

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



Ahmed Almohammed's
Capstone Project for
MiSK DSI Program



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Foundation

المهارات
Skills

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Problem Addressed

Data Acquisition



uciml

Kaggle



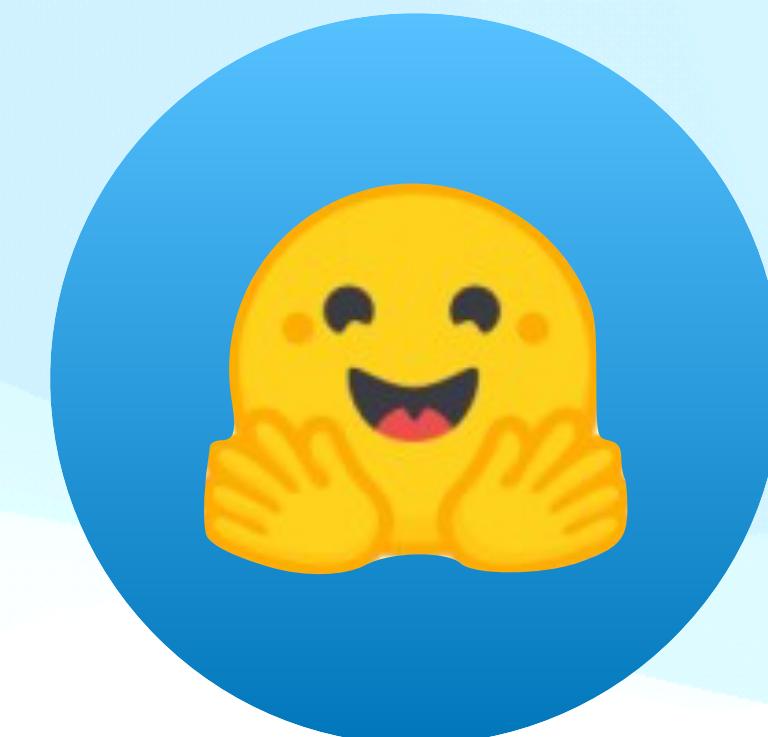
team-ai

Kaggle



@DeshDSingh

GitHub
Repository

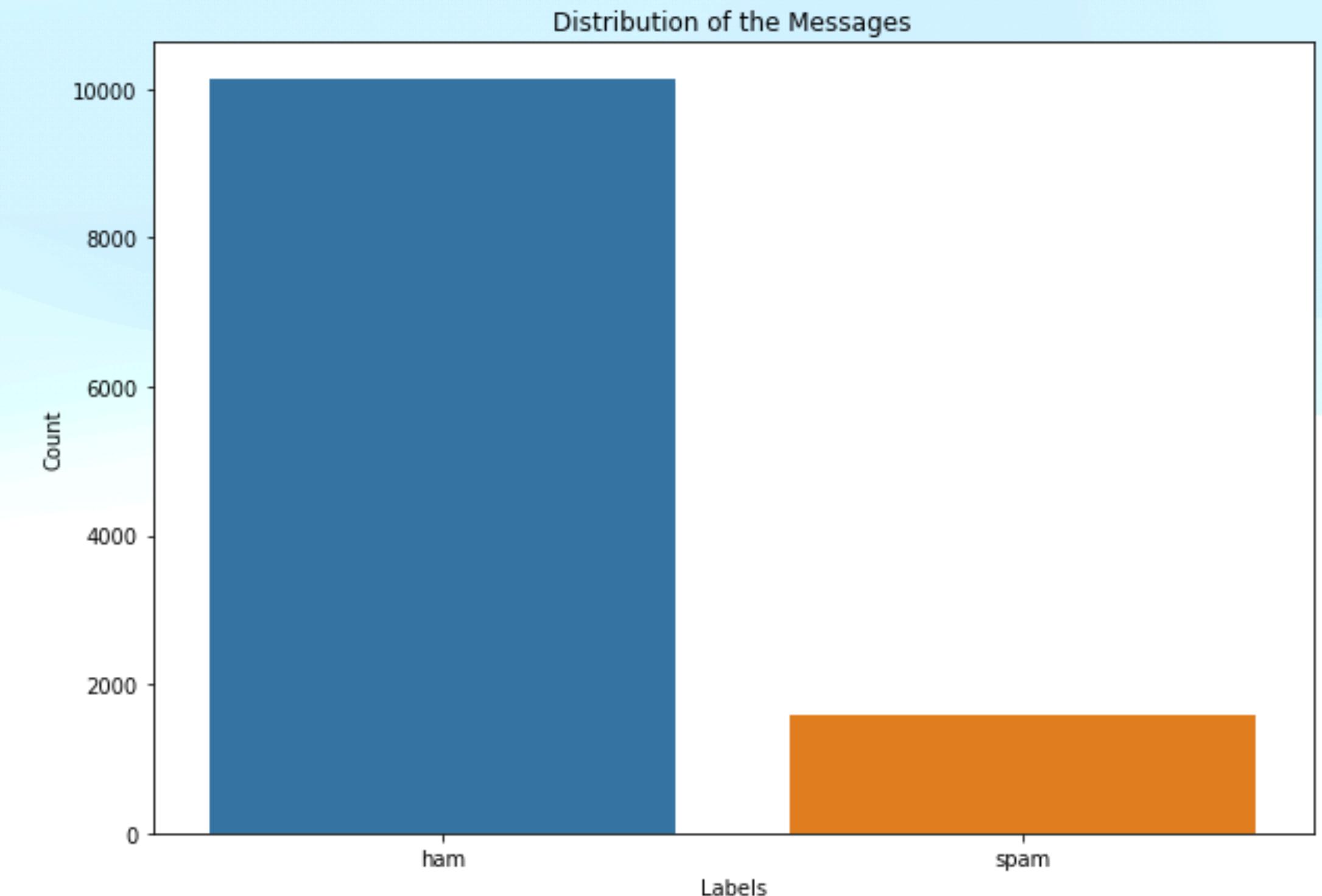
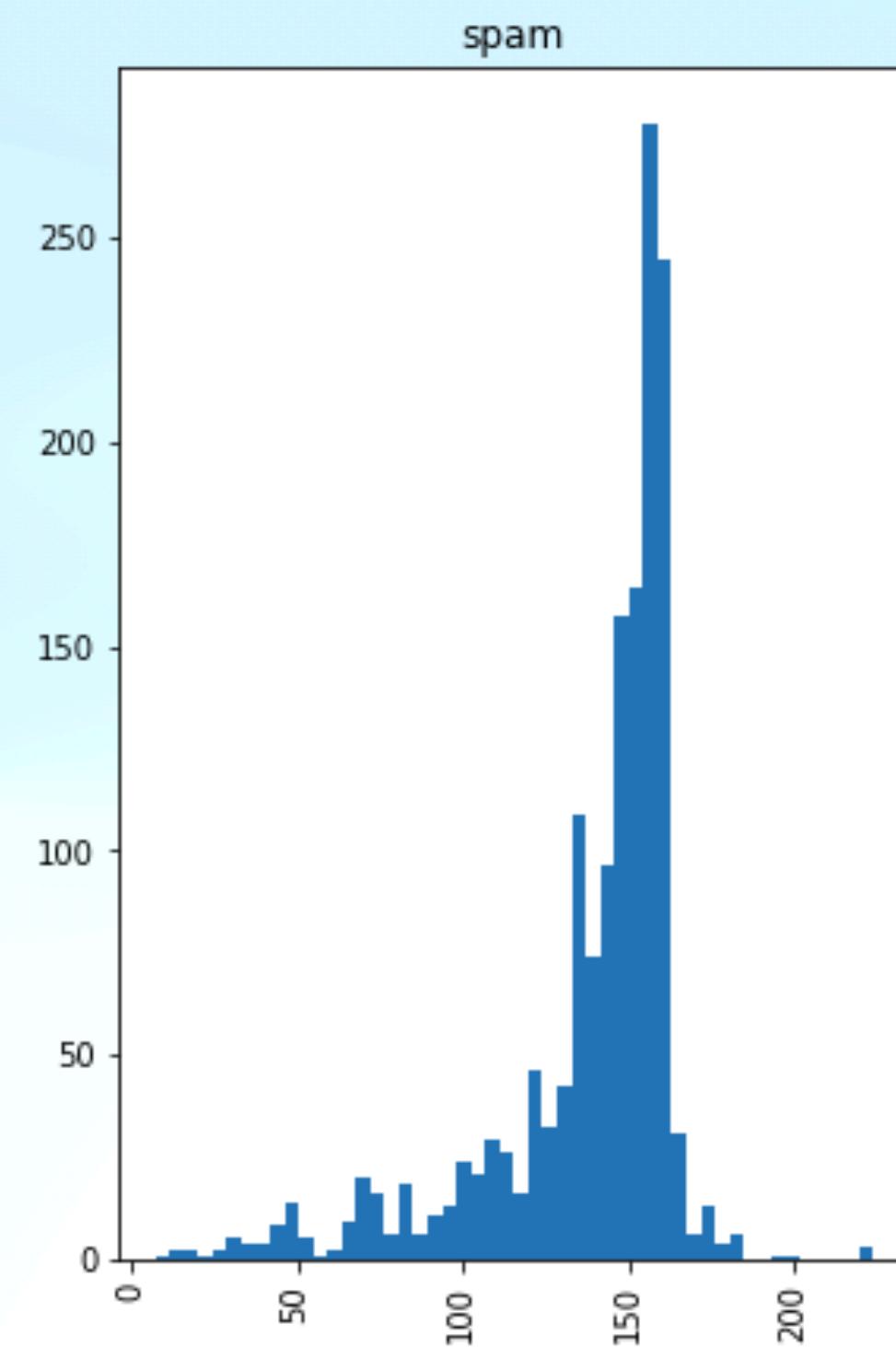
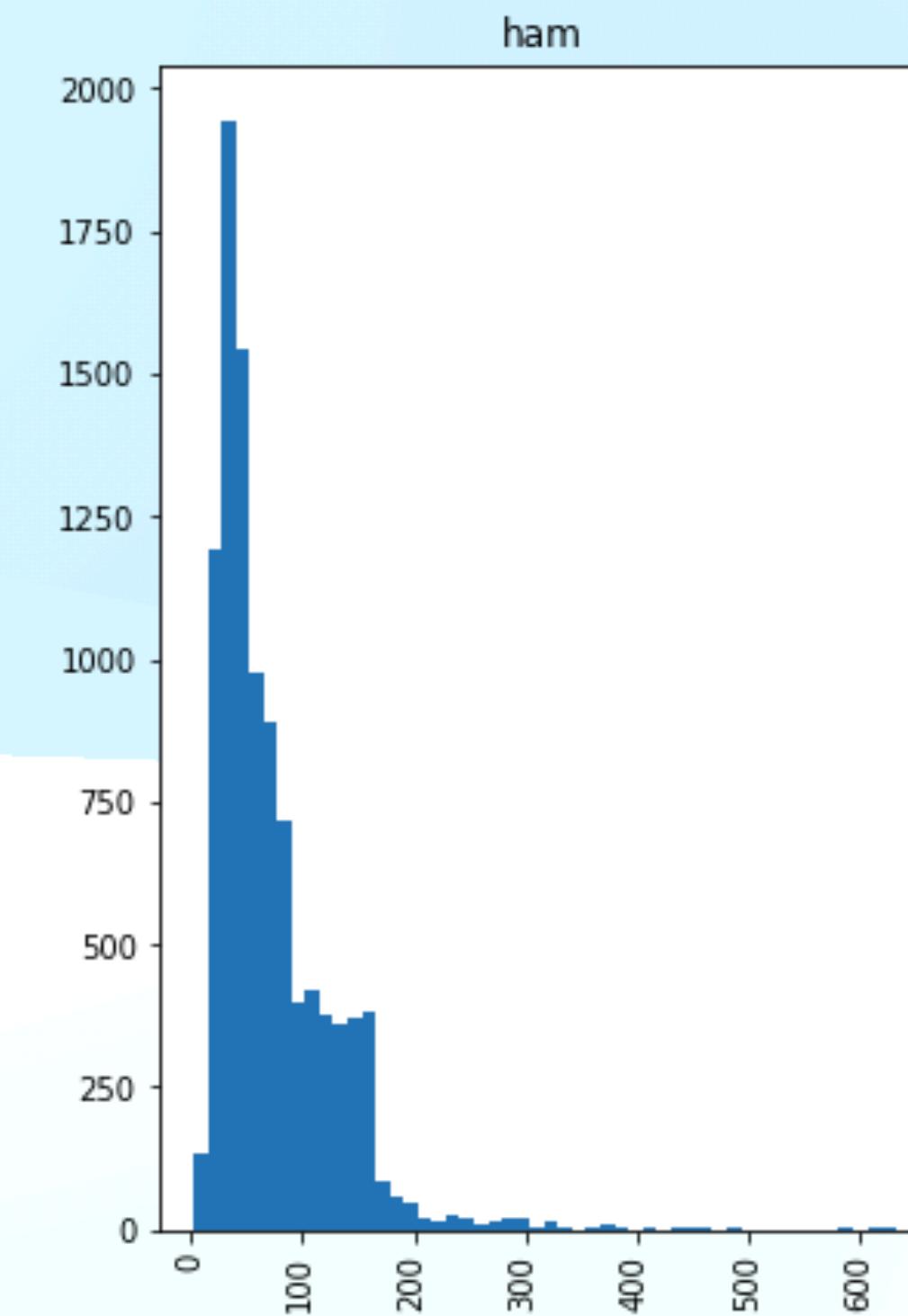


🤗HuggingFace

HuggingFace
Datasets

Preprocessing Data

Main Steps Taken in Preprocessing the Data

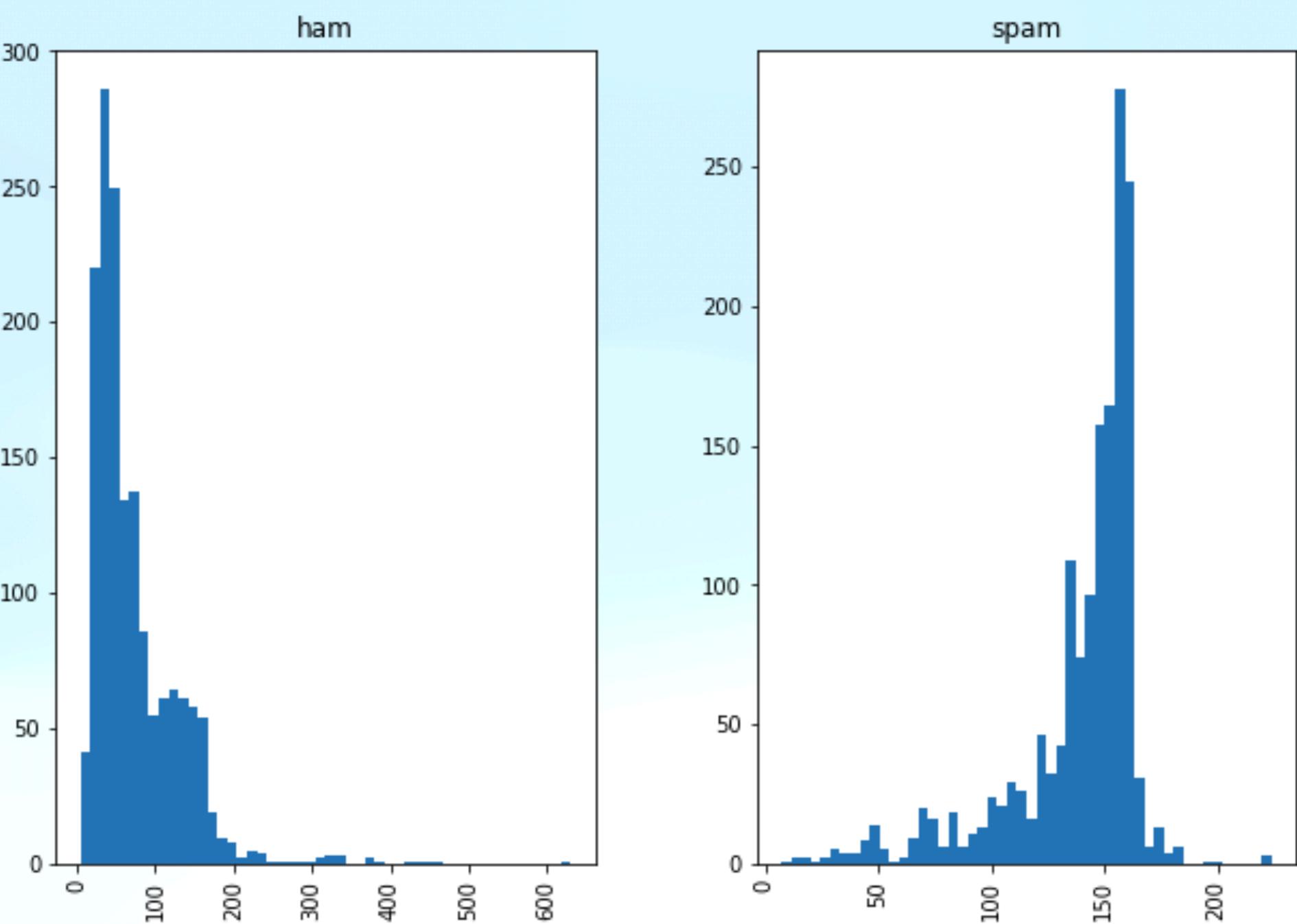


Examining the data

Fixing target imbalance

Main Steps Taken in Preprocessing the Data

Undersampling

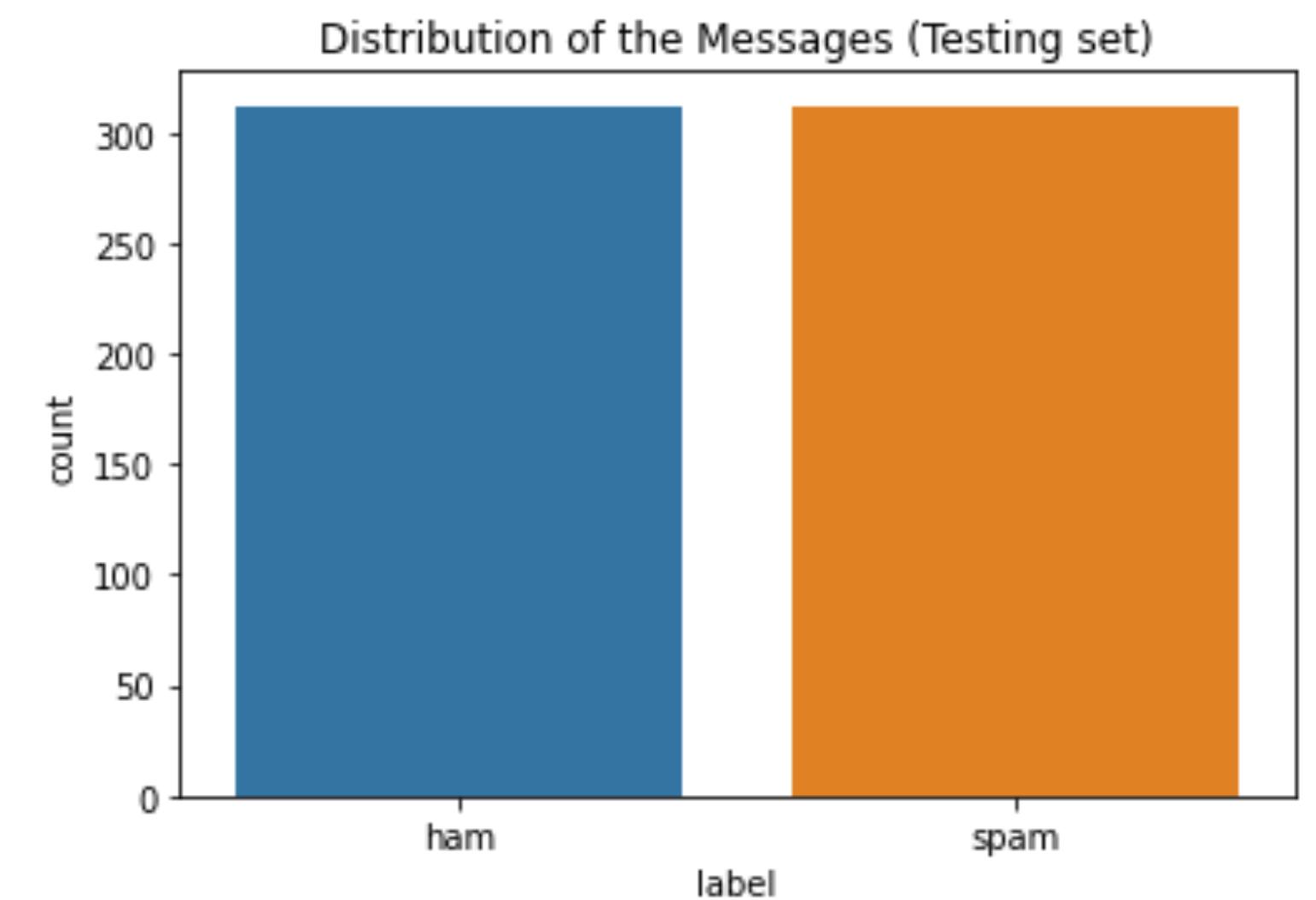
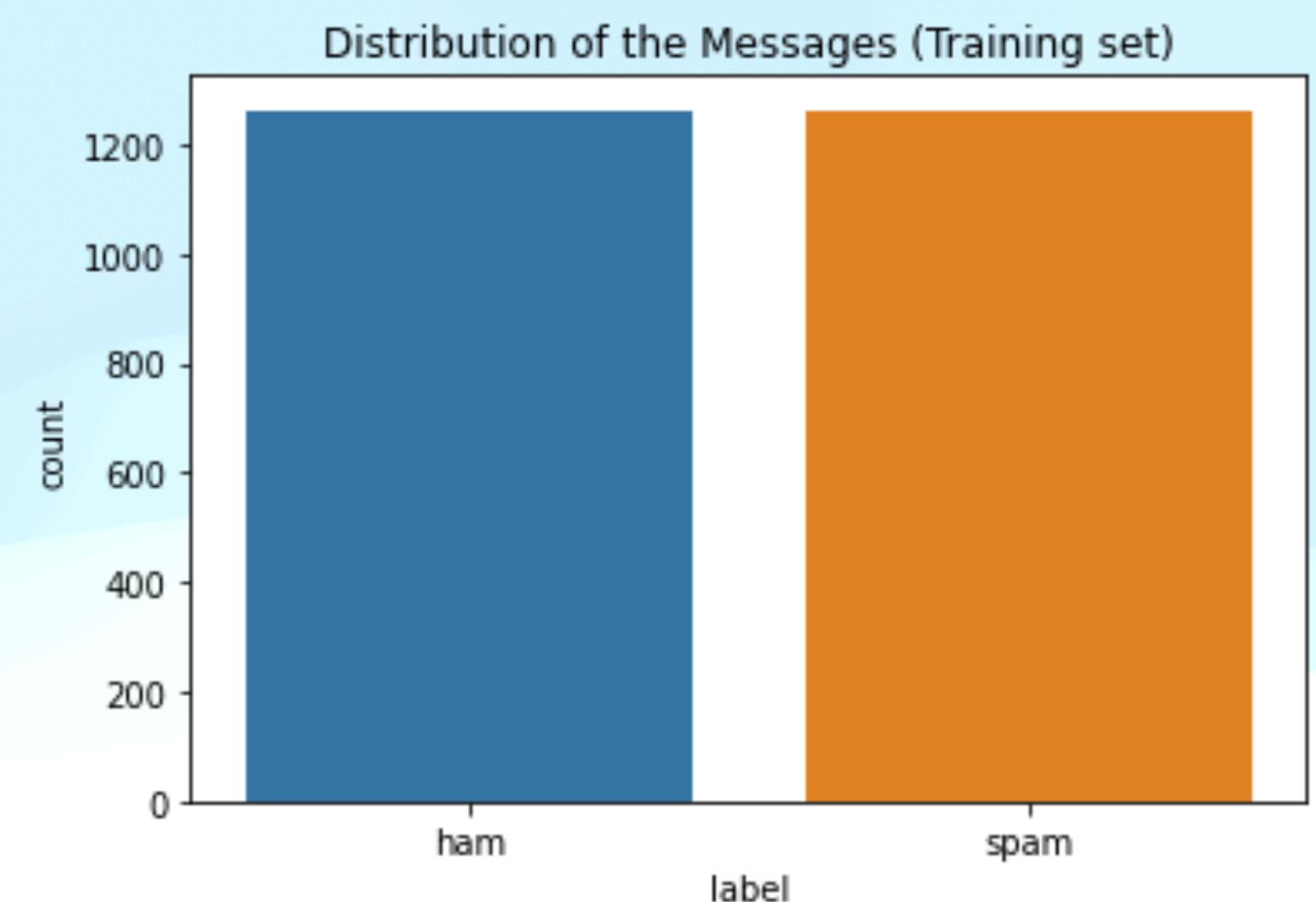


Tokenization

A dark-themed code editor window displays the following Python code:

```
max_tokens = 10000
output_sequence_length = avg_token_length

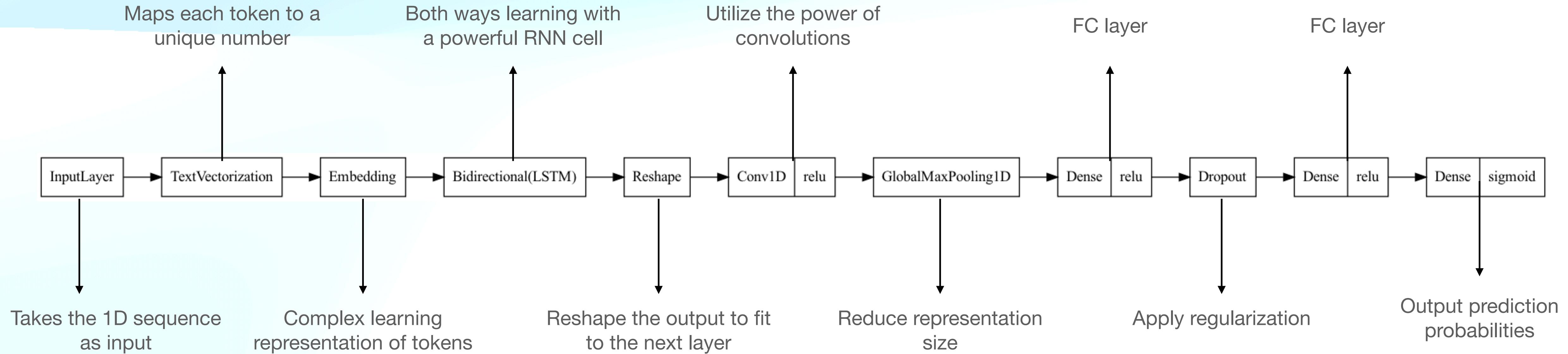
# create a text vectorization layer
text_vectorizer = TextVectorization(max_tokens=max_tokens,
                                     standardize="lower_and_strip_punctuation",
                                     split="whitespace",
                                     ngrams=None,
                  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



Model Development

The Optimal Model

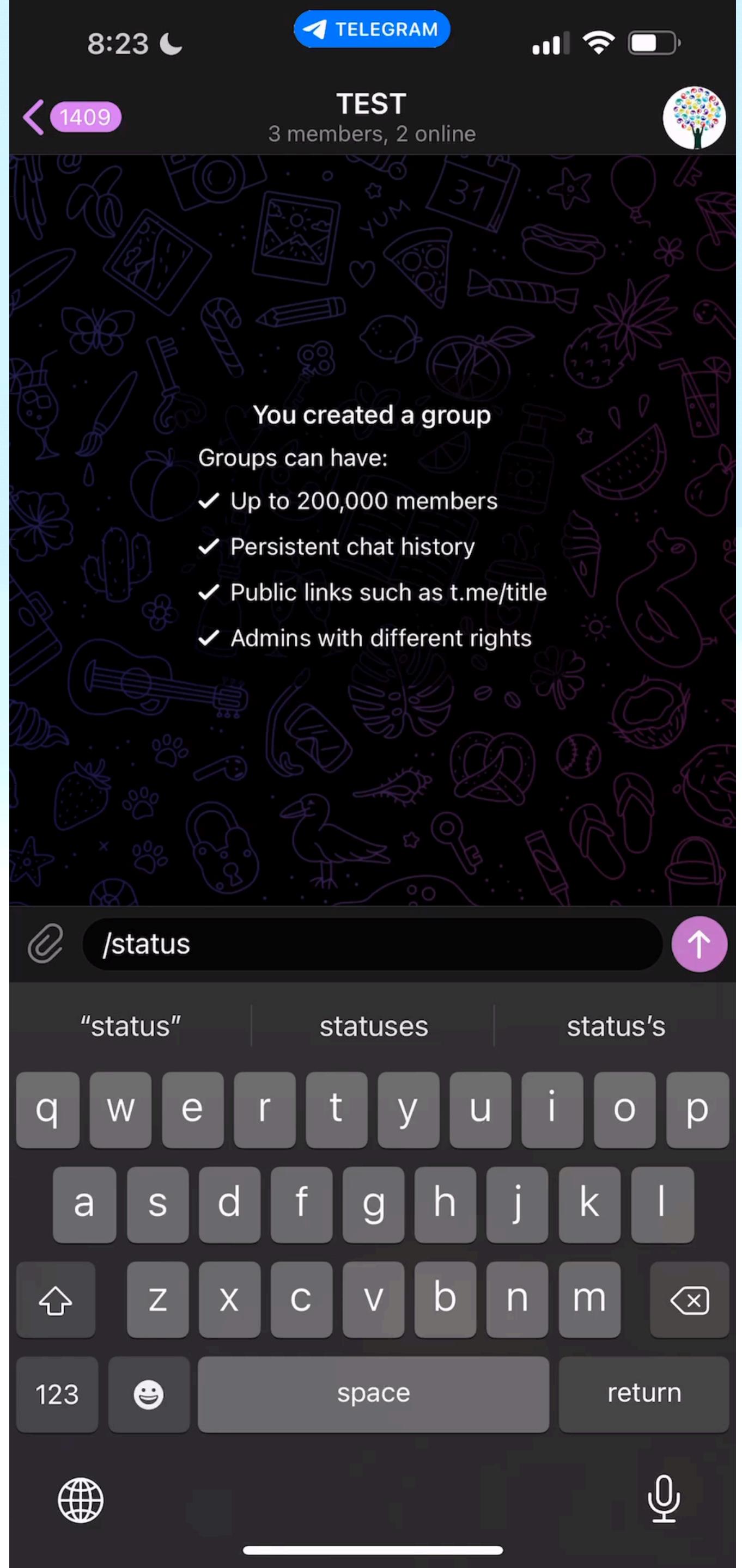
Model	Accuracy	F1-Score	Custom Data
Model 0	0.9599	0.9599	0.7500
Model 1	0.9599	0.9598	0.5000
Model 2	0.9775	0.9775	0.7500
Model 3	0.9855	0.9855	0.7500
Model 4	0.9727	0.9727	0.7500
Model 5	0.9839	0.9839	0.5000
Model 6	0.9743	0.9743	1.000



Model Deployment

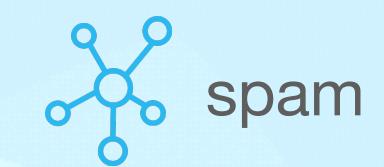
Telegram Bot

- 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: ->>>>>>>>>>>>>



1

Hi, customer, your order number: ORD2038388383, is currently out for delivery. If you have multiple orders come together, they all share the same OTP. Please send your account information to check your order



spam



spam

2

Guyss!!! Help I need some study material to prepare for the midterm exam tomorrow



spam



ham

3

Jiffy Lube customers 1-time offer: Rply Y to join our eClub for 45% off a Signature Service Oil Change! STOP to unsub
Msg&data rates may apply
T&C: jiffytos.com



spam

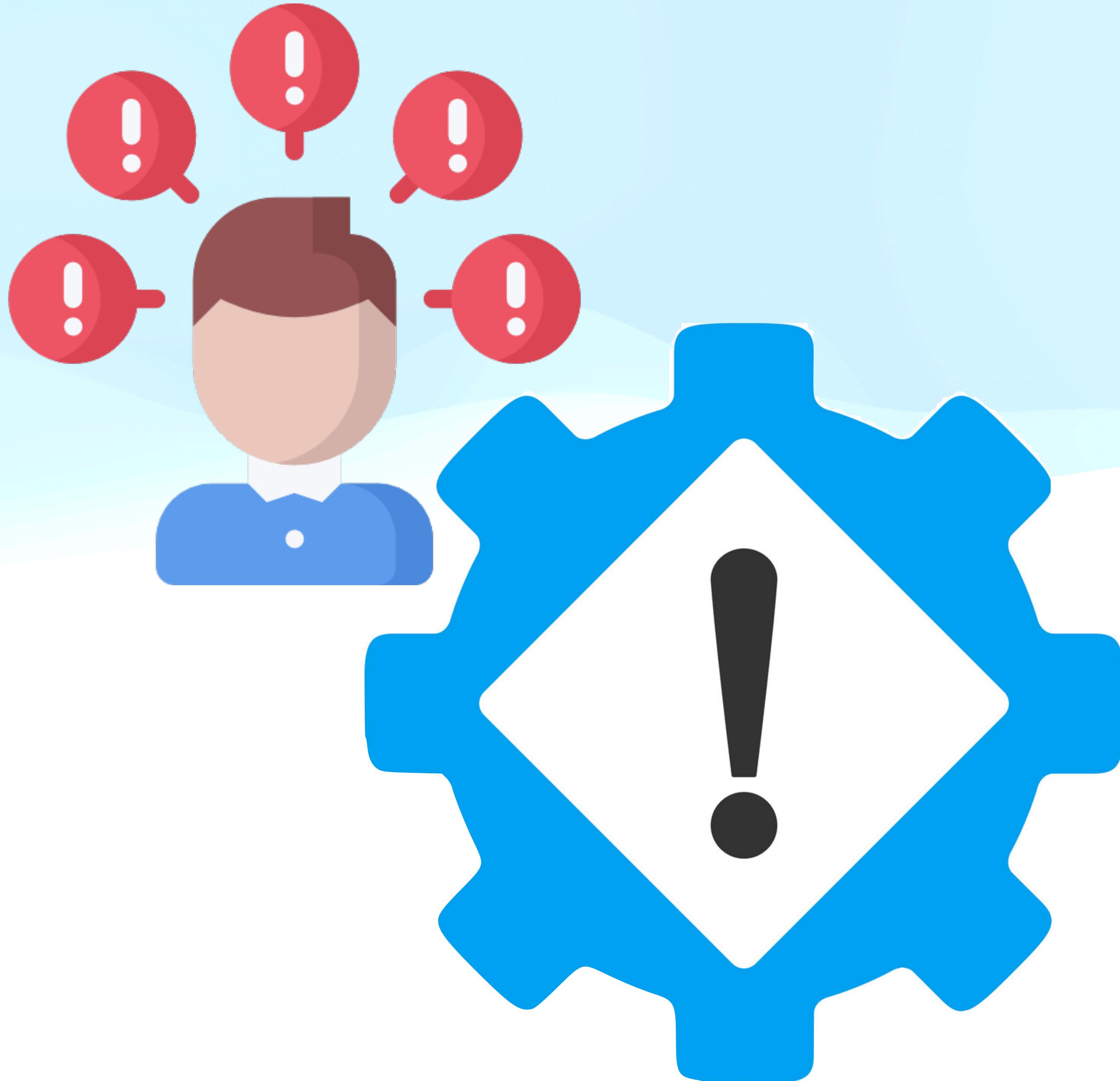


spam

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

- <https://www.kaggle.com/datasets/uciml/sms-spam-collection-dataset>
- <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
- <https://docs.pyrogram.org/>
- https://www.tensorflow.org/tutorials/keras/save_and_load
- https://www.tensorflow.org/api_docs/python/tf
- <https://towardsdatascience.com/dealing-with-imbalanced-classes-in-machine-learning-d43d6fa19d2>
- <https://www.geeksforgeeks.org/how-to-handle-imbalanced-classes-in-machine-learning/>

Thank You

All questions and inquiries are welcomed