

Course Information

CS 6355: Structured Prediction



Building up structured output prediction

- Refresher of binary classification and introduction to multiclass classification
- Simple structures
 - Multiclass 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

- Complexity of inference and inference algorithms
- Different training regimes
 - Training with/without inference
 - Constraint driven learning, posterior regularization

- Deep learning and structures
- Learning without full supervision
 - Latent variables, semi-supervised learning, 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 to
 - Define features
 - Define models
 - Make better predictions

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 by me initially and gradually, presentations by you
- 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 class presentation
 3. One class project in groups of size at most two
 4. No midterm/final. Instead, project proposal, intermediate checkpoints, final report and presentation

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:

Wed 2:00 PM, 3126 MEB,
or by appointment

TA: Jie Cao

Email: `jcao at cs.utah.edu`

Office hours:

Tue 1:30 PM – 2:30 PM

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
- The School of Computing policy on academic misconduct
 - If you haven't already done this, read and sign the SoC policy acknowledgement form within two weeks
- 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 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