SMS SPAM CLASSIFICATION USING NLP

Motivation

In the digital age, the proliferation of spam messages poses significant challenges to individual productivity and security. Leveraging Natural Language Processing (NLP) techniques for spam message classification not only enhances our ability to filter out irrelevant and potentially harmful content efficiently but also improves user experience by ensuring that vital communications reach their intended recipients without delay. By applying NLP, we can automate and refine the detection of spam, adapting to evolving tactics used by spammers and protecting users from unwanted intrusions into their digital communications.

Objectives

- Removing special character and numbers using regular expression
- Converting the entire sms into lower case
- Tokenizing the sms by words
- Removing the stop words
- Lemmatizing the words
- Joining the lemmatized words
- Building a corpus of messages

Related Work

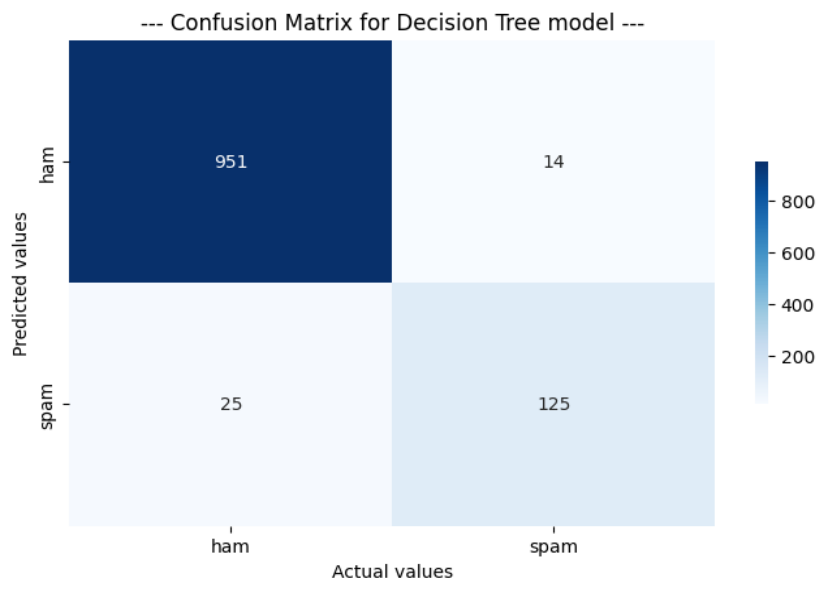
Proposed a transfer learning approach for SMS spam detection using Naïve Bayes classifier. The researchers utilized data augmentation methods to expand the training dataset and improve the classifier's performance. They also applied stacking, a model ensemble technique, to combine multiple classifiers for enhanced spam detection accuracy. The experiments conducted on a real-world SMS dataset demonstrated the efficacy of the proposed approach in achieving improved performance compared to traditional Naïve Bayes classifiers. The study contributes to the area of SMS spam detection by introducing a transfer learning framework that leverages augmentation and stacking techniques for enhanced classification accuracy.

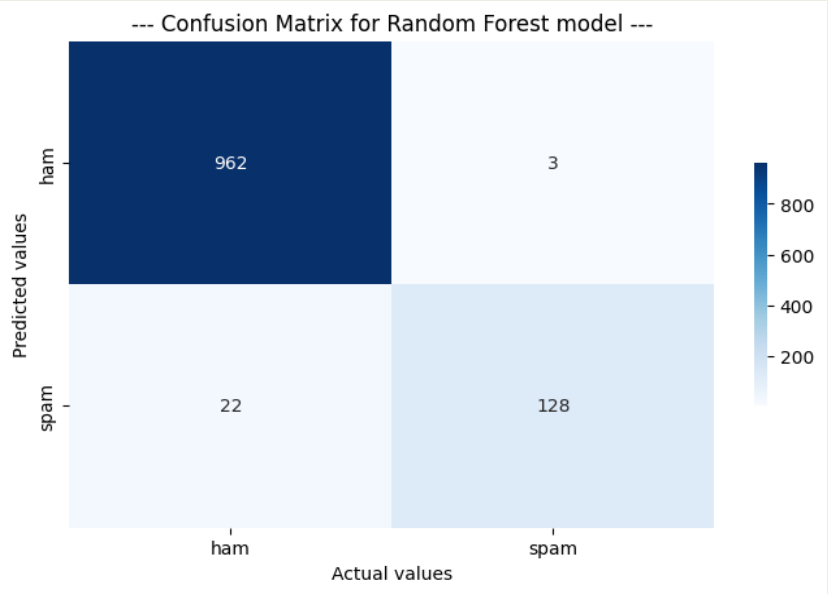
Problem Statement

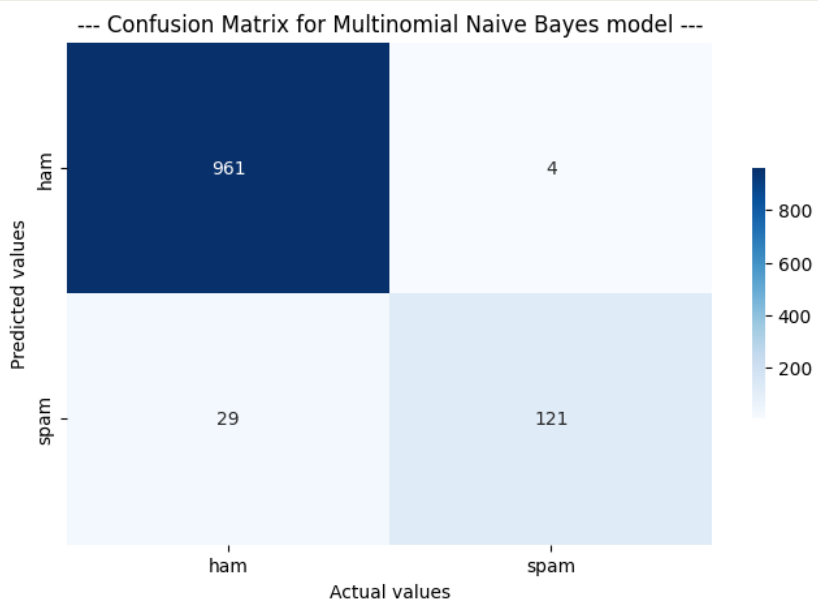
- The increasing volume and sophistication of spam messages circulating through digital communication channels present significant challenges in maintaining the efficiency, privacy, and security of online interactions. This project aims to develop a robust spam detection system using advanced Natural Language Processing techniques and machine learning algorithms, specifically Random Forest classifiers, to accurately identify and filter out spam messages. By leveraging feature extraction and employing an automated classification model, the system will enhance the ability to protect users from unsolicited and potentially harmful content, thereby ensuring the integrity and reliability of digital communications.

Proposed Solution

- Collection of Dataset from Kaggle
- Data Analysis
- Feature Engineering
- Data Cleaning
- Model Building & Comparision
- Making Predections

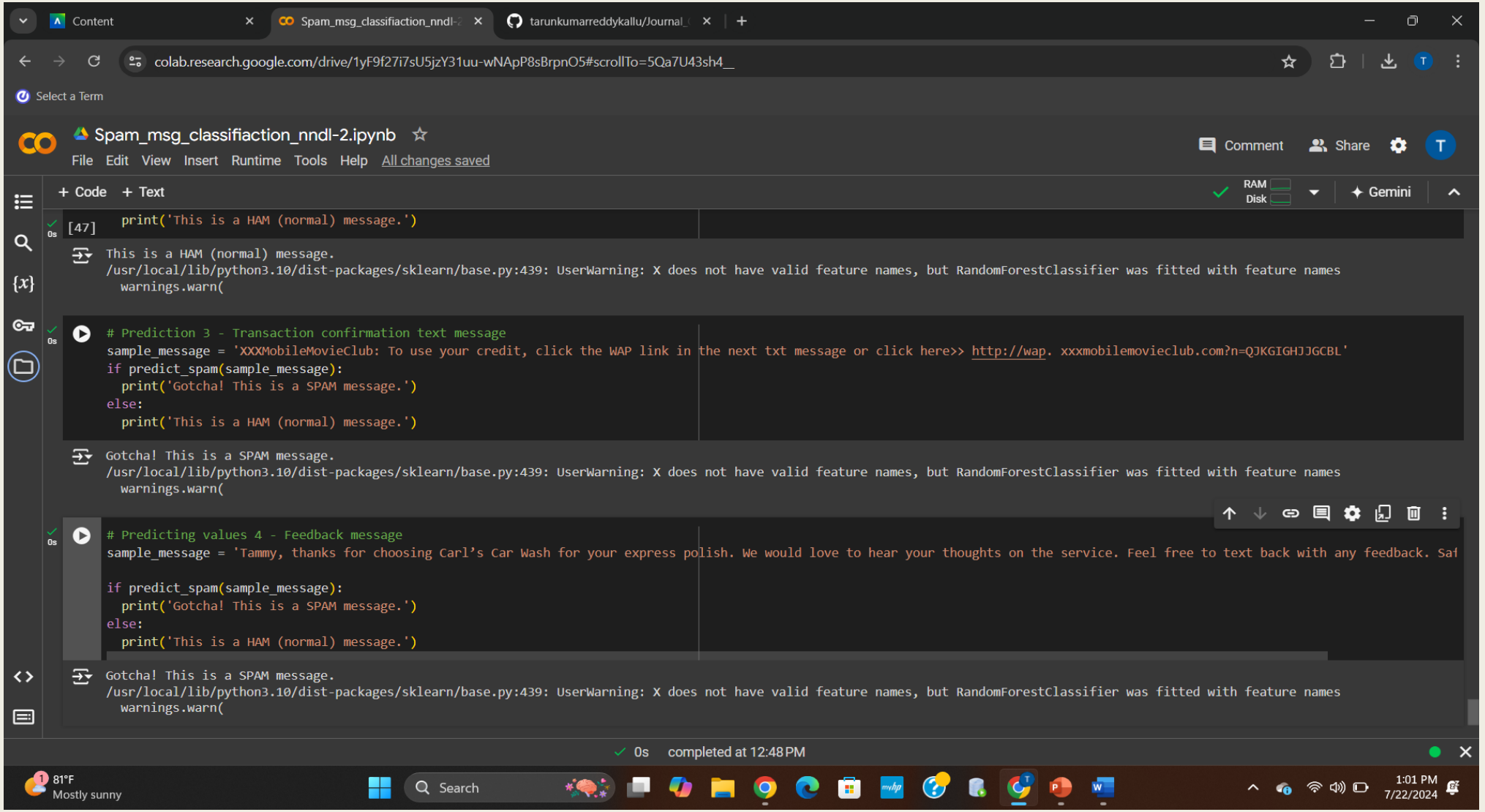






PROPOSED SOLUTION

Results


Content
Spam_msg_classifiaction_nndl-2
tarunkumarreddykallu/Journal
colab.research.google.com/drive/1yF9f27i7sU5jzY31uu-wNApP8sBrpnO5#scrollTo=5Qa7U43sh4__
Select a Term
Spam_msg_classifiaction_nndl-2.ipynb
File Edit View Insert Runtime Tools Help All changes saved
Comment
Share
+ Code + Text
RAM
Disk
Gemini
[47] print('This is a HAM (normal) message.')
This is a HAM (normal) message.
/usr/local/lib/python3.10/dist-packages/sklearn/base.py:439: UserWarning: X does not have valid feature names, but RandomForestClassifier was fitted with feature names
warnings.warn(
# Prediction 3 - Transaction confirmation text message
sample_message = 'XXXMobileMovieClub: To use your credit, click the WAP link in the next txt message or click here>> http://wap. xxxmobilemovieclub.com?n=QJKGIGHJJGCBL'
if predict_spam(sample_message):
print('Gotcha! This is a SPAM message.')
else:
print('This is a HAM (normal) message.')
Gotcha! This is a SPAM message.
/usr/local/lib/python3.10/dist-packages/sklearn/base.py:439: UserWarning: X does not have valid feature names, but RandomForestClassifier was fitted with feature names
warnings.warn(
# Predicting values 4 - Feedback message
sample_message = 'Tammy, thanks for choosing Carl's Car Wash for your express polish. We would love to hear your thoughts on the service. Feel free to text back with any feedback. Sa
if predict_spam(sample_message):
print('Gotcha! This is a SPAM message.')
else:
print('This is a HAM (normal) message.')
Gotcha! This is a SPAM message.
/usr/local/lib/python3.10/dist-packages/sklearn/base.py:439: UserWarning: X does not have valid feature names, but RandomForestClassifier was fitted with feature names
warnings.warn(
0s completed at 12:48 PM
81°F
Mostly sunny
Search
1:01 PM
7/22/2024

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