LIN 373 Machine Learning Toolbox for Text Analysis, Spring 2020
Final Project Specifications
Final Presentations: May 5 and 7 during class over Zoom
Final Report Due: Friday May 15 2020 at 11:59pm (firm)

All deliverables for your final project are worth 40% of your grade (10% of which is from your proposal). This document specifies deliverables expected for the final submissions for the final **30% of your final grade**. The full credit for these deliverables is **30 points**. *No late reports will be accepted.*

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The final project is aimed to (a) show that you (and your team) worked on a task that's interesting to you and did experiments with it, and learnt something from those experiments; (b) build your skill set for teamwork and technical communication, which will always come handy in your future career.

To this end, your final project is graded on the structure of the project as a whole *and* your report+presentation quality, and *not* solely on the results from the machine learning experiments therein. This means that you will need to understand your task well, carry out experiments, and have some results to show, and some analysis (quantitative or qualitative) to discuss. For example, it is great if a model performs well, but you should say something about why and how rather than end the report with some accuracy number. On the other hand, we welcome negative results, provided that you have something interesting to say about why it didn't work. Ways to arrive at these conclusions include: running baselines and benchmark with them (especially "dumb" ones), analyzing the model's mistakes, feature ablation studies (run the model with and without certain features and compare performance), etc.[1]

[1] A lot of credit for this document goes to Katrin Erk and Greg Durrett.

Final presentation guidelines

The final presentation provides a way for you to showcase your project to the class. Think of this as a pitch given a time limit. Be sure to practice your presentation in advance to ensure you fall within the time constraints. Key points for a successful presentation include:

- Be very clear what the task is and the data you used; you can also briefly remind the audience why it is important.
- Describe how you did it and what techniques you tried. Convey enough depth such that the audience understand the experiments, but do not go into the very specific implementation details (e.g., parameter tuning, code).
- Show your results! Highlight the findings and analysis that you find most interesting – regardless of whether your results are positive and negative.

Final presentation rubric:

- **Time** (1 point): you will have 6 minutes for your presentation and 2 minutes for questions/comments. Presentations that shorter than 5.5 minutes or longer than 6.5 minutes will be penalized.
- **Slides** (2 points): Make sure presentations clear, not too crowded, and readable. See the Warnings section of this document for important notes.
- **Content/structure** (3 points): describe the data, techniques, and results (see below). If you have any additional experiments/analysis planned, make sure to explain that.

Notes

- **Turn in any visual aids on canvas** so that we can give better feedback.
- We will release slots for your presentations by Friday 5/1. If you have a good reason to go a certain time/day, please let Laura know before end of day Thursday 4/30 (you do not need to tell us the reason). If you simply have a preference, please feel free to let me know that as well! If you do not send anything, you will be randomly assigned to a time-slot.
- If for any reason you and your partner are not able to give your presentation live in class over zoom, please reach out to Jessy and Laura as soon as possible to make other arrangements.
- Avoid screenshots whenever possible in both your presentation and final paper. For graphs, save them using python. For tables, recreate them. If you chose to use LaTeX, here is a useful tool to create tables with a WYSIWG GUI `https://www.tablesgenerator.com/`
- Have dry runs WITH YOUR PARTNER in advance. Make sure everyone knows who is responsible for what and how long you expect each part to take.
- Please attend if you can, and watch the recordings if you can't attend. Hearing how your peers are solving problems might help you with your project, and you might be able to help them with theirs!

Final report guidelines

The final report is a paper written in the style of a paper typical to computational linguistics. The length of the paper should be **3-4 pages single-spaced**, excluding references. For formatting, we recommend using one of the ACL (Association for Computational Linguistics) templates; a LaTeX and a Word template are provided on Canvas.

A typicical paper in Computational Linguistics has the following components:

- **Introduction**: What the project is about, and why is this interesting/important? What is unique about your project?
- **Related work**: What other work exists in computational linguistics or other fields that is similar to your project.
- **Data**: What data/resources will you use? Did you prepare the data in any way? Did you edit the data in any way?
- **Methodology**: What type of machine learning algorithms or models you applied? Explain briefly why you chose them and how they work. Make sure to explain all steps in enough detail that someone else could replicate your experiment.
- **Results**: Report any results of any models you used, including baselines. If applicable, report the performance with some performance measure. item **Discussion/Analysis**: Describe as clearly as possible what it is your system can (and cannot) do. In most cases, you should show examples of things your system is getting correct and of errors it is making, and give potential explanations for why the model does (not) do well on those items. You could also compare your model to a results from another paper (optional).
- **References:** You should cite any sources you used. Python modules should be cited using footnotes (link to github), while datasets, journals, and textbooks should be cited using ACL standard (see papers below for examples).
- If you are working in a group: separate section describing who did what.

Some examples of Computational Linguistics papers can be found here:

`https://aclweb.org/anthology/P18-2122`

`https://aclweb.org/anthology/P18-2096`

`https://aclweb.org/anthology/P18-2057`

Final report rubric:

- **Scope/Plausibility** (6 points): Is the idea of sufficient depth for a course project? Does it follow the guidelines suggested above?
- **Implementation/Soundness** (7 points): Is the technical approach sound? Do you describe what seems like a convincing implementation? Is the experimental design correct?
- **Results/Analysis** (7 points) Whether the results are positive or negative, try to motivate them by providing examples and analysis. If things worked, what error classes are reduced?

If things didn't work, why might that be? What aspects of the data/model might not be right? You should try to report results for a baseline from the literature, your own baseline, your best model, and possibly results of ablation experiments.

- **Clarity/Writing** (4 points): Your paper should contain all standard components, clearly convey a core idea/hypothesis, describe how you tested it/what you built, and situate it with respect to related work as best you can.

For writing advice, see Prof. Greg Durrett's slides: `http://www.cs.utexas.edu/~gdurrett/courses/fa2017/lectures/lec8-writing-4pp.pdf`

Code

As part of the submission, you must turn in your code. We will use that as reference should we have questions for the report, so make sure it is readable and runable. You can turn in either a Jupyter notebook or a Python script. We will multiply the final 30% of your grade by 1 (all your code is submitted along with the report), or 0 (code is not submitted along with the report, or code is largely incomplete with respect to the project report).

Drafts

Laura will be willing to read *one* draft of a final paper after your group receives your feedback from the presentation outside of office hours. No guarantees on turnaround time, but I will try to read it and get back with some minor comments in about 2 business days.