

Spam SMS Detection Project Report

1. Introduction

This report details the Spam SMS Detection project undertaken as part of the Data Science internship at 1stop.ai, inspired by Airtel's AI-powered spam detection system. The primary goal was to create a machine learning model that could distinguish spam from legitimate SMS messages using natural language processing (NLP) and machine learning algorithms.

2. Data Preparation

The dataset consisted of SMS messages labeled as 'spam' or 'ham' (non-spam). The data preprocessing steps involved text cleaning, tokenization, and the use of Term Frequency-Inverse Document Frequency (TF-IDF) for feature extraction. These steps are essential to transform raw text into numerical features that machine learning algorithms can understand.

3. Modeling

The spam detection system was built using several machine learning models, including Naive Bayes and Support Vector Machines (SVM). These algorithms were trained to identify patterns in the text data and classify SMS messages accordingly. The Naive Bayes algorithm, known for its efficiency in text classification tasks, performed particularly well.

4. Results

The final model achieved an accuracy of over XX% (insert final accuracy) in distinguishing between spam and legitimate SMS messages. The model was also able to reduce the number of false positives and false negatives through hyperparameter tuning and cross-validation.

5. Conclusion

The Spam SMS Detection project successfully demonstrated the application of machine learning in a real-world problem inspired by Airtel's AI-powered spam detection solution. By leveraging NLP

techniques and machine learning models, we were able to build a system capable of accurately classifying spam messages. This project highlights the importance of AI in improving communication security and user experience.