 3:30 PM	2%	submit the PDF link TBA	Fri deadline - religious holiday
SP5	4/22, 3:30 PM	2%	submit the PDF link TBA.	-
PRR	4/30, 3:30 PM	15%	submit ZIP file link TBA	LaTeX template, include code/data/report

Late-ness!

- Late homework is not allowed
  - late after due date/time: zero mark

- Late assignments and projects are allowed
  - late within 3 days: 30% reduction in grade
  - after that: zero mark.

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

Midterm Exam

- Closed-book.

- One double-sided sheet of notes is allowed.

Extra Credit – 5%

- Can be earned by attending a related *CS Colloquium*:
  - Provide a concise report/summary of:
    - Research problems addressed in the talk,
    - Draw connections to materials discussed in class.
  - Email the report within 1 week of the talk.
  - Max of 2 reports will be considered for a total credit of 5%.

Piazza

- Register here today:
  - piazza.com/uml/spring2020/comp5800

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

Course Evaluations

- 1-2 surveys
  - Before/After spring recess.
  - I try to take student comments seriously.

Course Evaluations

- 1-2 surveys
  - Before/After spring recess.
  - 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 spring recess.
  - Each student should:
    - clearly report his/her duties in the project
    - actively contribute to the project, and
    - try to help the other team members.

  - Report dysfunctional group situations ASAP.

Questions?