

COMP4420 Project Proposal: Sarcasm Detection

Bui, Nam

`nam_bui@student.uml.edu`

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1 Introduction

2 Dataset

The dataset used will be a collection of tagged newspaper headlines [1].

3 Evaluation Method

Since the dataset was created in 2016, during a period of political turmoil, there may be some bias in the data. It will be interesting to see what words have the highest correlation with a sarcastic headline. Additionally, news headlines usually have a lot of proper nouns, so it may help to use named entity recognition when encoding the headlines.

Sentiment analysis is a core natural language processing task so there is a lot of data available on what types of models work. We plan on using several for this project. Naive Bayes classifiers are lightweight models that have traditionally been used in sentiment analysis. Deep averaging networks are able to leverage the universal approximation properties of neural networks, but are lightweight since they don't capture context. In recent years, recurrent neural networks have gained popularity due to their ability to capture context with the attention mechanism. Since news headlines are often one or two sentences, there is not much need to capture long distance dependencies.

Since the task is a binary classification task, precision, recall, and F1 are good metrics to use. Accuracy will also be used to compare findings to results from Misra et al. [1].

4 Timeline

First, the dataset will be split into training, development, and test sets with a 70/10/20 split. For the baseline model, we will use a Naive-Bayes with one-hot encoding. After training and evaluating the baseline model, we would like to fine-tune word2vec to the headline-specific words. Once the word embeddings have been fine tuned, we would like to train and evaluate either a DAN or LSTM model.

References

- [1] Rishabh Misra and Prahal Arora. “Sarcasm Detection using News Headlines Dataset”. In: *AI Open* 4 (2023), pp. 13–18. ISSN: 2666-6510. DOI: <https://doi.org/10.1016/j.aiopen.2023.01.001>. URL: <https://www.sciencedirect.com/science/article/pii/S2666651023000013>.