Messages Monitoring Model Capable of Detecting and Deleting Spam in Public Telegram Group Chats

Ahmed Almohammed's
Capstone Project for
MiSK DSI Program

Misk مسك
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Foundation

المهارات
Skills

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- Problem Addressed
- Data Acquisition
- Preprocessing Data
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Problem Addressed

Data Acquisition

uciml

Kaggle

team-ai

Kaggle

@DeshDSingh

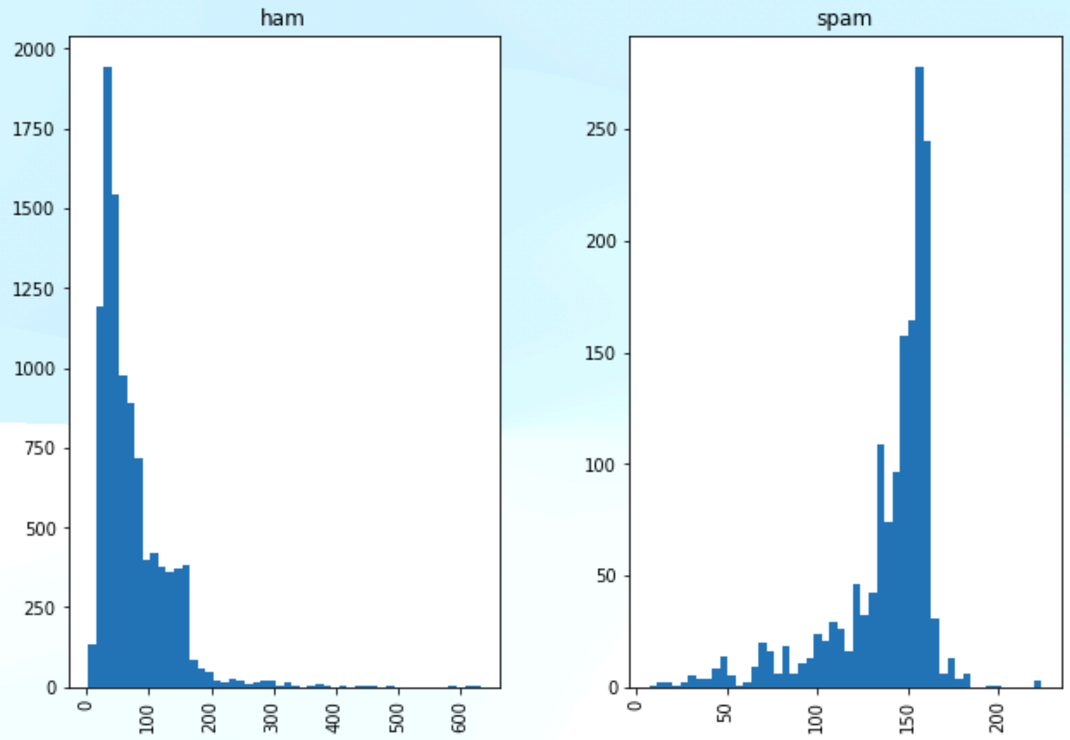
GitHub
Repository

🤗HuggingFace

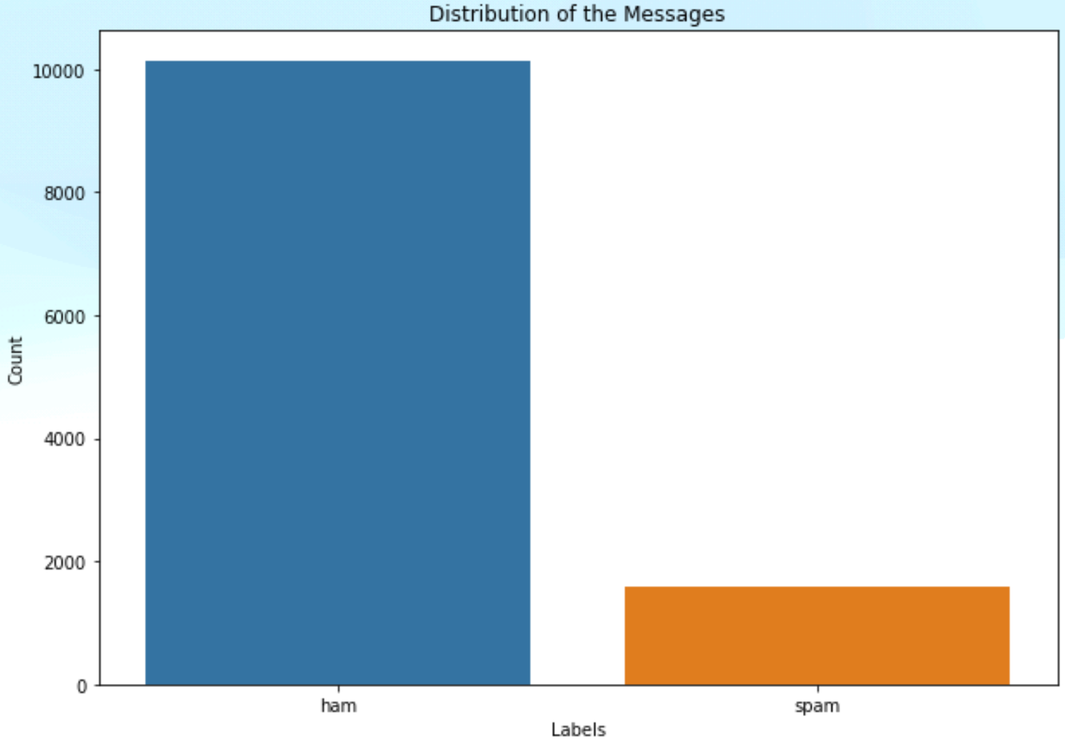
HuggingFace
Datasets

Preprocessing Data

Main Steps Taken in Preprocessing the Data



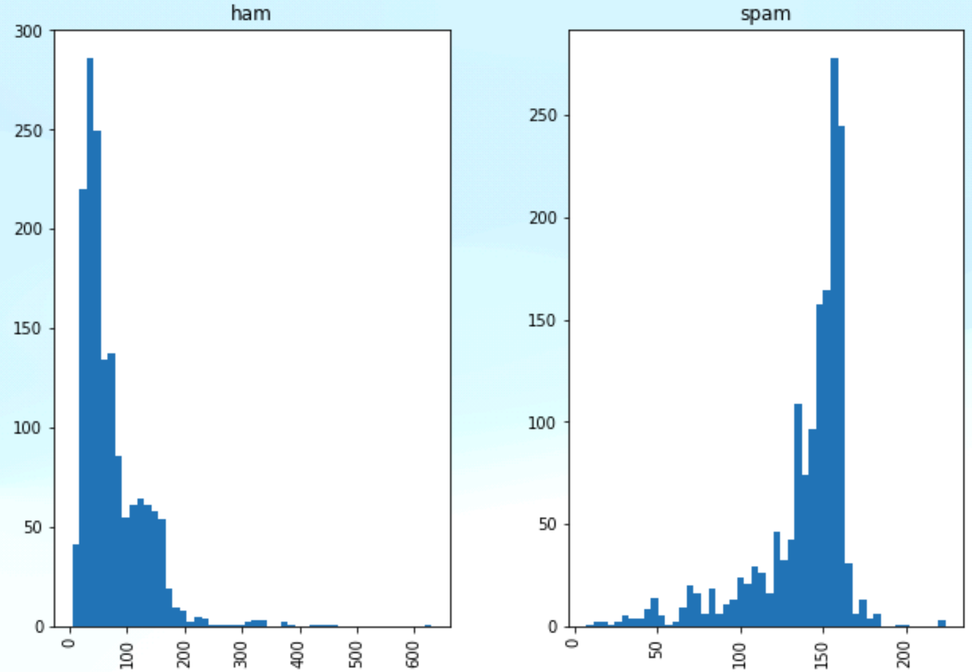
Examining the data

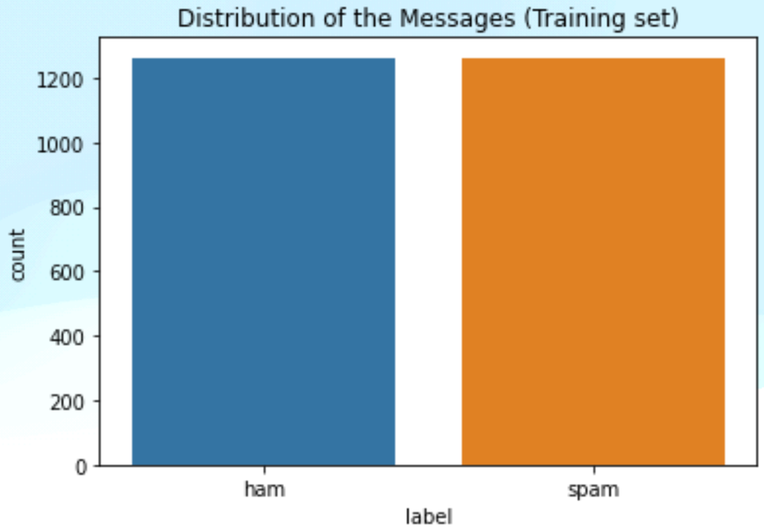


Fixing target imbalance

Main Steps Taken in Preprocessing the Data

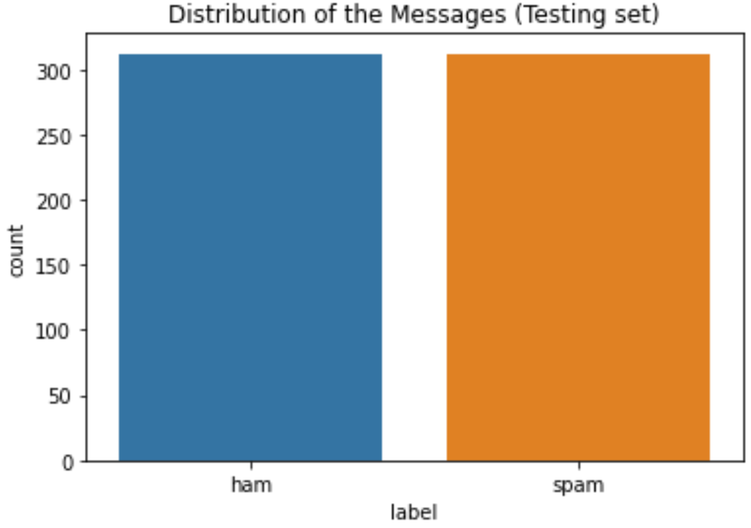
Undersampling





Tokenization

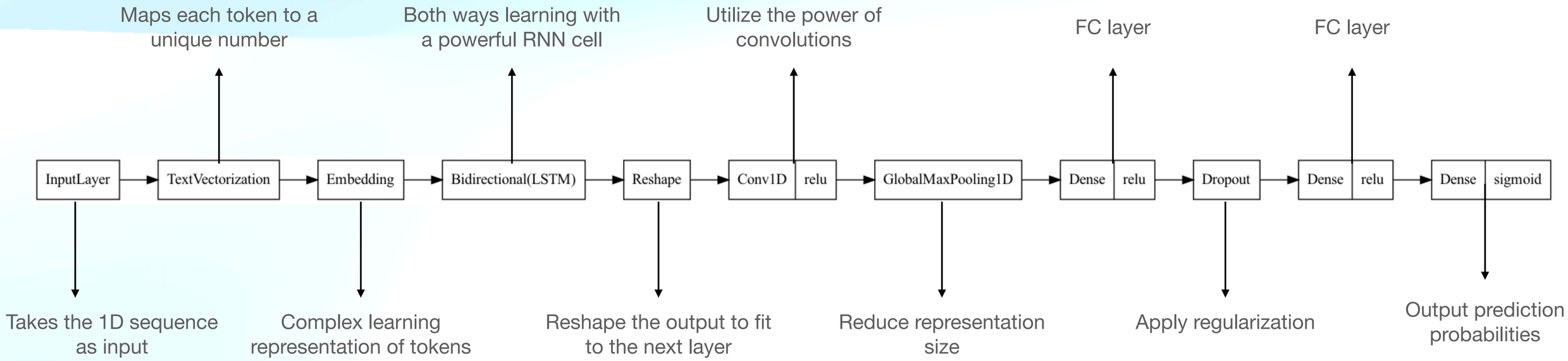
```python
max_tokens = 10000
output_sequence_length = avg_token_length

# create a text vectorization layer
text_vectorizer = TextVectorization(max_tokens=max_tokens,
                                    standardize="lower_and_strip_punctuation",
                                    split="whitespace",
                                    ngrams=None,
                                    output_mode="int",
                                    output_sequence_length=output_sequence_length)
```



Model Development

The Optimal Model

Model	Accuracy	F1-Score	Custom Data
Model 0	0.9599	0.9599	0.7500
Model 1	0.9599	0.9598	0.5000
Model 2	0.9775	0.9775	0.7500
Model 3	0.9855	0.9855	0.7500
Model 4	0.9727	0.9727	0.7500
Model 5	0.9839	0.9839	0.5000
Model 6	0.9743	0.9743	1.000



Model Deployment

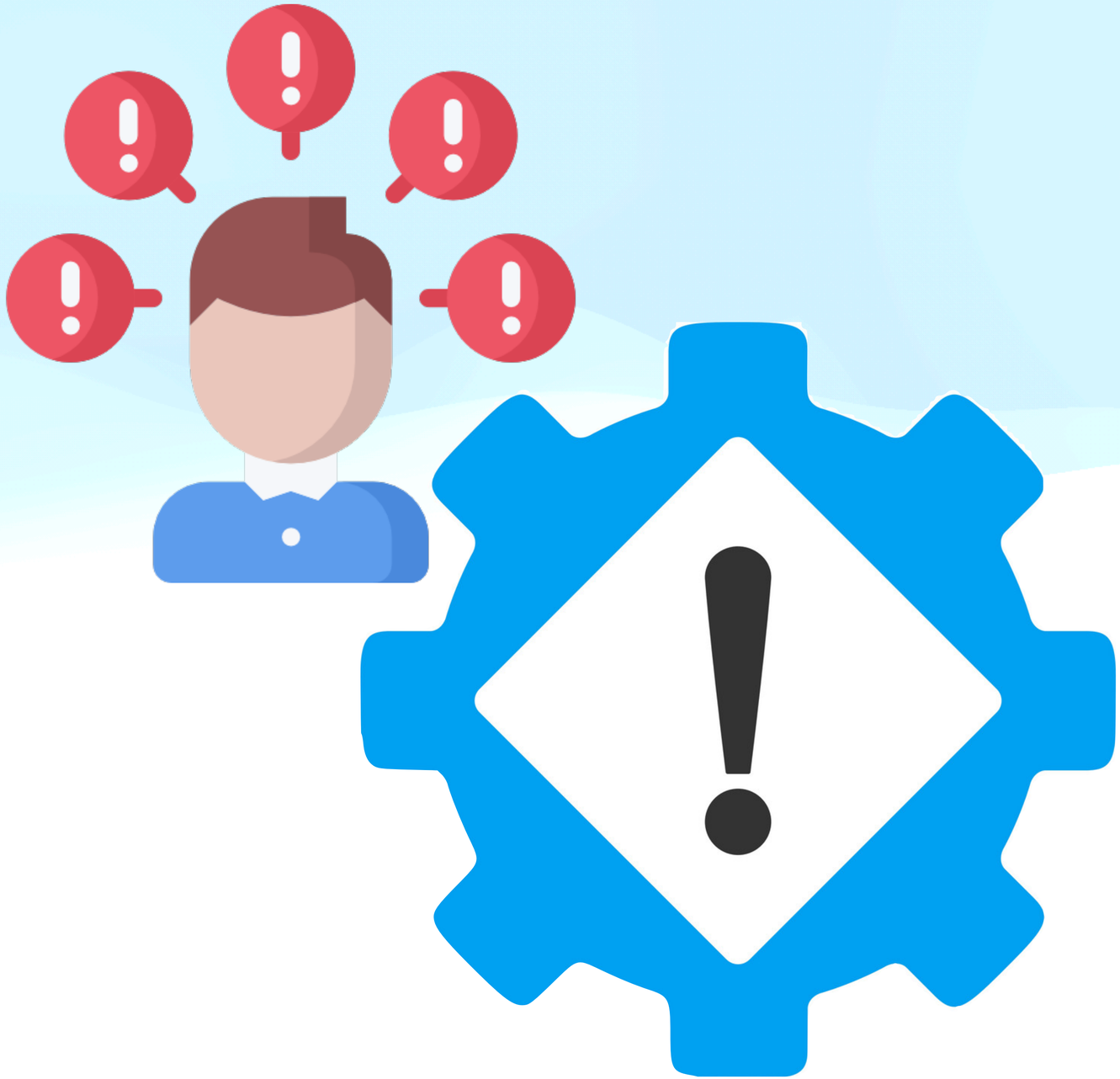
Telegram Bot

- Built a Telegram Bot through the power of `pyrogram` package
- Loaded the model in the Bot script to implement it.
- The script gets the messages from the chat, passes it through the model, and determines the action based on the predictions.
- DEMO: ->>>>>>>>>>>>>>>>>>

Problems with Current Solution

Current Problems

- The training data used doesn’t really represent the status of messaging in today’s life
- Must have large data for both classes to avoid overfitting
- Model might not always make accurate predictions



Conclusion

References

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- https://www.kaggle.com/datasets/team-ai/spam-text-message-classification
- https://github.com/DeshDSingh/SMS-SPAM-Detection/blob/master/sms_spam.csv
- https://huggingface.co/datasets/sms_spam
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Thank You

All questions and inquires are welcomed