Course Information

CS 6355: Structured Prediction

Building up structured output prediction

- Refresher of binary classification and introduction to multiclass classification
- Simple structures
  - Multiclass classification is really a trivial kind of a structure
- Sequence labeling problems
  - HMM, inference, Conditional Random Fields, Structured variants of SVM and Perceptron
- Conditional models: How previous algorithms extend to general structures
- Inference: Predicting structures, complexity of inference and inference algorithms
- Different training regimes
  - Training with/without inference
- Deep learning and structures
  - Do we need inference at all?
- Learning without full supervision
  - Latent variables, semi-supervised learning, weak/incidental/indirect supervision

Class focus

- To see different examples of structures
  - Sequence labeling, eg. Part-of-speech tagging
  - Predicting trees, eg Parsing
  - More complex structures, eg: relation extraction, object recognition,
  - And most importantly,

Your favorite domain/problem…

- To understand underlying *concepts*
  - Defining models, training, inference
  - Using domain knowledge for these steps
  - Overview of recent literature

Course objectives

1. To be able to define structured models for new applications

2. To identify or design training and inference algorithms for a new problem

3. To be able to critically read current literature in structured prediction and its applications

Course mechanics

Course website: https://svivek.com/teaching/structured-prediction

- Course structure
  - Lectures
  - Readings and paper reviews
- No text book
  - Some useful background reading on course website
- Machine learning is a pre-requisite
- Assignments *(due dates on schedule page of website)*
  1. Three paper reviews (not hand written, please!)
  2. One or two more assignments
  3. One class project in groups of size at most two
  4. No midterm/final. Instead, project proposal, intermediate checkpoints, final report and poster session.

Questions?

What assistance is available for you?

Course website: https://svivek.com/teaching/structured-prediction

We will use

Canvas for:

1. Announcements and communication
2. Discussion board
3. All submissions

Course website for:

1. Lecture slides
2. Notes and readings

Staff

Email: svivek at cs.utah.edu

Office hours:

Thu 11:00 AM, 3126 MEB,

or by appointment

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Please prefix subjects of all emails with course number

Policies (see website for details)

- Collaboration vs. Cheating
  - Collaboration is strongly encouraged, cheating will not be tolerated
  - School of Computing policy on academic misconduct
  - Acknowledge sources and discussions in all deliverables
- Late policy
  - 10 % penalty if submitted one day late, no further extensions
- Access and assistance
  - If you need any assistance, please contact me as soon as possible

Questions?

Course expectations

This is an advanced topics course aimed at helping you navigate recent research.

I expect you to

- Participate in the class
- Complete the readings for the lectures
- And most importantly, demonstrate independence and mathematical rigor in your work

- No readings for next lecture
- For questions about registration, please meet me now