Project

1 Overview

A major component of CS 5134/6034 will be a project for which you create and evaluate a NLP system. You can choose to reimplement/improve a published work at NLP Conferences (ACL / EMNLP / NAACL) from the last 5 years (since 2018) or one of the provided tasks on our course web page (`https://jiangtianyu.com/cs5134/`). You must choose a task with a pre-existing annotated text collection to use as training and evaluation data, so that you can spend your time building the system, and will not get bogged down in the quagmire of annotating data yourself.

The project is worth 35% of the overall grade for the class. It consists of 4 parts:

1. Project Proposal: 5%, due Feb 20
2. Intermediate Report: 8%, due Mar 19
3. Final Report: 14 %, due April 16
4. In-class Presentation: 8%

2 Teams

You should work on the project as a **3-person** team. Each team member must have clearly defined individual responsibilities for each phase of the project, as demonstrated in the report and presentations. Team members may receive different project grades if their levels of contribution are substantially different.

3 Project Goal

The goal of the project is for you to get first-hand experience with building and evaluating a NLP system, understand the research questions in NLP, and develop skills for solving new NLP problems in the future. You can apply the knowledge learned from the class or dig deeper into state-of-the-art techniques for your task. Teams that demonstrate a deep understanding of some aspect of NLP through their project will receive high grades.

If you choose to re-implement a published work, you are also encouraged to come up with innovations that are not in the original paper, such as model improvement, comparison with other models, extra analysis and ablation study, and so on.

If you choose from the provided tasks, you can build a system all from your ideas. Or you are welcome to use the search engine to find existing work to improve upon, and clearly demonstrate your novelty in the reports.

Please keep in mind that all submitted code/report **must be your own** (For example, it is not allowed to just download and submit others' code from the github.)!

4 Project Proposal

Each team should submit a project proposal **at most 2 pages** in pdf format that contains the following information:

1. Team Name
2. Team Members
3. **Data**: name the data set that you plan to use for your project. Please include a URL if you will obtain it from an on-line site.
4. **Task**: which paper/task do you select? In your own words, give a detailed description of the NLP task that you will tackle. I want to see that you truly understand what the task involves, in terms of the problem that it's trying to solve, the types of annotations in the data set, and the type of output that your system will need to produce.
5. **Evaluation**: describe how you will evaluate the performance of your NLP system using this data. Be specific in terms of the metrics you will use and what data you will use for training versus evaluation (you should use the same data split if the dataset already contains separate training and validation/testing sets).

Prof. Jiang will review each proposal to make sure that the NLP task, data set, and evaluation plans are appropriate in both topic and scope. Please remember that you will receive a grade for your project proposal! The grade will be based on how well your project proposal fits the specified criteria and the quality of the written descriptions.

5 Intermediate Report

Each team should submit:

1. a zip file containing all of the source code you wrote. It should be no larger than 10 MB. Do not include large pre-trained models, word embeddings, etc. We will not be compiling or running your model ourselves. The purpose of the source code submission is so that we can verify that you **wrote your own code** and so that we can inspect the code in case we have questions about the system's design or what it does.
2. an intermediate report **at most 4 pages** in pdf format.

The intermediate report should contain the following information:

1. Team Name and Team Member(s)
2. Task and Data (in a brief but precise way)
3. **Resources List**: A list of all external software tools and data or other resources that your system uses, along with a URL showing where you got each one from.
4. **Technical Description**: Describe the overall design and technical components of your sys-

tem. Explain the type of model that you built, its architecture, and how it works.

5. **Evaluation**: Describe how you evaluated the performance of your model, including how the data set was used and the evaluation metrics that you applied. Present tables and/or figures showing the results of your evaluations.

6. **Contributions**: describe the specific contributions of each team member. Remember that each team member must have clearly defined individual responsibilities.

The report should demonstrate that you have a good understanding of the project, and have made **non-trivial** contributions to tackling the problem. For example, suppose you proposed to tackle the hate speech detection task. By the intermediate report, you should have a basic and "working" classifier and your report should include some evaluation results. At this stage, you do not necessarily have your own state-of-the-art model that achieves "99% accuracy" or outperforms all the previous systems (you can still aim for that!).

In the **Technical Description** and **Evaluation** section, try to discuss your progress in detail, e.g.,

(1) describe the model you built; if you reimplemented an existing method, were you able to follow the paper exactly? Did you observe the same model performance?

(2) do you have some baseline models to compare with?

(3) describe experiments/analysis you have done so far; how do you interpret the experimental results?

(4) what challenges you have met; how you have addressed them, or if any are still unresolved?

(5) list your plans to improve the current approach, or try a new method, or conduct more experiments?

Prof. Jiang will review each report and provide guidance toward your goal. The more progress you have made and the more detailed information you include, the more success you will likely have with your project, as well as your final report.

You will receive a grade based on the progress you have made and the quality of your team's report.