Automated Essay Grading

A Kaggle Challenge

kaggle

The Learning Agency Lab

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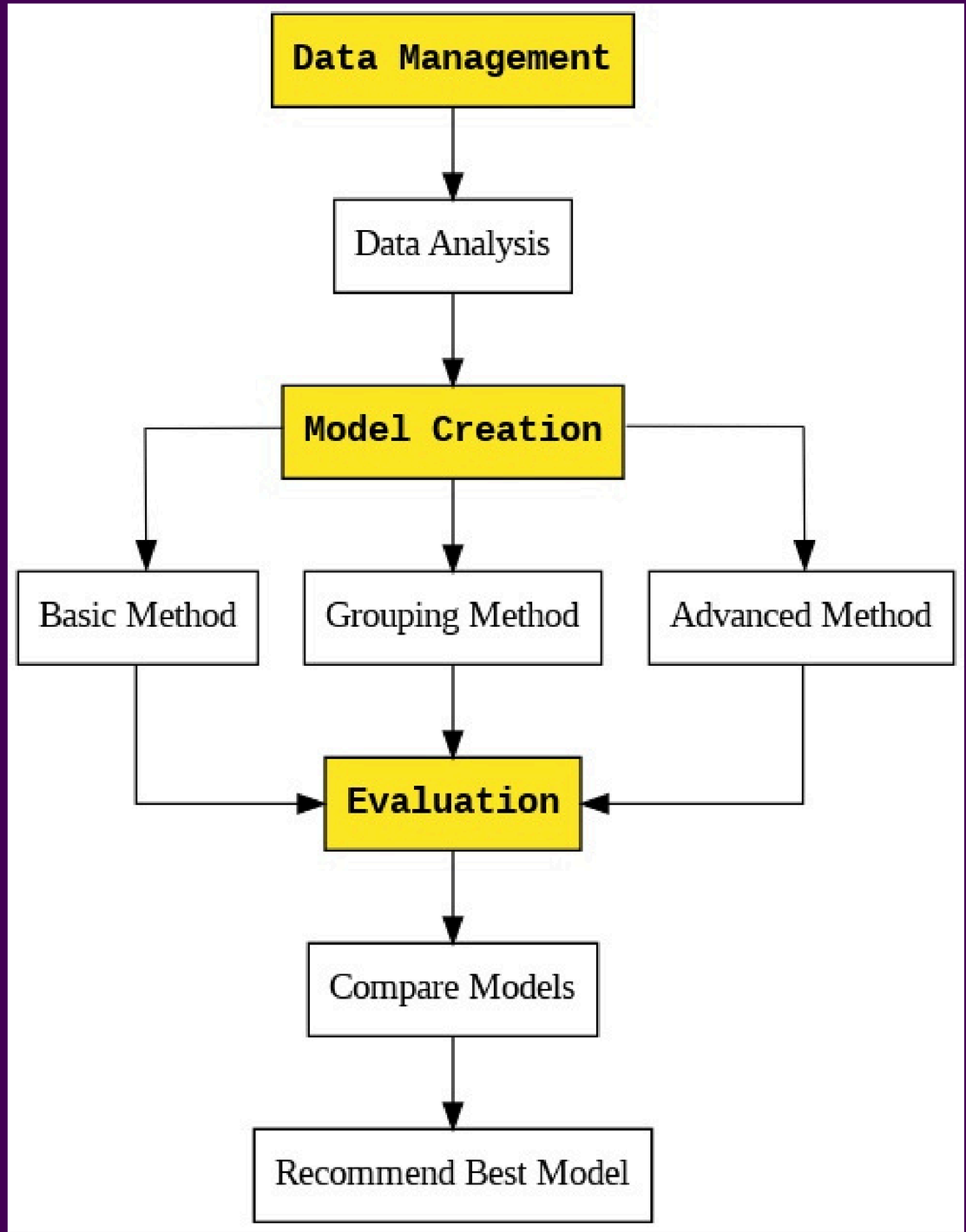
BUSINESS PROBLEM

1. What are the optimal test settings for the models?
2. How does the model build impact grading accuracy?

DATA UNDERSTANDING

- Source: Kaggle (open commons)
- 6,000 argumentative essays
- Essay scores range: 1 to 6

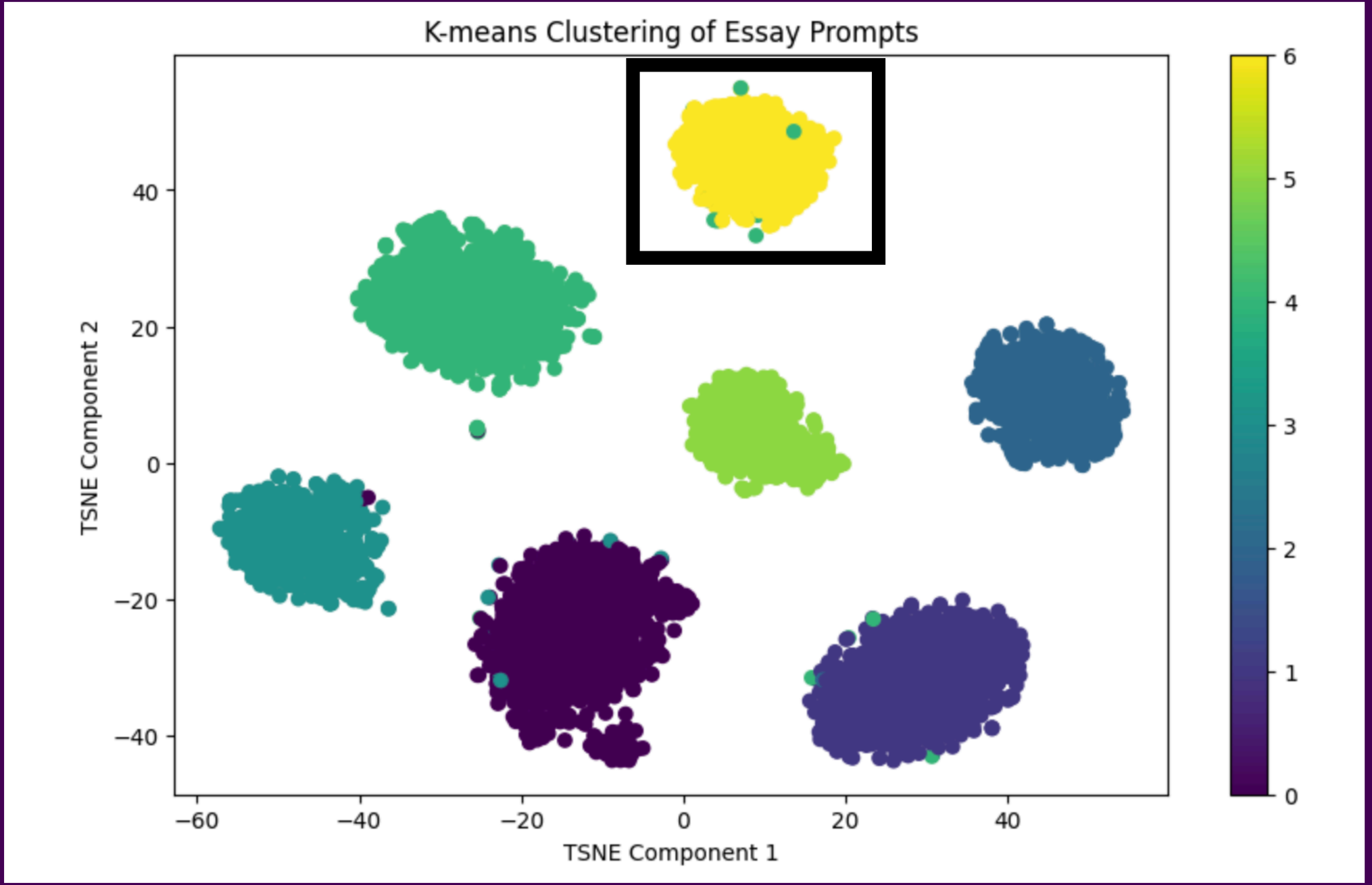
METHODOLOGY



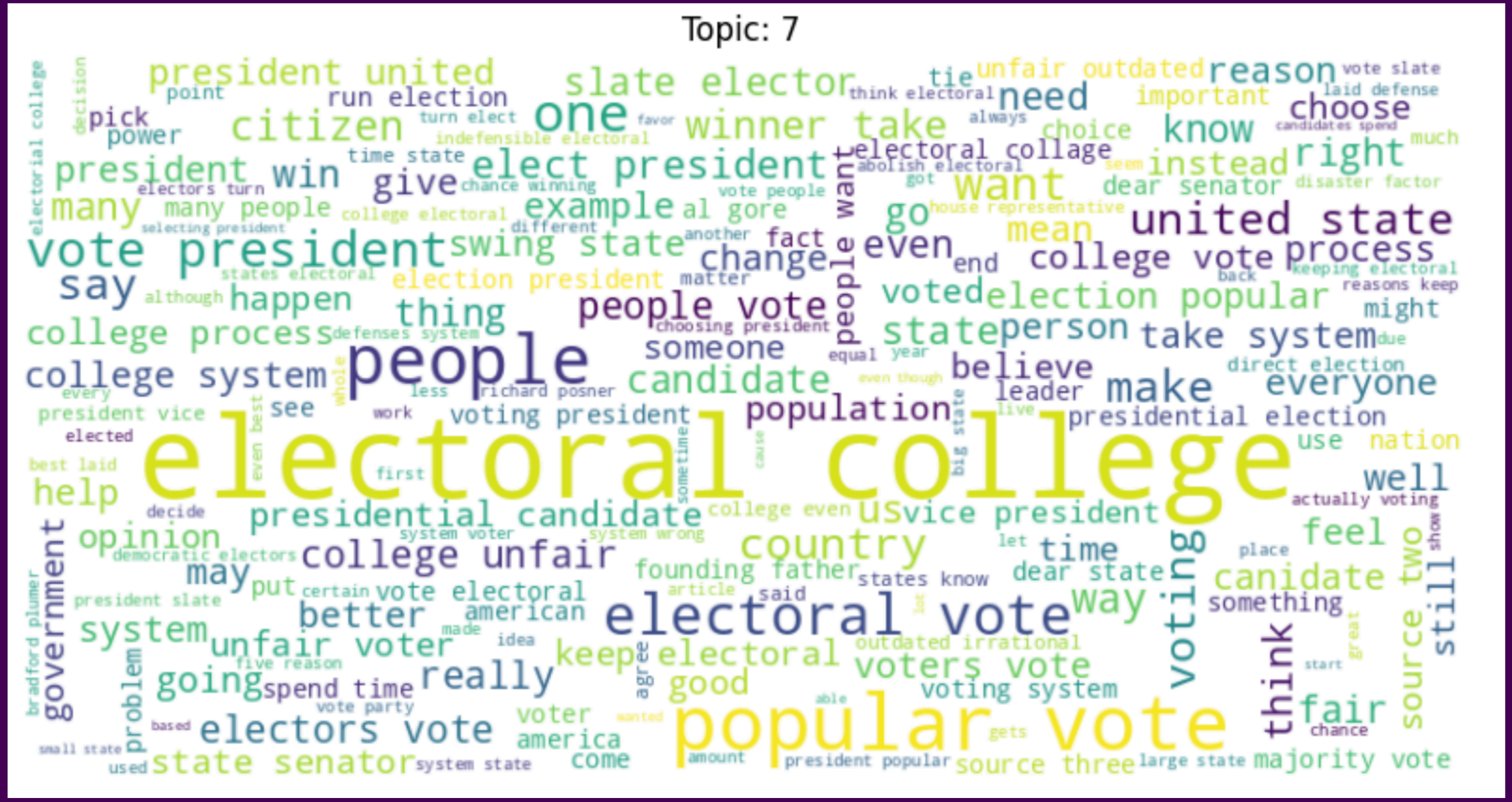
RESULTS

Vector	Model	Sample Size	Train Accuracy	Test Accuracy
TF-IDF	Neural Network	6000	88.5%	41.4%
TF-IDF	K-Means	6000	100.0%	41.2%
BERT	BERT	2000	84.6%	52.8%

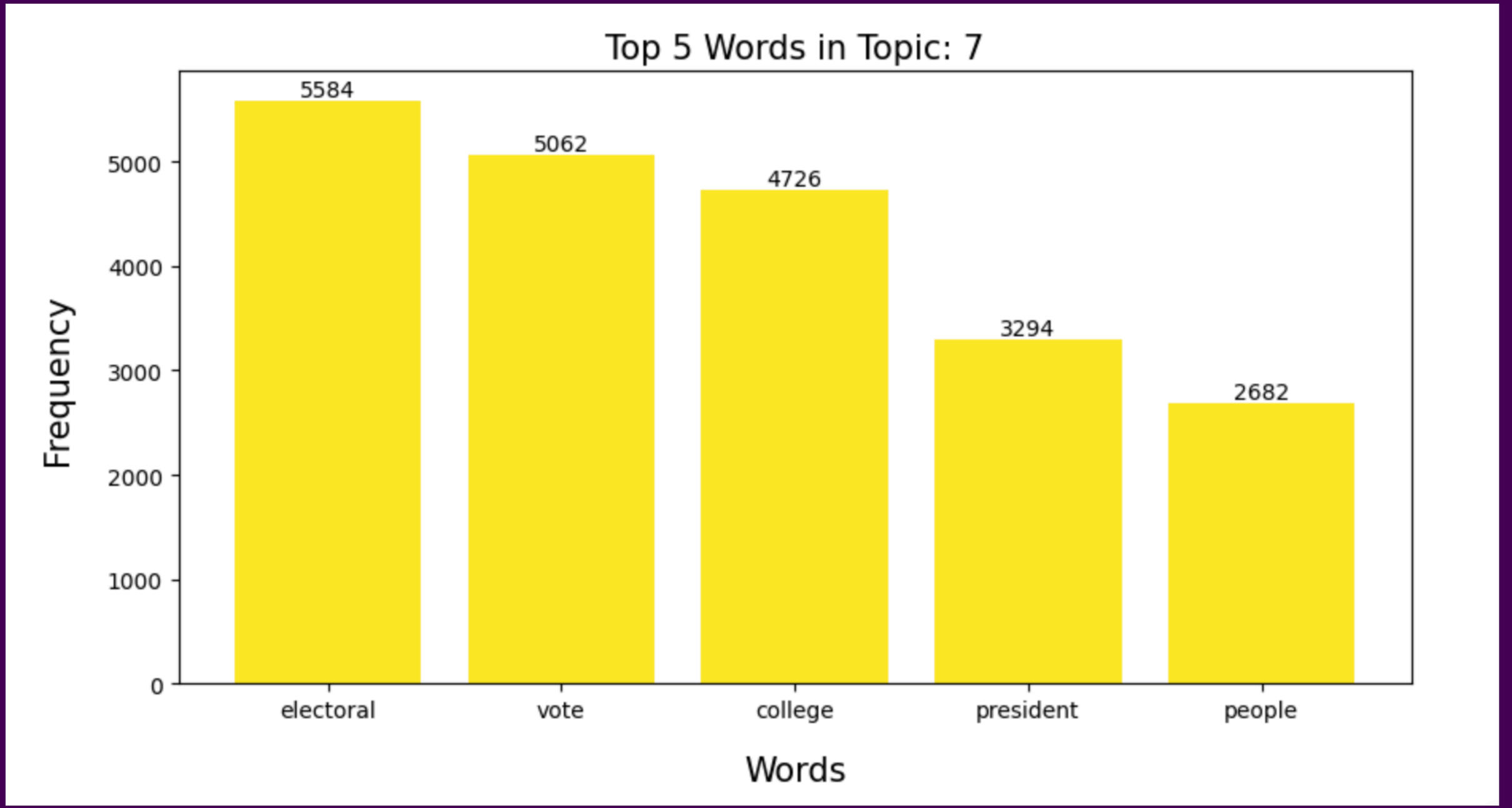
GROUPING TOPICS



ESSAY 7 WORD CLOUD



ESSAY 7 TOP WORDS



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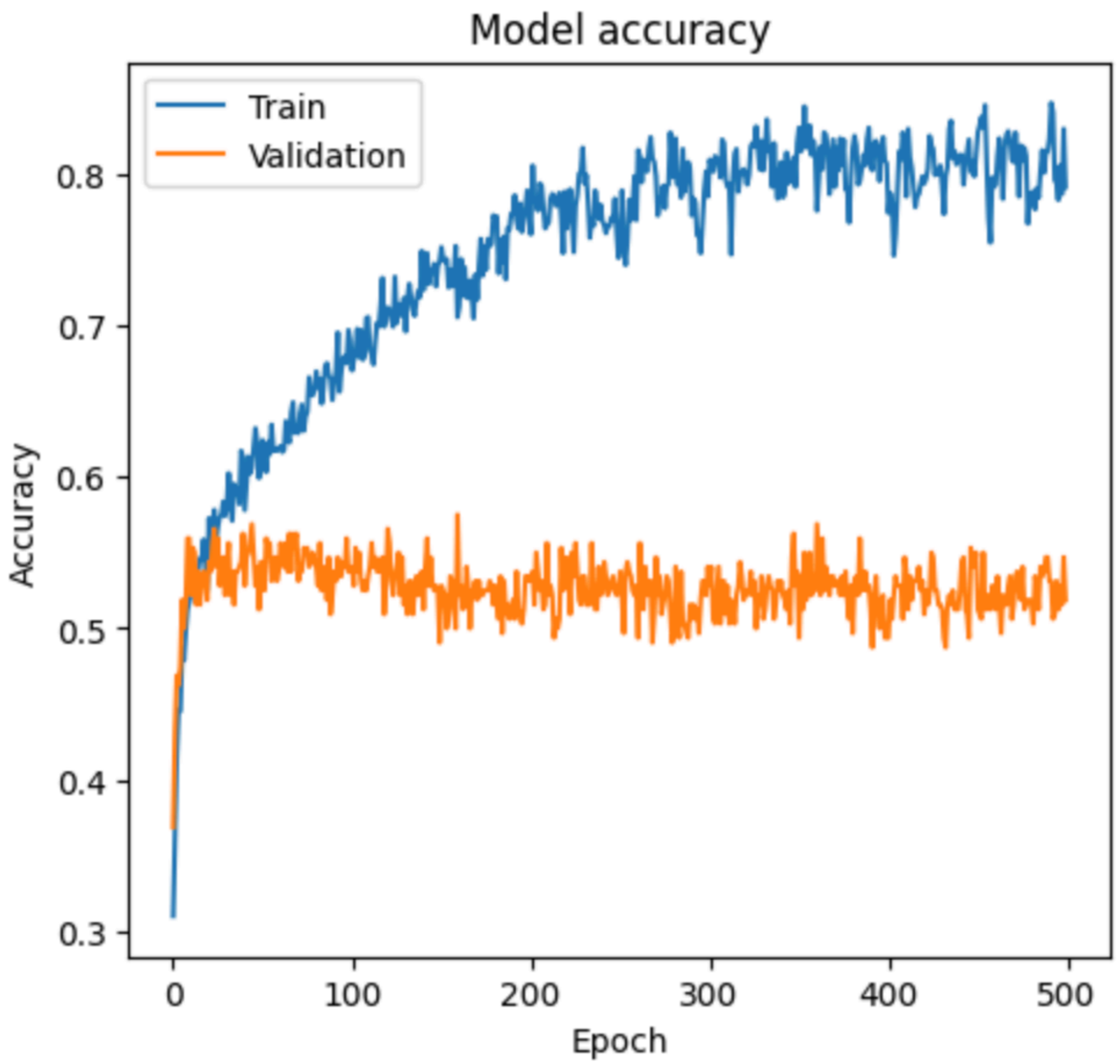
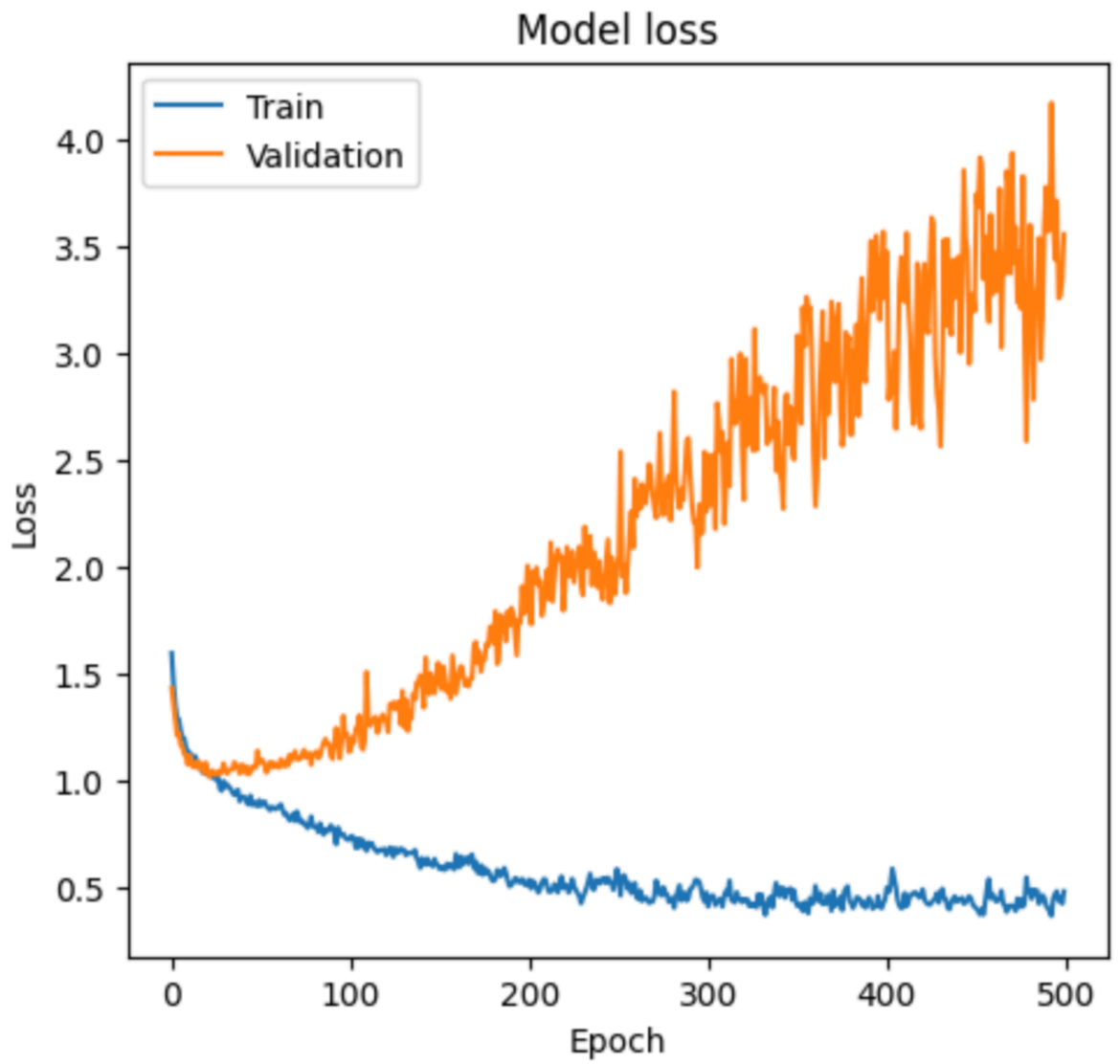
BEST MODEL


Model accuracy
Train
Validation
Accuracy
0.8
0.7
0.6
0.5
0.4
0.3
0
100
200
300
400
500
Epoch


Model loss
Train
Validation
Loss
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0
100
200
300
400
500
Epoch

RECOMMENDATIONS

- Adopt the BERT-Based Mode
- Address Overfitting in Neural Network Models
- Increase Training Data Size

LIMITATIONS

- Inconsistent Grading
- Limited Dataset Variety
- Bias in the Model

NEXT STEPS

- Make the Model Bigger and Smarter
- Train the Model Longer and Better
- Enhance the Model’s Understanding

THANK YOU

QUESTION AND ANSWER