Assignment 3

Covid-19 Fact Checking

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Analysis of the Initial Dataset

Is there anything particular about these datasets that might have an impact on the performance of some models? Explain.

Yes. For instance, the datasets contain punctuation that could potentially influence the vocabulary. Furthermore, the dataset could contain words in both their singular and plural forms, therefore adding new words to the vocabulary. For instance, “vaccine”, “vaccines” and “vaccine!” would not be considered the same word lest we clean up the data and to ensure better consistency in our results.

Also, there are non-standard text in a lot of these tweets, such as emojis, URL links, that could influence the final vocabulary and model results.

Analysis Between the Vocabulary

NB-BOW-OV

What is the size of the vocabulary?

The original vocabulary is bigger because we don't filter out words that only appear once and take the raw vocabulary. 3385 words.

Accuracy:	0.7593	
	YES	**NO**
Per-class Precision:	0.7381	0.8333
Per-class Recall:	0.9394	0.4762
Per-class F1:	0.8267	0.6061

NB-BOW-FV

What is the size of the vocabulary?

The size of this model was smaller than the original vocabulary as the single occuring words were filtered out. 1168 words.

Accuracy:	0.7593	
	YES	**NO**
Per-class Precision:	0.7632	0.75
Per-class Recall:	0.8788	0.5714
Per-class F1:	0.8169	0.6486

Did the reduction in vocabulary lead to a significant difference in performance?

There was a significant difference in performance because if we compare the metrics, the NB-BOW-FV had a more balanced PCP, PCR and PCF1. The accuracy although remained constant.

Analysis of the Results of all 3 Models

Compare and contrast the performance of each model with one another

Overall, both OV and FV outperformed the LSTM model in accuracy, per class precision, pre class recall and per class f1 measure. The LSTM doesn't outperform any of our models in any of the per-class performance.

In terms of accuracy, the OV and the FV ended up with the same accuracy. For the per-class performances of precision, recall and f1-measure, the FV model has much more balanced results between the two classes (yes and no) than the OV. However, the OV model provides value in performing better than the FV model in:

- "No" class precision
- "Yes" class recall
- "Yes" class f1-measure