



Classifying Audience Response on Political Speech

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PROBLEM STATEMENT

- Contextual classification of audience reaction on transcribed political speech.
- Experiment with BERT's ability to capture humor and sarcasm based features.
- Evaluating the impact of humour and sarcasm on applause propensity in speeches.

DATASET

CORPS Dataset : Political speeches annotated for audience reactions like *Applause* or *Boo*.

Example :

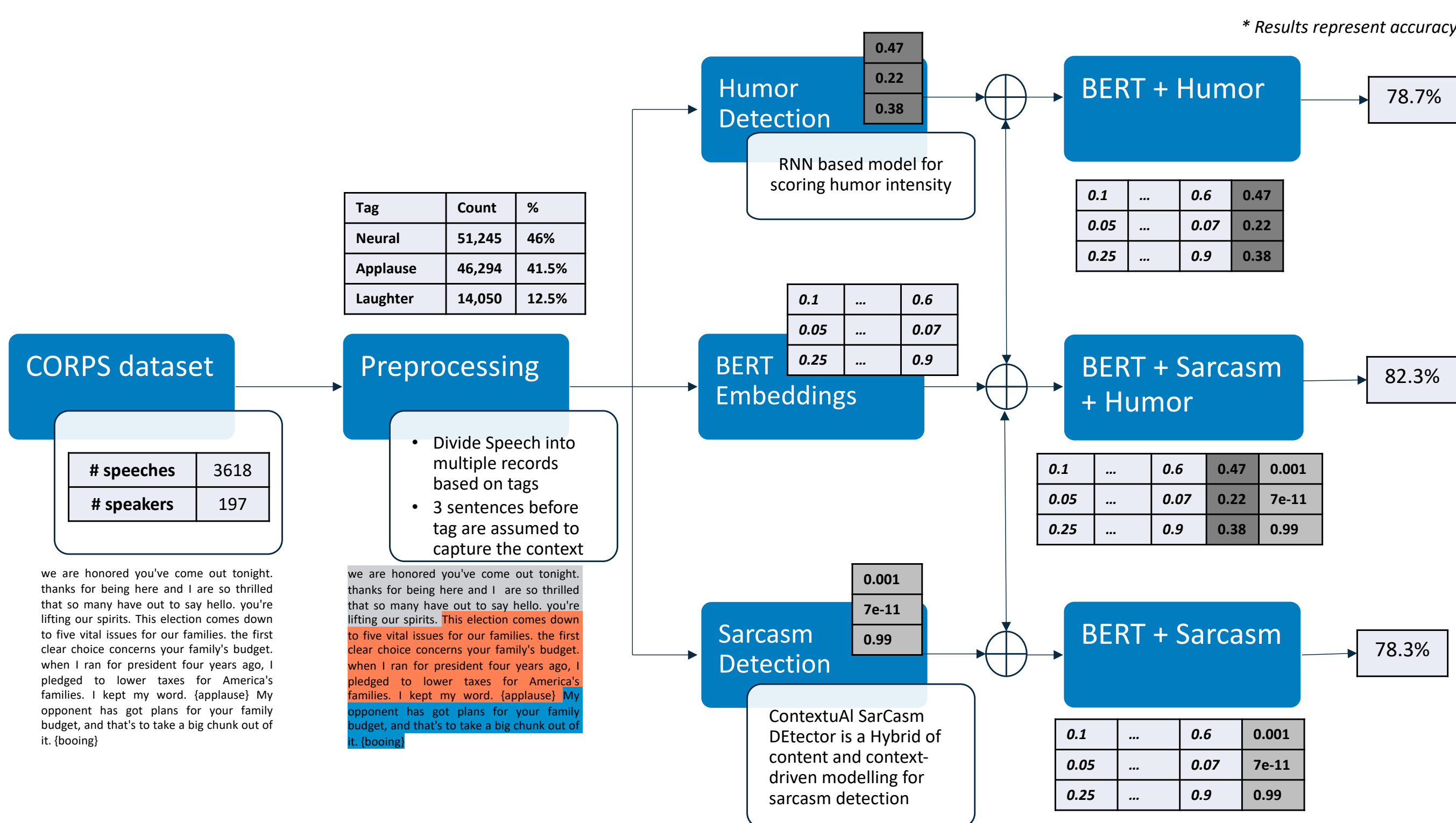
when john kerry suggests a global test, he goes right back to his beginnings in politics, when he said as he ran for congress the first time, he would only deploy troops under the authority of the united nations {**BOOING**}

during the 1980s, he opposed ronald reagan's major defense initiatives that brought victory in the cold war.... {**NEUTRAL**}

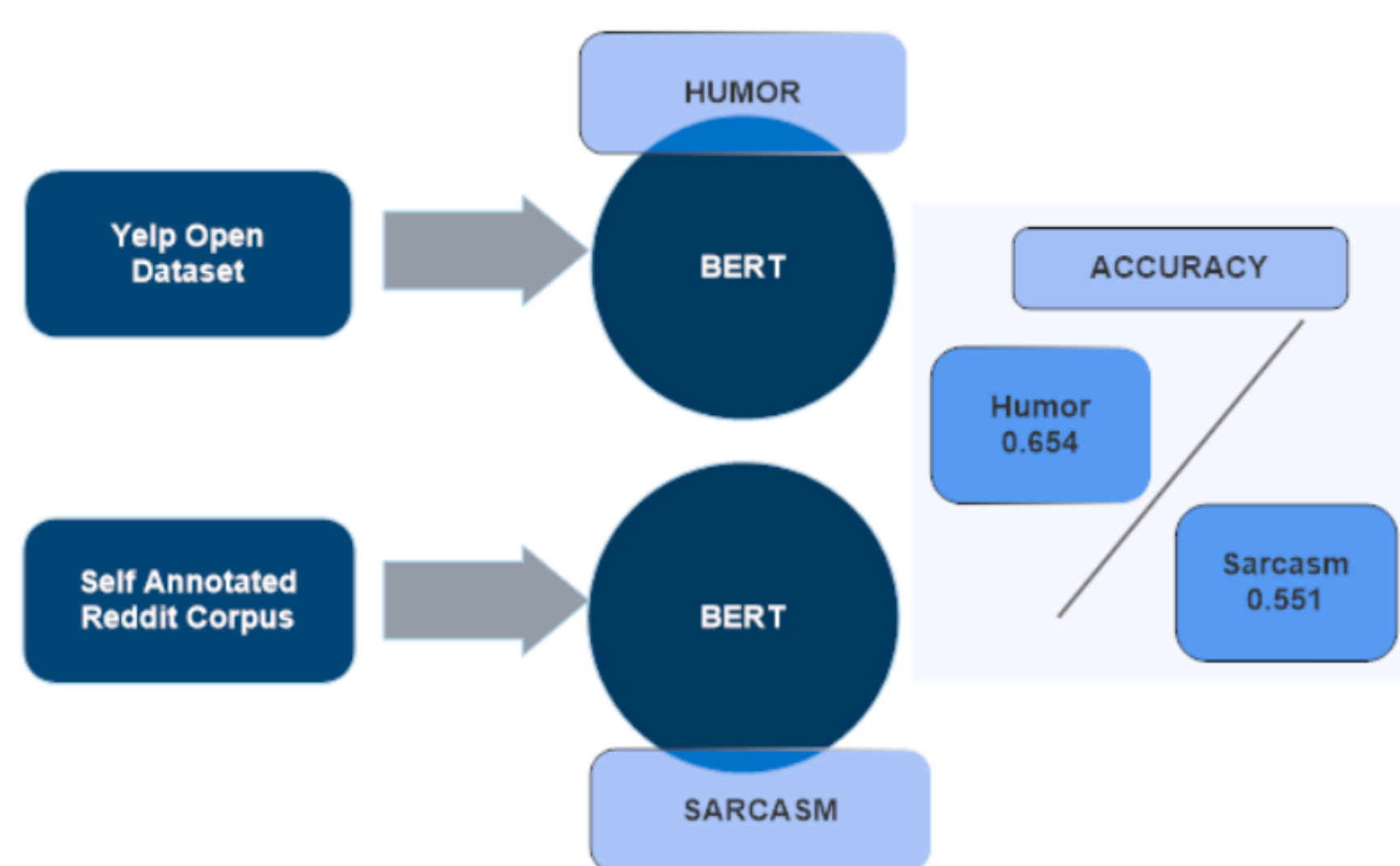
you occasionally hear some bold talk from him, but it cannot disguise a 30-year record of coming down on the wrong side of virtually every major defense issue. {**APPLAUSE**}

METHOD

Approach



Experiment



- What?** Evaluate BERT for sarcasm and humor
- Why?** To identify potential ways of improvement in applause detection
- How?** Trained one FC layer over raw BERT using annotated data.
- Results?** BERT Base Un-cased appears to perform poorly.

ERROR ANALYSIS

- Confusion matrix was analyzed - identified class imbalance in data - rectified by down-sampling to a 55-45 division of data.
- Example (Contains Sarcastic + Humour | Annotated with No applause)

god sent a carpenter, and when goliath threatened the nation of israel, he sent a non-descript david god doesn't seem to choose the high and mighty maybe i was wrong maybe being an american is not such a blessing

Total Applause	With Sarcasm and Humor	Only Sarcasm	Only Humor	Rest
63398	9423	5350	30833	17792
Feature Dependency - Strong dependency of applause data on humor				

CONTRIBUTIONS

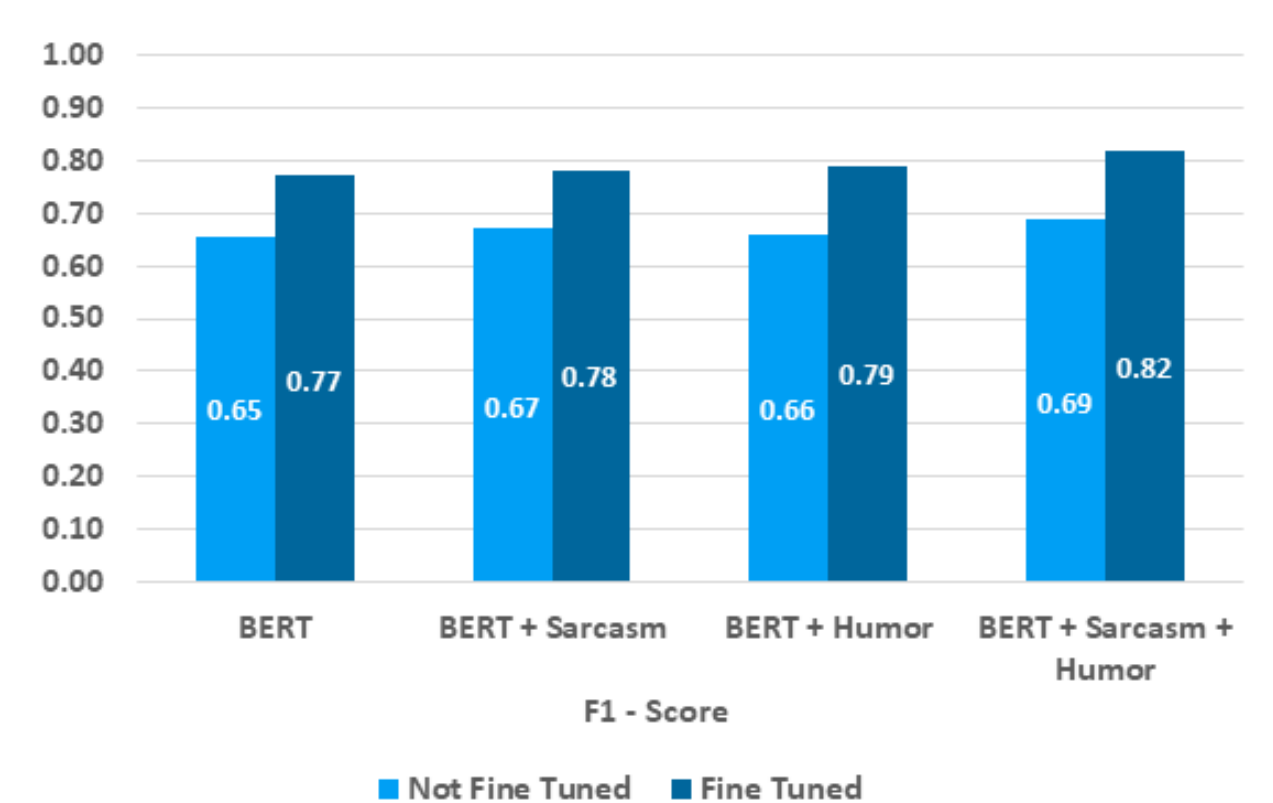
- Implement and improve baseline for applause detection
- Evaluate BERT's ability to capture sarcasm and humor features
- Annotate CORPS data for sarcasm and humor -> Implement state of the art sarcasm and humor
- Perform BERT + Humour + Sarcasm feature concatenation

RESULTS

Baseline Performance Analysis

Model	Accuracy	F1-Score
SVM	58.56%	0.55
CNN	62.23%	0.68
BERT	76.88%	0.77

Feature Performance Analysis



72% of records with applause contain either humor or sarcasm. This lead to a 5% improvement in F1 score

FUTURE WORK

- Enhance Linguistic Features**
Identify features beyond humor and sarcasm influencing applause (remaining 28% from error analysis).
- Model Enhancement**
Using audio and physical gestures from videos of audience response to improve model performance.
- Extend Scope of Application**
Extend the approach to domains beyond political speeches like books.
- Audience Profiling**
Explore areas of audience information incorporation to improve performance.