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IDEAL INNOVATION HOUSE

Truth Seeker for Tweets

Ali Al-Awiede and
Hussen Mahmoud

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وزارة الاقتصاد الرقمي والريادة

الشباب والتكنولوجيا والوظائف

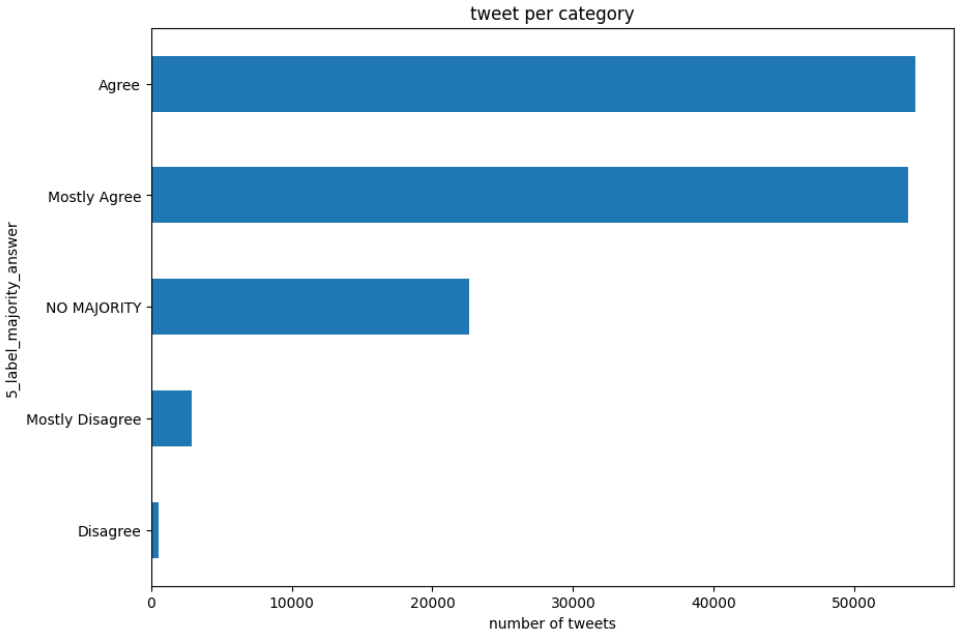
Introduction

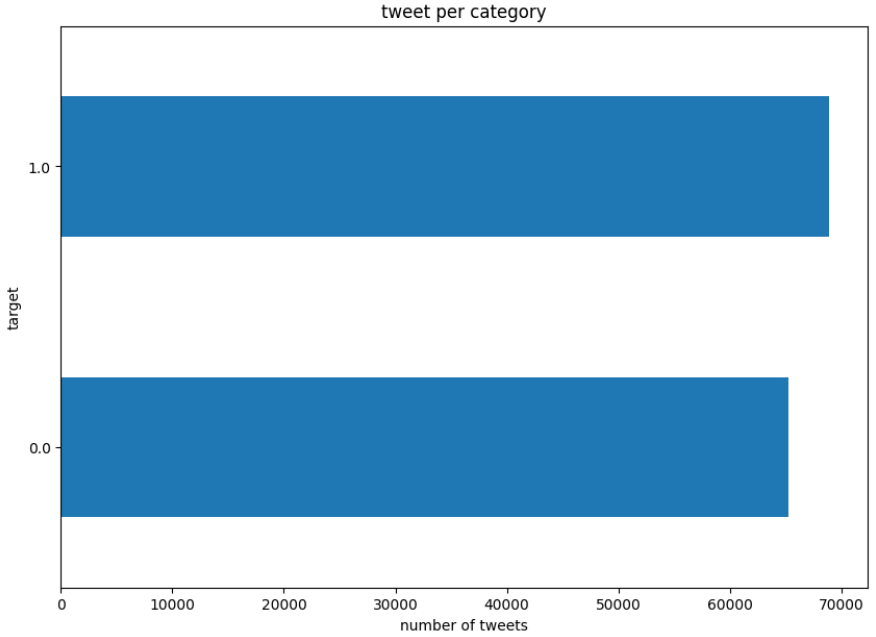
- Objective: Detect the truthfulness of tweets using deep learning and machine learning.
- Motivation: Combat misinformation on Tweet.
- Approach: Use NLP, ML, and DL models for tweet classification.

Dataset Overview

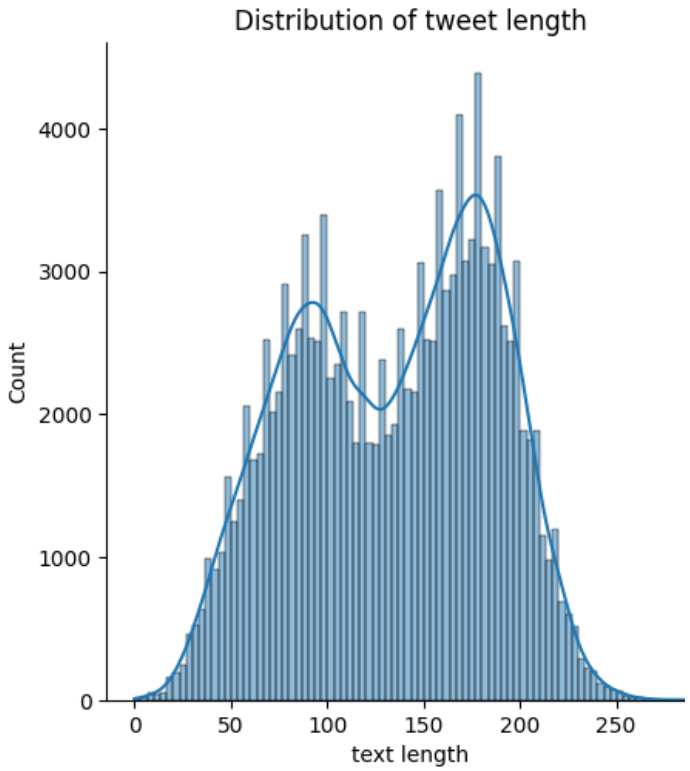
- Source: TruthSeeker2023 dataset
- Key columns: tweet, target, 5_label_majority_answer.
- Tweet labels: truthful vs. false (multi-class)
- Preprocessing steps applied to raw tweets

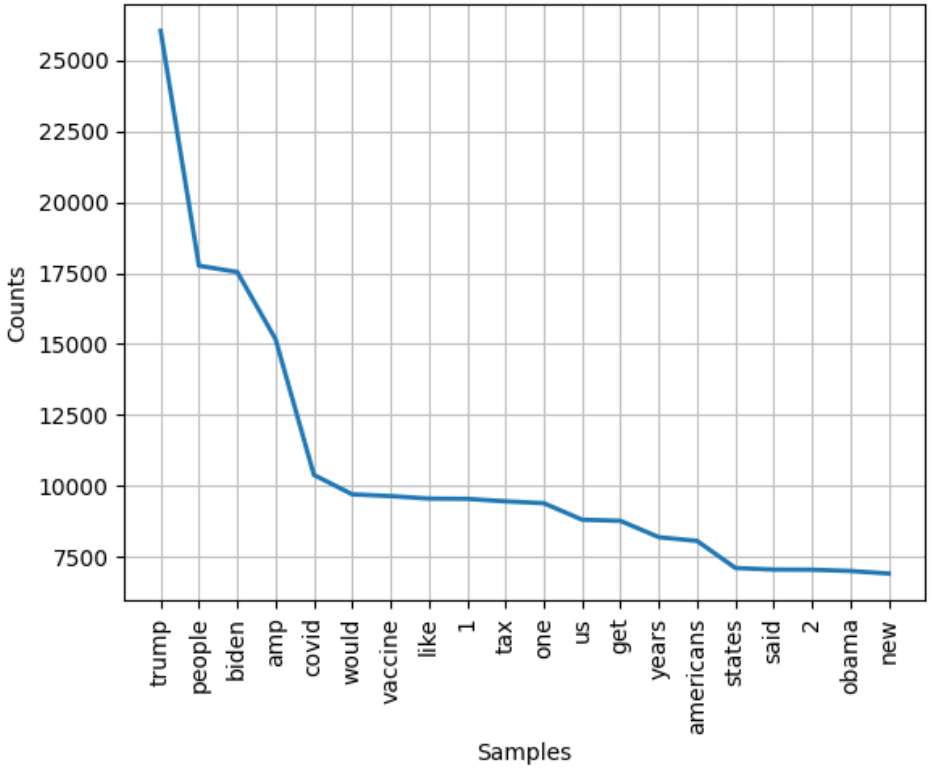
Tweet Distribution



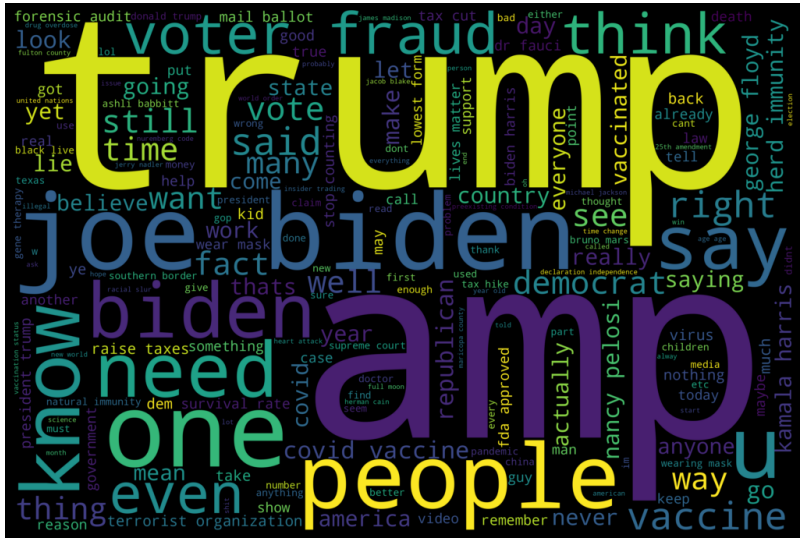


Tweet Distribution

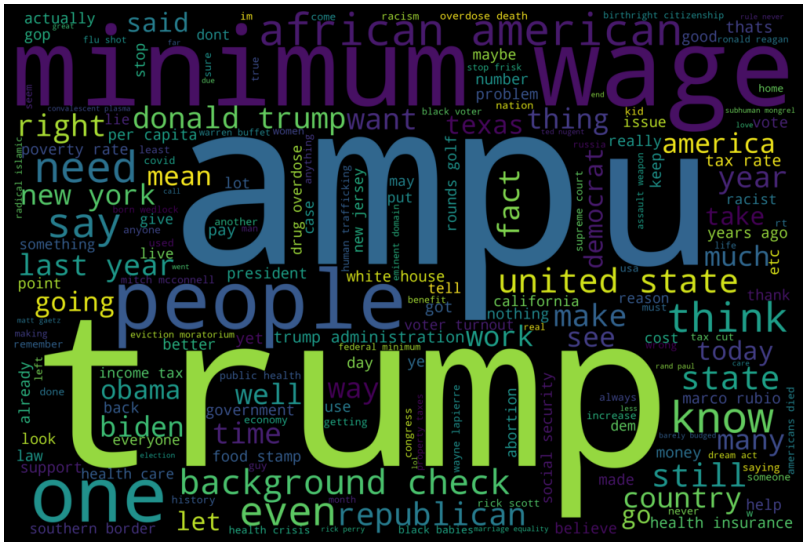




Word cloud for Most word in truth and False



Word cloud for False tweet



Word cloud for Truth tweet

Preprocessing Steps

- 1. Removed user mentions (@username)
- 2. Removed punctuation and stopwords
- 3. Converted text to lowercase
- 4. Calculated text length
- 5. Dropped irrelevant or null columns

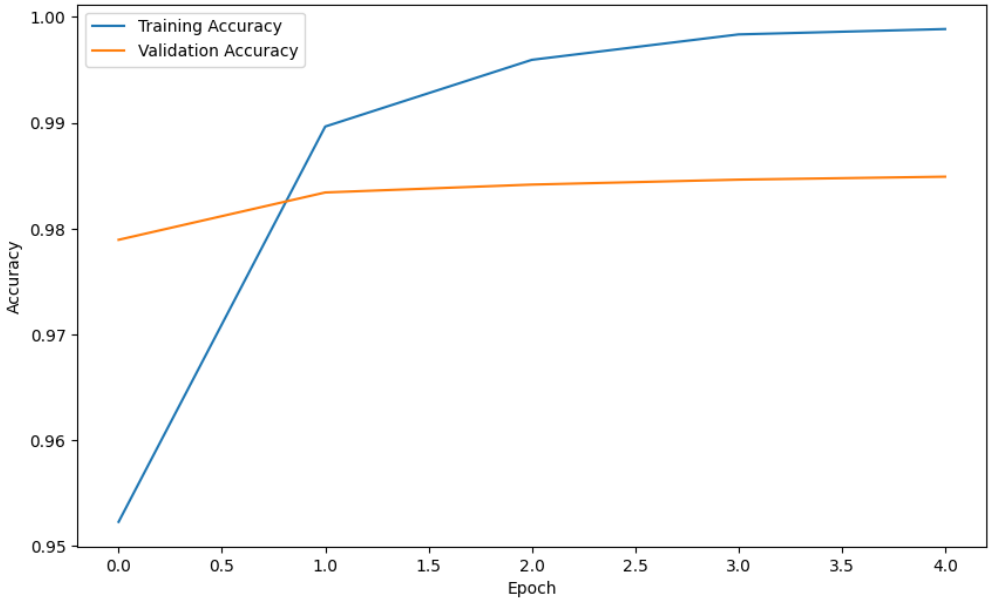
Modeling Approach

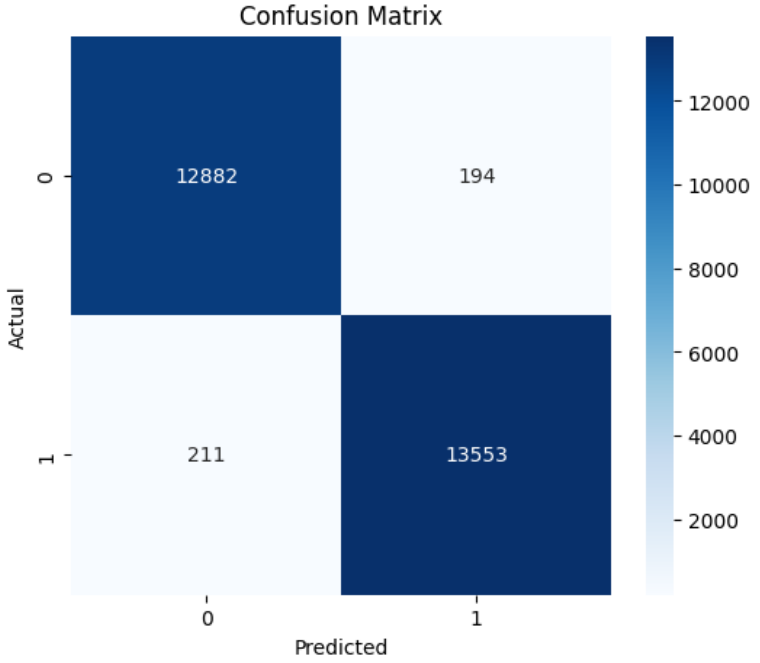
- Vectorization:TF-IDF
- Models Used:
- - Random Forest
- - XGBoost
- - Logistic Regression
- - Linear SVM
- - Deep Neural Network (Keras)

Evaluation Metrics

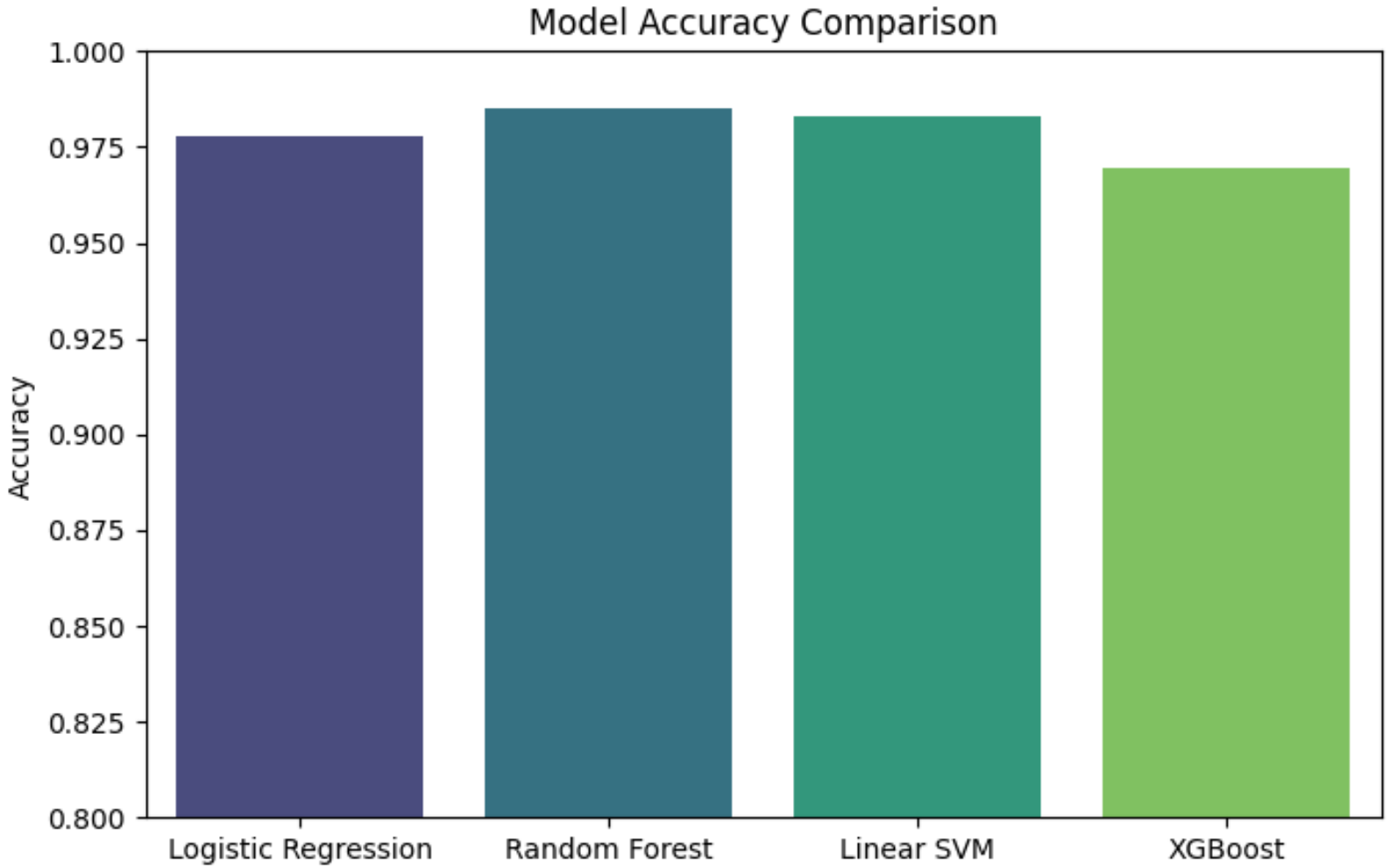
- Accuracy Score
- Classification Report
- Confusion Matrix
- EarlyStopping used in DNN to avoid overfitting

Deep Learning result

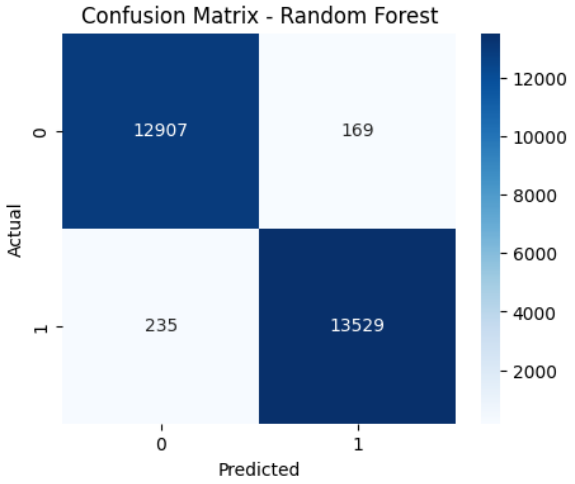


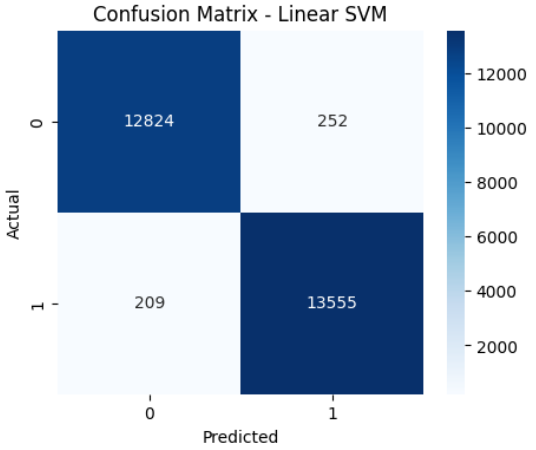


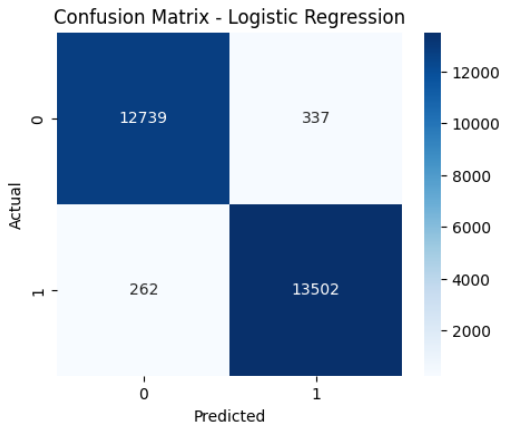
Result for machine learning classification

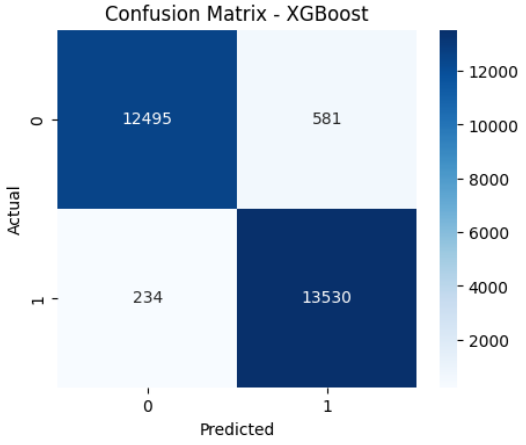


Result for machine learning classification









Conclusion

- Deep learning shows strong potential for truth detection.
- Classical ML models also achieve good accuracy.