

MARKETING INSIGHTS FROM TWITTER SENTIMENT

Tem Orederu

DATA SCIENTIST
ZENITH MOBILE

Zenith Mobile

An innovative startup poised to disrupt the mobile technology landscape by offering groundbreaking solutions that challenge the dominance of established brands.



Marketing Strategy

01

Identify potential customers active on social media

02

Target customers who feel lackluster about the leading brands (i.e. Apple, Google)

03

Reach out to those customers to explain what Zenith Mobile has to offer

The Data

- 9,093 tweets about Apple or Google products
- Each tweet labeled as positive (n=2978), negative (n=570), neutral (n=5389), or unknown (n=156)
 - 1: neutral + negative (n = 5959)
 - 0: positive (n=2978)
 - 1's downsampled to n = 2978
- Sourced by CrowdFlower and available on DataWorld (<http://data.world>)

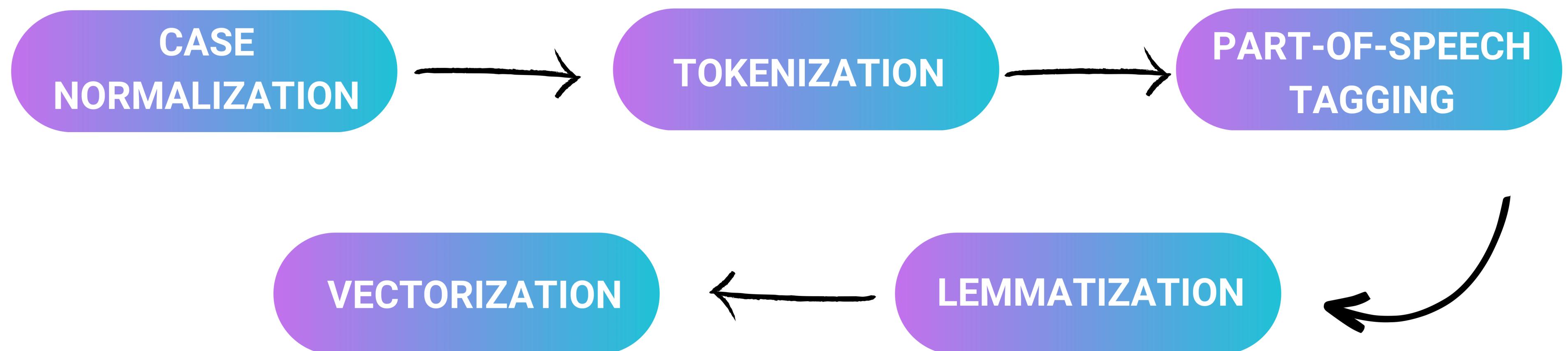




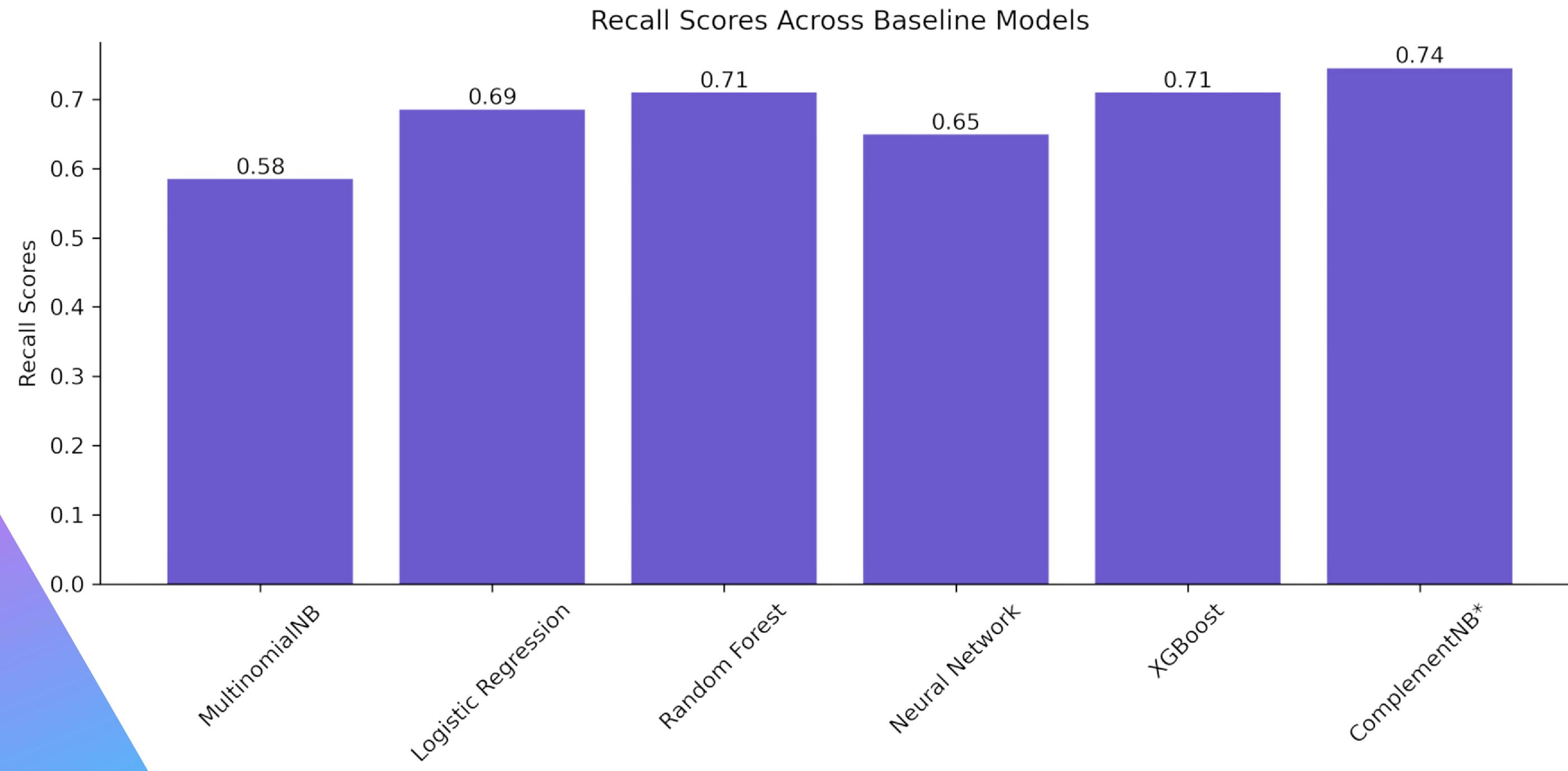
Modeling Strategy

- Classify tweets into sentiment categories using Natural Language Processing (NLP)
- Classifiers: (1) Multinomial Naive Bayes, (2) Logistic Regression, (3) Random Forest, (4) Neural Network, (5) XGBoost, and (6) Complement Naive Bayes
- Optimized model for high recall to identify all likely potential customers

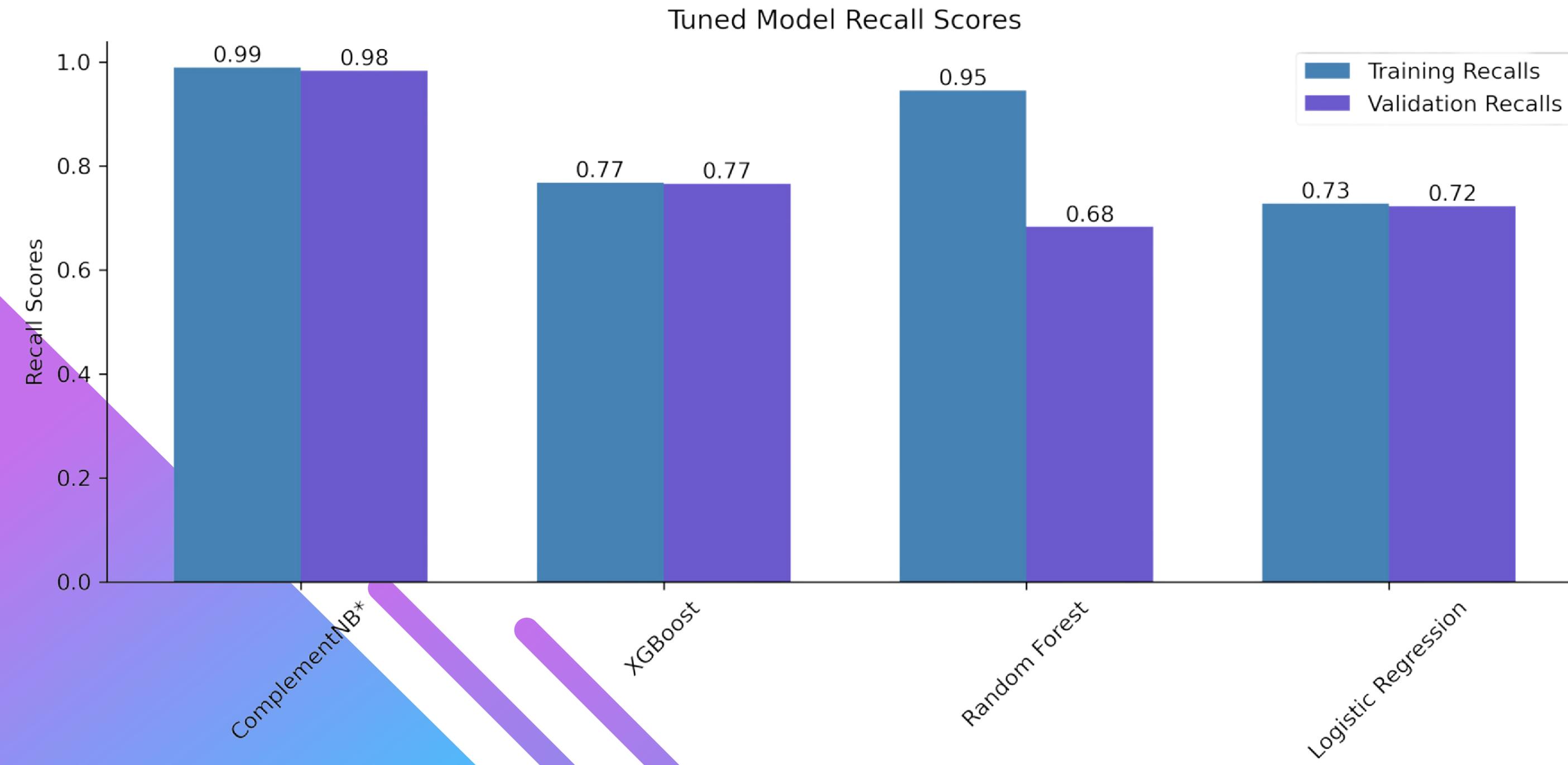
Data Cleaning



Baseline Models



Tuned Model Performance

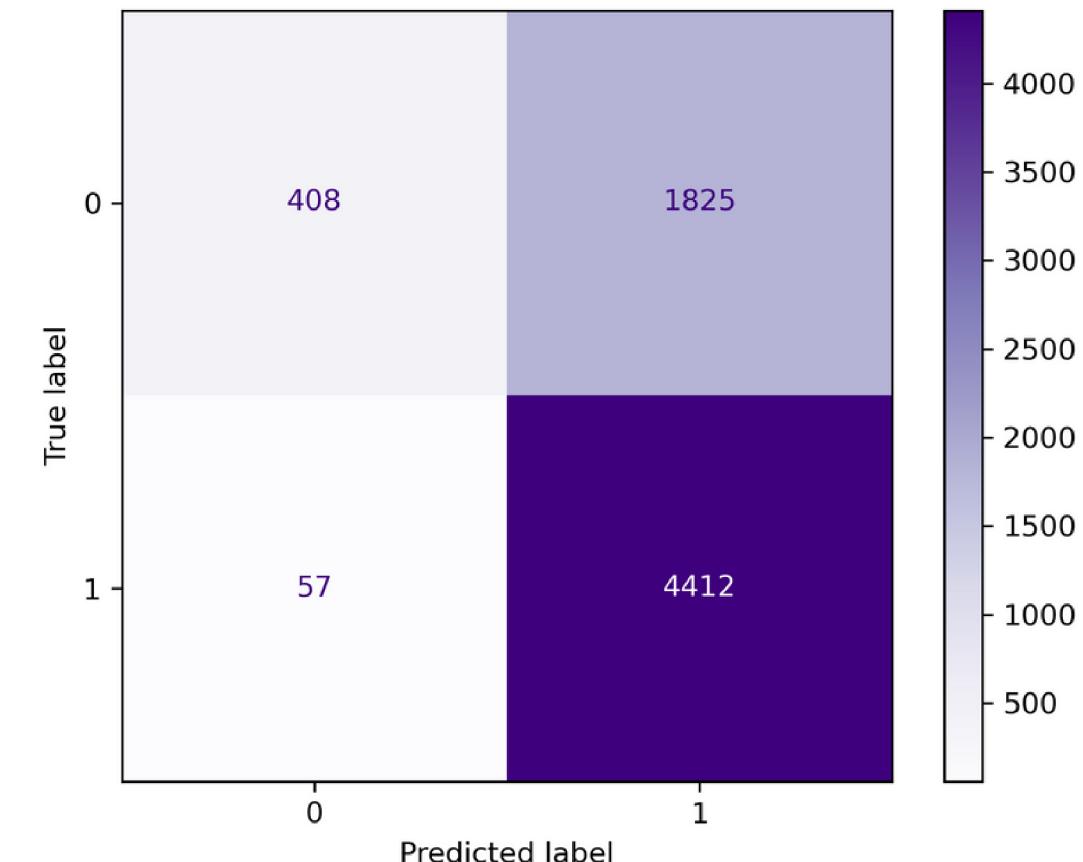


*ran on whole dataset (not undersampled)

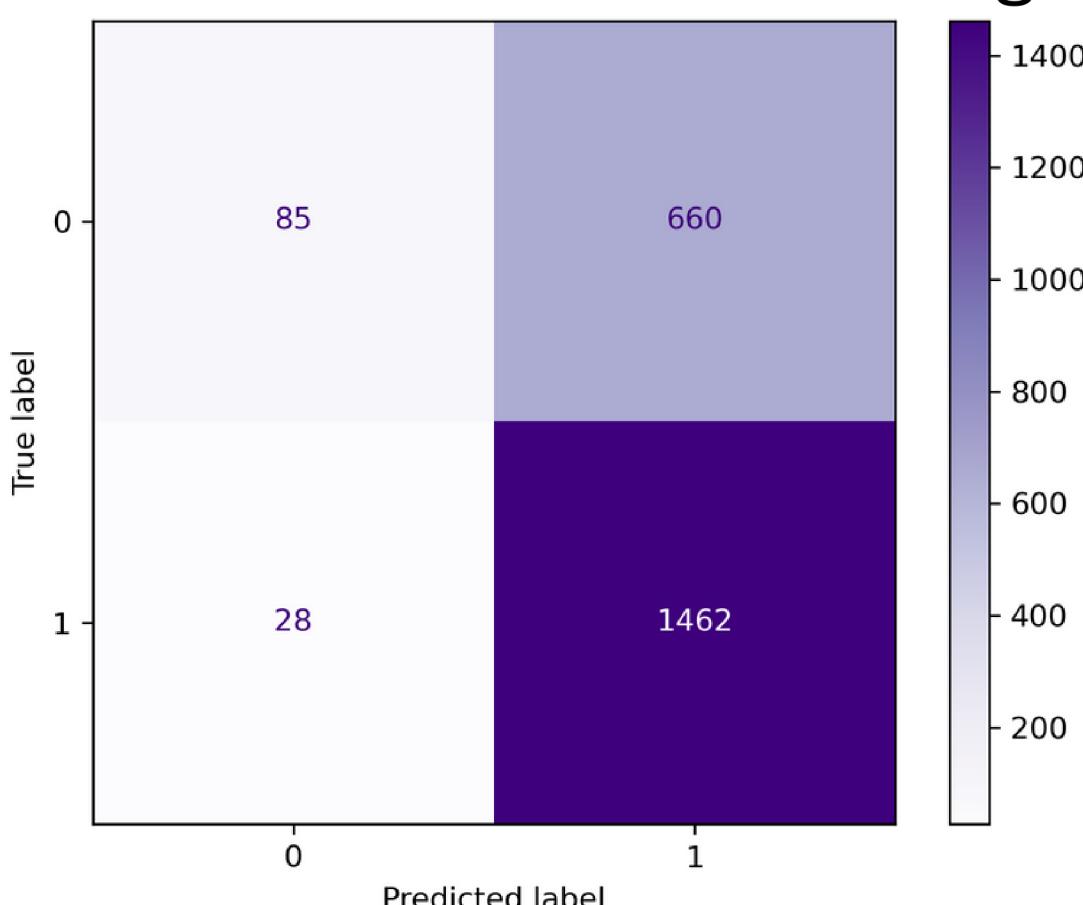
Best Performing Model

- Complement Naive Bayes on entire dataset (not undersampled)
- TfidfVectorizer(min_df=1e-10, max_df=0.99999)
- classifier alpha: 7
- classifier fit prior = True
- training recall = 0.9896
- validation recall = 0.9837

Confusion Matrix - Training



Confusion Matrix - Testing



recall = 0.98; f1 = 0.81



Conclusions

01

Classifier Success

We are able to successfully classify tweets based on emotionality with high model performance scores.

02

Complement Naive Bayes

A Complement Naive Bayes classifier outperforms all other models tested, and gives the added benefit of managing the entire, imbalanced dataset.

03

High Recall

The final model achieves high recall, although sacrifices precision.

THANK YOU

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QUESTIONS?