released: October 15, 2019

Class Project

CSE 256: Statistical NLP: Fall 2019

University of California, San Diego

Midterm Deliverable Due: November 6 2019

Final Demos Due: December 3 & 5 2019

In this project we will explore machine learning solutions to the problem of natural language understanding. Students may do the final projects solo, or in teams of up to **3 people**.

1 Project Description

For the class project, your task is to develop machine learning algorithms for a natural language process task. There are **two** deliverables for the project. You are free to pick any NLP task for which you can find a labeled dataset, and any machine learning method. We provide a *default* project which you can choose to work on if you prefer.

1.1 Midterm Deliverable— Project Proposal and Paper Summary(10%)

Explain the NLP task you will be working on for your project. Find one paper related to your project task and summarize it. The paper should be published. Places to look include machine learning and NLP conferences (ICML, NeurIPS, ACL, EMNLP, NAACL, ICLR, etc.)

1.2 Final Deliverable— Demo (90%)

We will grade the final deliverable during the lecture time slot on the last week of lectures, over two days. You are expected to show up on both days to see other demos and to vote for the best project. A demo guideline will be provided. After the midterm deliverable, teams will be allocated to demo slots, which will be either on December 3rd or 5th.
It will be relatively easy to achieve 80% from this part, however, for full credit, some creativity is required. You are free to be creative along any dimension: choice of task and dataset, visualization, machine learning methods, explanability of your model, bias-free models, etc. If you choose to explore visualization for your creativity, you can create a simple HTML-based interface that allows making calls to your model. The user provides some input text; your model should make predictions on the input text. We recommend Django, but you are free to use any tools you are familiar with and prefer.

2 Default Project

Take the classifier you developed in PA2[1], and add functionality to support **question answering** on the bAbI dataset (**QA bAbI tasks**) from Facebook AI research. You will need to cast question answering as a classification problem over words of the vocabulary.

2.1 The dataset for default project

Download the dataset from here: `https://research.fb.com/downloads/babi/`.
Notice that there are multiple datasets on the bAbI project, look for the question answering(QA) dataset.

[1] If you did not get a solution you are happy with, it will be considered adequate to work with the starter code.

2.2 The paper for default project

For the default project the paper you will need to read and summarize for the midterm deliverable is [Weston et al.(2016)Weston, Bordes, Chopra, and Mikolov].

3 Deliverable Guidelines

3.1 Midterm Deliverable(10%)

Submit a report, up to 2 pages, containing the following information.

3.1.1 Team information.

a. Names and PIDs of Team members

3.1.2 Problem Definition.

a. Why is this NLP task important?

b. Why doesnt the problem have a trivial solution?

3.1.3 Related Paper Summary.

a. Paper Which paper did you pick? Provide full paper information: authors, and publication venue.

b. Contributions What are the contributions of the paper work? The contributions in a paper may be many and varied. They can be new ideas, new methods, software, experimental techniques. What are the evaluation metrics, and datasets?

c. Criticial Analysis What are the limitations of the paper? Are the assumptions made is this work reasonable? Can they be generalized further? Are there simple solutions that the current paper do not seem to have considered?

3.2 Final Deliverable - Demo (90%)

A demo guideline will be provided. We will grade your project holistically, taking into account your effort, creativity, and success.

4 Resources for Finding NLP Problems and Datasets

If you choose not to do the default project, below are some places you can start looking for a project.

- Repository for progress on Various NLP tasks: `https://github.com/sebastianruder/NLP-progress`
- SemEval runs competitions for different NLP tasks: `http://alt.qcri.org/semeval2018/index.php?id=tasks`
- Kaggle `https://www.kaggle.com/`

5 Prizes

There will be prizes awarded to the outstanding teams. The winning teams will be decided determined by the class vote and the vote of the teaching team.

6 Submission and other Instructions

- **Final Code:** You will submit your final code together with a neatly written README file with instructions on how to run your code.
- **Final Report:** There will be no final report, but we will require a few screenshots of your system working, up to 10 pages are allowed.
- **Demo:** A demo guideline will be posted.

References

[Weston et al.(2016)Weston, Bordes, Chopra, and Mikolov] Jason Weston, Antoine Bordes, Sumit Chopra, and Tomas Mikolov. 2016. Towards ai-complete question answering: A set of prerequisite toy tasks. In *4th International Conference on Learning Representations, ICLR 2016, San Juan, Puerto Rico, May 2-4, 2016, Conference Track Proceedings*.