**ABSTRACT**

The rise of digital communication has made spam detection a crucial component of secure and efficient messaging platforms. This project presents a machine learning–based spam classifier that identifies whether a given message is spam or not. Using a labeled dataset of SMS messages, the system preprocesses the text and transforms it into numerical features using the Bag-of-Words model via CountVectorizer. A Multinomial Naive Bayes classifier is then trained on this data to distinguish spam from legitimate (ham) messages.

The application is built with Python and utilizes the scikit-learn library for model training and evaluation. The model achieved an accuracy of **97.88%** (0.97888456) on the test set, indicating strong performance in real-world spam detection scenarios. A user-friendly interface is implemented using the Gradio library, allowing real-time predictions through a web application.

This project demonstrates the effective use of natural language processing (NLP) and supervised learning techniques for spam filtering, offering a practical solution for enhancing the security and quality of digital communications.