

AI-Based Email Phishing Det

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Introduction

Phishing emails attempt to steal sensitive information such as passwords and credentials. They are often disguised as trustworthy messages.

Goal:

- Detect phishing emails using machine learning.
- Provide both a GUI tool for easy access.

Why Is Detection Necessary?

- Phishing emails look legitimate.
- Attack methods evolve rapidly.
- Manual detection is slow and error-prone.

Need:

- Real-time, intelligent, automated phishing detection.

Data Preparation

Dataset:

- Label 1: Phishing (e.g., 'Win a free iPhone now!')
- Label 0: Legitimate (e.g., 'Reminder: meeting at 3 PM')
- Stored in pandas DataFrame with 'message' and 'label' columns.



Feature Extraction

- Used TF-IDF Vectorizer from scikit-learn.
- Measures word relevance across the corpus.
- Reduces impact of common words.
- Outputs sparse matrix suitable for classification.

Model Training

- Classifier: Multinomial Naive Bayes (MultinomialNB).
- Combined with TF-IDF using scikit-learn Pipeline.
- Trained on the labeled dataset.
- Model saved using joblib as 'spam_detector_model.pkl'.

GUI Using Tkinter

- Simple desktop interface with Tkinter.
- Paste email → Click 'Check' → Shows result.
- Labels prediction as 'SPAM Email ' or 'Not Spam .
- Clean layout with dark theme.

Real-World Use Cases

- Enterprise email filtering.
- Outlook/Gmail plugin.
- Training tool for employees.
- Emergency email screening (incident response).

Future Scope

- Add more real-world emails to improve accuracy.
- Use deep learning models (LSTM, BERT).
- Add feedback mechanism for retraining.
- Web-based or browser extension interface.

Conclusion

- Built a lightweight AI-based phishing email detector.
- TF-IDF + Naive Bayes for fast, reliable detection.
- GUI for end-user convenience.
- Modular design for future upgrades.

Live GUI Prediction

Paste Email Content Below:

```
"Win a free iPhone now!"
```

Check

SPAM Email ❌

Paste Email Content Below:

```
Your bill is due tomorrow
```

Check

Not Spam ✅

```
il_detector
```