Project Notes

* Consider using allsides.com to label dataset.
* Consider using Common Crawl and Internet Archive to gather articles for the dataset
* Can scrape news articles using the python library Goose3

Model Families:

Main Pre-Deep Learning: RNNs, Multilayer Perceptron, LSTM RNNs, CNNs

Deep Learning, Transformers: BERT, S-BERT based multi-head attention model, RoBERTa, DistilBERT, BERT-base, KoBERT, KoBigBird, KoELECTRA, mBERT, XLM-RoBERTa, EstBERT, Est-RoBERTa

Other Transformers: GPT(3.5 & 4), Llama, Gemini, Mistral, PLMs

Other: MVDAM (Multi-View Document Attention Model that uses article title, content, and links to other articles)

Other Papers: Knowledge graph on top of models, Bias about specific issues in news articles, the good survey paper, multi-faceted ideology schema instead of left-right paper, inherent biases in models(usually left-leaning) and strategies to debias LLMs paper, Gun Control Stance Detection dataset tested on different models paper, guide to classify political beliefs in text paper

Eval Results:

BERT: Acc: 0.941 F1: 0.941 Precision: 0.941 Recall: 0.941

Second dataset pass: 0.943

0.5 of dataset: 0.923

0.25 of dataset: 0.882

0.4 of dataset + 0.3 of each article: 0.903

0.4 of dataset + 0.3 of each article + removing keywords: 0.901

0.35 of dataset + 0.2 of each article + removing keywords: 0.895

0.1 of each article + removing keywords: 0.878

A blue squares with white text

Description automatically generated

RoBERTa: All 0.958

Second dataset pass: 0.963

0.5 of dataset: 0.959

0.25 of dataset: 0.929

0.4 of dataset + 0.3 of each article: 0.950

0.4 of dataset + 0.3 of each article + removing keywords: 0.916

0.35 of dataset + 0.2 of each article + removing keywords: 0.909

0.1 of each article + removing keywords: 0.905

A screenshot of a graph

Description automatically generated

Llama 3.2-3B:

Confusion Matrix:

[[213 0 0 0]

[ 0 885 5 1]

[ 0 3 828 3]

[ 2 2 4 925]]

Classification Report:

precision recall f1-score support

0 0.99 1.00 1.00 213

1 0.99 0.99 0.99 891

2 0.99 0.99 0.99 834

3 1.00 0.99 0.99 933

accuracy 0.99 2871

macro avg 0.99 0.99 0.99 2871

weighted avg 0.99 0.99 0.99 2871

Balanced Accuracy Score: 0.9943743144430183

Accuracy Score: 0.9930337861372344

Llama-3.2-1B-Instruct:  
Confusion Matrix:

[[211 0 0 2]

[ 1 879 6 5]

[ 0 4 828 2]

[ 3 4 4 922]]

Classification Report:

precision recall f1-score support

0 0.98 0.99 0.99 213

1 0.99 0.99 0.99 891

2 0.99 0.99 0.99 834

3 0.99 0.99 0.99 933

accuracy 0.99 2871

macro avg 0.99 0.99 0.99 2871

weighted avg 0.99 0.99 0.99 2871

Balanced Accuracy Score: 0.9895395363982407

Accuracy Score: 0.9892023685127134

Using 0.25 of dataset: 0.98

Gemma 2-2b:

Confusion Matrix:

[[213 0 0 0]

[ 0 882 8 1]

[ 0 4 829 1]

[ 2 3 5 923]]

Classification Report:

precision recall f1-score support

0 0.99 1.00 1.00 213

1 0.99 0.99 0.99 891

2 0.98 0.99 0.99 834

3 1.00 0.99 0.99 933

accuracy 0.99 2871

macro avg 0.99 0.99 0.99 2871

weighted avg 0.99 0.99 0.99 2871

Falcon3-1B:

Confusion Matrix:

[[216 0 0 3]

[ 1 880 23 11]

[ 0 16 818 4]

[ 2 0 5 892]]

Classification Report:

precision recall f1-score support

0 0.99 0.99 0.99 219

1 0.98 0.96 0.97 915

2 0.97 0.98 0.97 838

3 0.98 0.99 0.99 899

accuracy 0.98 2871

macro avg 0.98 0.98 0.98 2871

weighted avg 0.98 0.98 0.98 2871

Phi-3.5-mini-instruct:

Confusion Matrix:

[[218 1 0 0]

[ 0 902 11 2]

[ 0 13 821 4]

[ 1 4 6 888]]

Classification Report:

precision recall f1-score support

0 1.00 1.00 1.00 219

1 0.98 0.99 0.98 915

2 0.98 0.98 0.98 838

3 0.99 0.99 0.99 899

accuracy 0.99 2871

macro avg 0.99 0.99 0.99 2871

weighted avg 0.99 0.99 0.99 2871

Balanced Accuracy Score: 0.9871759814811616

Accuracy Score: 0.9853709508881923