

# CS 162 Project Midterm Report

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## Abstract

No abstract yet for midterm report.

## 1 Introduction

This project aims to use train and use NLP models to solve a common-sense reasoning task. We use complementary pairs of true and false sentences to train the machine to reason what sentences it is given later on are true or false. Using the Com2Sense dataset and a starter codebase from the instructors, we load data, train the data, test models, and verify its efficacy.

## 2 Results

### 2.1 Milestone 1

In milestone 1, we implemented the evaluator functions used in the project.

- For part 1, we implemented standard metrics: accuracy, precision, recall, and f1-score. These were implemented using scikit-learn's metrics library.
- For part 2, we implemented pairwise accuracy metrics by grouping predictions into pairs and evaluating accuracy based on whether both items in each pair provided the correct label.

Both implementations successfully pass the included test suite.

### 2.2 Milestone 2

In milestone 2, we implemented the mandatory TODO blocks for the DataLoaders and Processors. In the first part, we added code to read the Com2Sense data. We processed the input in the json files and created individual entries for each piece of data given, making sure to handle empty inputs.

The first output of running

```
ython3 -m data_processing.processors.py  
-d com2sense
```

was:

```
Coms2SenseSingleSentenceExample(guid='0',  
text='Given that Grace is next  
to perform on stage she will  
do her make up rather wait  
for her make up artist ',  
label=None, domain='time',  
scenario='comparison',  
numeracy=False)
```

This matched the format of the expected output.

In the second part, we implemented code to restructure the data we read before into a DataSet class. We implemented the `__getitem__` function for the Com2SenseDataset class which basically encoded the text into a numeric form.

After running the test function, it output that the Com2Sense Dataset was loading correctly. We have not implemented the optional semeval portion at this point, but we may still implement it down the road.

### 2.3 Milestone 3 and Beyond

Not yet implemented

## 3 IGNORE EVERYTHING BELOW THIS

I can't remove this section without latex breaking bc of some ACL format...

### 3.1 Footnotes

Footnotes are inserted with the `\footnote` command.

### 3.2 Tables and figures

See Table ?? for an example of a table and its caption. **Do not override the default caption sizes.**

### 3.3 Hyperlinks

Users of older versions of  $\text{\LaTeX}$  may encounter the following error during compilation:

```
\pdfendlink ended up in different
nesting level than \pdfstartlink.
```

This happens when  $\text{\pdf\LaTeX}$  is used and a citation splits across a page boundary. The best way to fix this is to upgrade  $\text{\LaTeX}$  to 2018-12-01 or later.

### 3.4 cit

Table ?? shows the syntax supported by the style files. We encourage you to use the `natbib` styles. You can use the command `\citet` (cite in text) to get “author (year)” citations, like this citation to a paper by [Gusfield \(1997\)](#). You can use the command `\citep` (cite in parentheses) to get “(author, year)” citations ([Gusfield, 1997](#)). You can use the command `\citealp` (alternative cite without parentheses) to get “author, year” citations, which is useful for using citations within parentheses (e.g. [Gusfield, 1997](#)).

### 3.5 ref

The  $\text{\LaTeX}$  and  $\text{\BibTeX}$  style files provided roughly follow the American Psychological Association format. If your own bib file is named `custom.bib`, then placing the following before any appendices in your  $\text{\LaTeX}$  file will generate the references section for you:

```
\bibliographystyle{acl_natbib}
\bibliography{custom}
```

You can obtain the complete ACL Anthology as a  $\text{\BibTeX}$  file from <https://aclweb.org/anthology/anthology.bib.gz>. To include both the Anthology and your own `.bib` file, use the following instead of the above.

```
\bibliographystyle{acl_natbib}
\bibliography{anthology,custom}
```

Please see Section ?? for information on preparing  $\text{\BibTeX}$  files.

### 3.6 appn

Use `\appendix` before any appendix section to switch the section numbering over to letters. See Appendix A for an example.

## 4 Conclusion

Unicode cannot be used in  $\text{\BibTeX}$  entries, and some ways of typing special characters can disrupt  $\text{\BibTeX}$ ’s alphabetization. The recommended way of typing special characters is shown in Table ??.

Please ensure that  $\text{\BibTeX}$  records contain DOIs or URLs when possible, and for all the ACL materials that you reference. Use the `doi` field for DOIs and the `url` field for URLs. If a  $\text{\BibTeX}$  entry has a URL or DOI field, the paper title in the references section will appear as a hyperlink to the paper, using the `hyperref`  $\text{\LaTeX}$  package.

## Limitations

ACL 2023 requires all submissions to have a section titled “Limitations”, for discussing the limitations of the paper as a complement to the discussion of strengths in the main text. This section should occur after the conclusion, but before the references. It will not count towards the page limit. The discussion of limitations is mandatory. Papers without a limitation section will be desk-rejected without review.

While we are open to different types of limitations, just mentioning that a set of results have been shown for English only probably does not reflect what we expect. Mentioning that the method works mostly for languages with limited morphology, like English, is a much better alternative. In addition, limitations such as low scalability to long text, the requirement of large GPU resources, or other things that inspire crucial further investigation are welcome.

## Ethics Statement

Scientific work published at ACL 2023 must comply with the ACL Ethics Policy.<sup>1</sup> We encourage all authors to include an explicit ethics statement on the broader impact of the work, or other ethical considerations after the conclusion but before the references. The ethics statement will not count toward the page limit (8 pages for long, 4 pages for short papers).

## Acknowledgements

This document has been adapted by Jordan Boyd-Graber, Naoaki Okazaki, Anna Rogers from the style files used for earlier ACL, EMNLP and

<sup>1</sup><https://www.aclweb.org/portal/content/acl-code-ethics>

NAACL proceedings, including those for EACL 2023 by Isabelle Augenstein and Andreas Vlachos, EMNLP 2022 by Yue Zhang, Ryan Cotterell and Lea Frermann, ACL 2020 by Steven Bethard, Ryan Cotterell and Rui Yan, ACL 2019 by Douwe Kiela and Ivan Vulić, NAACL 2019 by Stephanie Lukin and Alla Roskovskaya, ACL 2018 by Shay Cohen, Kevin Gimpel, and Wei Lu, NAACL 2018 by Margaret Mitchell and Stephanie Lukin, BibTeX suggestions for (NA)ACL 2017/2018 from Jason Eisner, ACL 2017 by Dan Gildea and Min-Yen Kan, NAACL 2017 by Margaret Mitchell, ACL 2012 by Maggie Li and Michael White, ACL 2010 by Jing-Shin Chang and Philipp Koehn, ACL 2008 by Johanna D. Moore, Simone Teufel, James Allan, and Sadaoki Furui, ACL 2005 by Hwee Tou Ng and Kemal Oflazer, ACL 2002 by Eugene Charniak and Dekang Lin, and earlier ACL and EACL formats written by several people, including John Chen, Henry S. Thompson and Donald Walker. Additional elements were taken from the formatting instructions of the *International Joint Conference on Artificial Intelligence* and the *Conference on Computer Vision and Pattern Recognition*.

## References

- Rie Kubota Ando and Tong Zhang. 2005. [A framework for learning predictive structures from multiple tasks and unlabeled data](#). *Journal of Machine Learning Research*, 6:1817–1853.
- Galen Andrew and Jianfeng Gao. 2007. [Scalable training of  \$L\_1\$ -regularized log-linear models](#). In *Proceedings of the 24th International Conference on Machine Learning*, pages 33–40.
- Isabelle Augenstein, Tim Rocktäschel, Andreas Vlachos, and Kalina Bontcheva. 2016. [Stance detection with bidirectional conditional encoding](#). In *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing*, pages 876–885, Austin, Texas. Association for Computational Linguistics.
- James Goodman, Andreas Vlachos, and Jason Naradowsky. 2016. [Noise reduction and targeted exploration in imitation learning for Abstract Meaning Representation parsing](#). In *Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, pages 1–11, Berlin, Germany. Association for Computational Linguistics.
- Dan Gusfield. 1997. *Algorithms on Strings, Trees and Sequences*. Cambridge University Press, Cambridge, UK.

Mary Harper. 2014. [Learning from 26 languages: Program management and science in the babel program](#). In *Proceedings of COLING 2014, the 25th International Conference on Computational Linguistics: Technical Papers*, page 1, Dublin, Ireland. Dublin City University and Association for Computational Linguistics.

Mohammad Sadegh Rasooli and Joel R. Tetreault. 2015. [Yara parser: A fast and accurate dependency parser](#). *Computing Research Repository*, arXiv:1503.06733. Version 2.

## A Example Appendix

This is a section in the appendix.