Spam Email Classifier using Machine Learning

Abstract

Spam emails are unwanted messages that may contain misleading or harmful content.
This project focuses on building a simple Machine Learning model to classify emails as spam or non-spam (ham) using text processing techniques and the Naive Bayes algorithm.

Objective

- To understand text classification
- To apply Machine Learning algorithms
- To identify spam emails automatically

Tools & Technologies

- Python
- Pandas
- Scikit-learn
- Google Colab

Dataset Description

A small sample dataset consisting of email messages labeled as **spam** or **ham** was used for training and testing the model.

Methodology

1. Email text data was collected
2. Text was converted into numerical format using CountVectorizer
3. Dataset was split into training and testing sets
4. Naive Bayes model was trained
5. Accuracy and predictions were evaluated

Algorithm Used

Multinomial Naive Bayes
This algorithm is suitable for text classification problems and works efficiently on word frequency data.

Result

The model successfully classified emails into spam and ham categories.
The system was able to predict new email inputs correctly.

Conclusion

This project demonstrates the practical application of Machine Learning in email filtering.
The model can be improved further using larger datasets and advanced NLP techniques.

End of Report