



# Analysis of Qatar Airways Customer Reviews

A SENTIMENT ANALYSIS APPROACH

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SECTION: TT5L

# Introduction

- ▶ Objective: Analyze customer reviews of Qatar Airways to predict sentiment (Positive, Negative, Neutral).
- ▶ Approach: Sentiment classification using machine learning models.

# Data Overview

- ▶ Dataset: Qatar Airways reviews dataset
- ▶ Columns: Review Text, Rating, Traveler Info, Date, Flight Info, and more.
- ▶ Sample Review: "Service was ok, pretty good on my aisle and the food was decent."

Unnamed: 0	Date Published	Rating	Max Rating	Title	Author	Country	Date	Review Body	Type Of Traveller	Seat Type	Route	Date Flown	Recommended	Aircraft	Verified
0	2024-03-02	1.0	10.0	"married by inconveniences"	Mary Le	United Kingdom	2024-03-02	The delay of my flight from Haneda to Doha ca...	Solo Leisure	Economy Class	Tokyo to London Heathrow via Doha	March 2024	no	NaN	0.0
1	2024-02-29	1.0	10.0	"seat wouldn't stay up"	Brian English	Canada	2024-02-29	They convinced me that I needed to pay \$1500...	Couple Leisure	Business Class	Doha to Montreal	February 2024	no	NaN	1.0
2	2024-02-29	1.0	10.0	"no attempt to address our complaint"	Wayne Burgess	Australia	2024-02-29	I have sent 5 emails and have only received ...	Business	Economy Class	Doha to Perth	November 2023	no	A380	1.0
				"I have the"				We flew on			Doha to				

# Data Preprocessing

- ▶ Text Preprocessing Steps:
  - ▶ - Tokenization
  - ▶ - Stopword Removal
  - ▶ - Lemmatization
  - ▶ - Vectorization (TF-IDF)
- ▶ Why It's Important: Preparing text data for machine learning.



# Machine Learning Models

- ▶ Traditional Models Used:
  - ▶ - Logistic Regression
  - ▶ - Naive Bayes
  - ▶ - Support Vector Machine (SVM)
- ▶ Deep Learning Models Used:
  - ▶ - Bidirectional Long Short-Term Memory (BiLSTM)
  - ▶ - Convolutional Neural Network (CNN)
- ▶ Transformer Based Models Used:
  - ▶ DistilBERT
  - ▶ Bidirectional Encoder Representations from Transformers (BERT)
  - ▶ A Robustly Optimized BERT Approach (RoBERTa)
- ▶ Goal: To classify reviews into Positive, Neutral, or Negative sentiment.

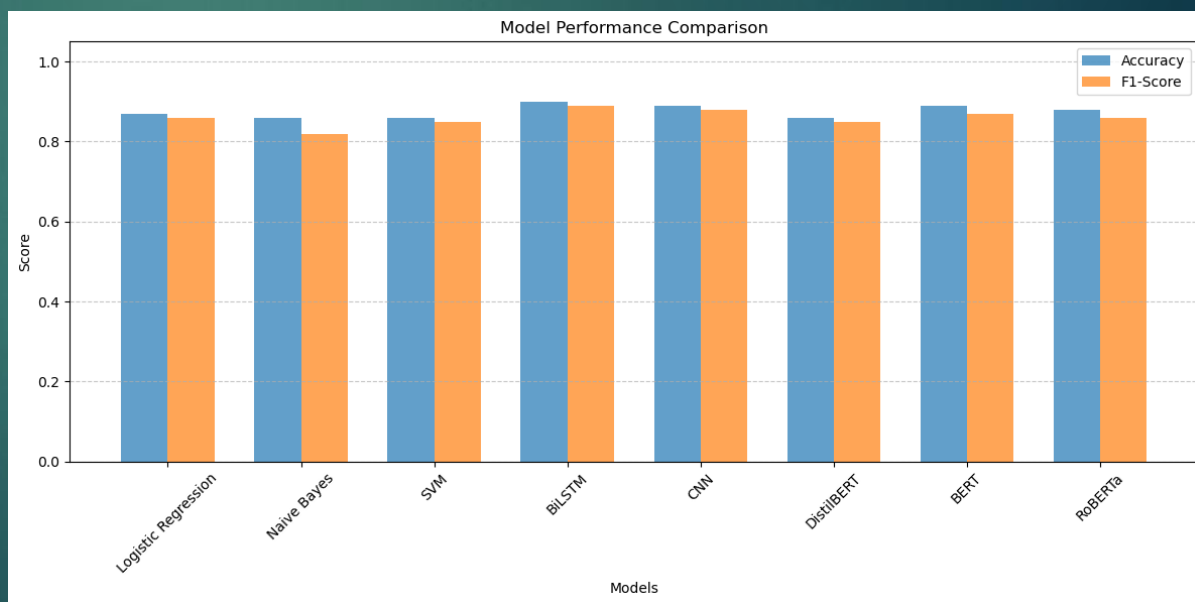
# Model Evaluation

- ▶ Metrics:
  - ▶ - Accuracy
  - ▶ - Precision, Recall, F1-Score
  - ▶ - Confusion Matrix
- ▶ Class Imbalance: Use of SMOTE to handle imbalance.

# Results

- ▶ - Best Model: Show which model performed best based on evaluation metrics.
- ▶ - Confusion Matrix: Show how well the model distinguishes between different sentiments.

	Model	Accuracy	F1
0	Logistic Regression	0.87	0.86
1	Naive Bayes	0.86	0.82
2	SVM	0.86	0.85
3	BiLSTM	0.90	0.89
4	CNN	0.89	0.88
5	DistilBERT	0.86	0.85
6	BERT	0.89	0.87
7	RoBERTa	0.88	0.86





# Conclusion

- ▶ Key Findings:
  - ▶ - The model accurately predicts sentiment for most reviews.
  - ▶ - Recommendations for improving the service based on negative feedback.
- ▶ Future Work:
  - ▶ - Fine-tuning the models.
  - ▶ - Expanding the dataset with more reviews.



# Thank you

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