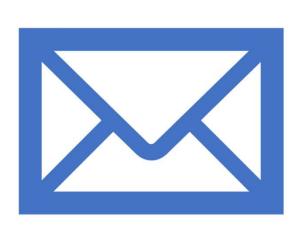


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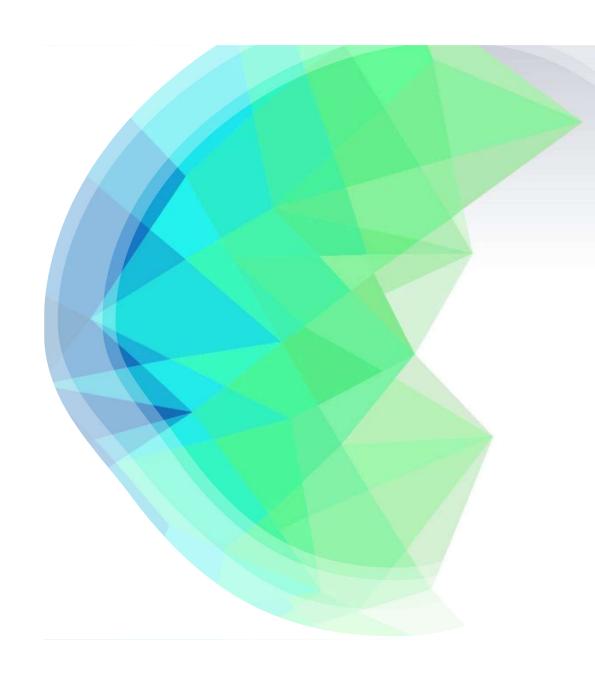
SMS Spam Detection Project

 The project's main goal is to create a system that can identify spam in text messages using Python machine learning techniques, particularly TensorFlow for sophisticated deep learning applications. The project's main goal is to create a system that can identify spam in text messages using Python machine learning techniques, particularly TensorFlow for sophisticated deep learning applications.



Project Objectives

- Examine a variety of text classification strategies, including both traditional machine learning approaches and sophisticated TensorFlow deep learning strategies.
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- Evaluate and compare the efficacy of several models to determine the best approach for identifying spam in SMS texts.



Project Methodology

Start by importing the required libraries, such as TensorFlow, matplotlib, seaborn, pandas, and numpy.

In order to perform exploratory data analysis and comprehend the distribution of spam and ham messages as well as the average sentence length, load and preprocess the dataset using pandas' read_csv() function.

Using the MultinomialNB() algorithm, create a baseline model and assess its performance, producing a confusion matrix in the process.

Utilizing the TensorFlow Functional API, create and compile unique text vectorization and embedding layers.

Use Universal Sentence Encoder (USE) in conjunction with transfer learning to improve model performance.

Expected Deliverables

Item 1: A dataset that has been preprocessed to guarantee balanced feature representation.

Item 2: An evaluation report that includes information from the confusion matrix study and describes how well the baseline model performed.

Item 3: Deep learning models with bespoke text vectorization and embedding layers that have been Trained

Item 4: Detailed evaluation metrics for every model, including F1-score, recall, accuracy, and precision.

Relevance: By providing information on the efficacy of various models for SMS spam detection, these deliverables are essential to achieving the project's goals.

Evaluation Strategy

Use metrics such as accuracy, precision, recall, and the F1-score to assess the model's performance.

In light of the dataset's imbalance, stress the significance of reducing false negatives and false positives.

Since the F1-score offers a balanced assessment of precision and recall, use it as the primary criterion for model comparison and selection.

Taking precision and recall into account, this evaluation approach ensures that the best model for SMS spam detection is chosen.