**EMAIL SPAM DETECTION AND CLASSIFICATION**

**Introduction** :

Email spam remains a persistent nuisance in our digital lives, inundating our inboxes with unwanted messages, wasting time, and posing security risks. To combat this issue, the development of efficient email spam classifiers has become crucial. These classifiers employ various machine learning techniques to differentiate between legitimate emails and spam, thereby enhancing user experience and security. In this project, we present a novel email spam classifier designed to accurately identify and filter out spam emails, thus streamlining email management and bolstering cybersecurity.

**Abstract :**

Email spam continues to be a significant problem, adversely affecting user experience and posing security risks. To address this issue, we propose an email spam classifier utilizing machine learning algorithms. Our classifier analyzes email content and metadata to distinguish between legitimate emails and spam. Through the implementation of advanced natural language processing techniques and feature engineering, our classifier achieves high accuracy in spam detection. We evaluate the performance of our classifier using a diverse dataset and demonstrate its effectiveness in mitigating the impact of email spam on users' inboxes.

**System Requirements :**

* **Hardware:**
  + Processor: Dual-core processor or higher
  + RAM: Minimum 4GB RAM (8GB recommended for optimal performance)
  + Storage: Sufficient disk space for storing datasets and trained models
* **Software:**
  + Operating System: Compatible with Windows, macOS, Linux
  + Python (version 3.x)
  + Required Python libraries: NumPy, pandas, scikit-learn, NLTK, TensorFlow/PyTorch (for advanced machine learning models)
  + Integrated Development Environment (IDE) or text editor (e.g., Jupyter Notebook, PyCharm)
* **Dependencies:**
  + Internet connection for downloading necessary datasets and libraries
  + Access to email datasets for training and testing the classifier
* **Additional Requirements:**
  + Basic understanding of machine learning concepts and Python programming
  + Access to labeled datasets for training the classifier
  + Regular updates and maintenance to incorporate new spam patterns and improve classifier performance

**Program :**

**Conclusion :**

In conclusion, our email spam classifier represents a significant advancement in combating the proliferation of unwanted emails. By leveraging machine learning algorithms and sophisticated feature engineering techniques, we have developed a robust solution capable of accurately identifying and filtering out spam emails from users' inboxes. The effectiveness of our classifier is demonstrated through comprehensive evaluation using diverse datasets, highlighting its potential to enhance user experience and bolster cybersecurity. Moving forward, continuous refinement and updates will be essential to adapt to evolving spamming techniques and ensure sustained performance in real-world email environments.