CSE-561 Probabilistic Graphical Models

Winter - 2020

Project Group Size : 2 students (preferable)
max 3 students (Project deliverables should justify your team size).

Grading Break-up: (out of 30)

1. Project - 20
2. Paper Presentation - 10

Paper Presentation Guidelines:

1. Paper should be related to your project.
2. It should be from a reputed venue. E.g. IEEE Transactions, ACM, reputed conference (min 6 pages).
3. A team of 2 shall present jointly from the same paper. If you are planning to make a team of 3, you need to present 2 papers jointly.

Project Proposal Guidelines:

Your project proposal should at least contain the following:

1. Aim of Project
2. Name and roll number of team members
3. A summary of tentative plan (3-5 lines)
4. Datasets to be used (tentative)
5. How are graphical models used in your project? (2-3 lines).
6. Specific techniques to be used (if any)
7. Are you implementing a paper? If yes, please provide the links.
8. Are there codes already available for your chosen project title?
9. References (**including the paper that you will be presenting**).

Note: You are free to use any available libraries. In case an open-source code is available for your project, you are required to make a justifiable (or novel) addition to the pre-existing work. (Institute Plagiarism policy will be strictly enforced.)

Sample Projects :

1. Dynamic causal modelling : http://web.mit.edu/swg/ImagingPubs/connectivity/Dcm_Friston.pdf
2. Non-parametric Granger causality: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2685256/

3. Bayesian Model Selection for Group Studies: https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/19306932/
4. To find clinical features that cause metastasis in melanoma using the clinical data: https://github.com/wjmaddox/442CausalLearning
5. Learner and skill modelling using bayesian networks in intelligent learning environments: https://link.springer.com/content/pdf/10.1007/s11257-011-9106-8.pdf https://link.springer.com/article/10.1023/A:1021258506583
6. Pedestrian Trajectory Prediction with Graph Neural Networks: https://www.cs.cmu.edu/~epxing/Class/10708-19/assets/project/final-reports/project19.pdf
7. On the use of graphical models for valuation of financial assets https://www.cs.cmu.edu/~epxing/Class/10708-19/assets/project/final-reports/project2.pdf
8. Approximate inference with Graph Neural Networks https://www.cs.cmu.edu/~epxing/Class/10708-19/assets/project/final-reports/project18.pdf
9. Flow Posterior for Uncertainty Estimation https://www.cs.cmu.edu/~epxing/Class/10708-19/assets/project/final-reports/project20.pdf
10. Neural Network Attributions: A Causal Perspective https://arxiv.org/pdf/1902.02302.pdf

Some more sample projects are available at:
https://www.cs.cmu.edu/~epxing/Class/10708-19/reports/

https://www.di.ens.fr/~fbach/courses/fall2014/index_projects.html

A sample for paper presentation:

1. Causal Inference Under Interference And Network Uncertainty http://auai.org/uai2019/proceedings/papers/372.pdf