AI in Social Engineering and Phishing Campaigns: Spam Detector

Contributors

This project and research paper were completed solely by:

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Abstract

This research introduces an AI-driven spam and phishing detection system leveraging Machine Learning and Deep Learning methods.

It compares multiple models (Naive Bayes, SVM, Random Forest, LSTM) for accuracy and integrates the best-performing one into a user-friendly GUI.

Problem Statement & Objectives

Phishing attacks are growing more sophisticated, bypassing traditional filters. This project aims to:

1. Understand limitations in existing systems.

2. Apply AI techniques for email classification.

3. Evaluate multiple models based on accuracy and speed.

4. Create a functional spam/phishing detection tool with real-world application.

Research Methodology

- Dataset Sources: Enron, SpamAssassin, PhishTank.

- Preprocessing: Text cleaning, tokenization, vectorization.

- Features: URL patterns, headers, body text characteristics.

- Algorithms: Naive Bayes, SVM, Random Forest, LSTM.

- Validation: Accuracy, Precision, Recall, F1-score, ROC-AUC.

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Implementation & Files

Tool Components:

1. GUI built using Python.

2. Core logic in `694fada1.py` and `c35c52b2.py`.

3. Trained model stored as `3ee62cf1.pkl`.

The tool allows users to input email text and choose between trained AI models to get predictions with confidence scores.

Performance Results

- LSTM: 97.3% accuracy (best performance)

- Random Forest: 95%

- SVM: 93.5%

- Naive Bayes: 91.2%

LSTM is most accurate, especially for complex phishing messages.

Ethics & Future Scope

The system uses anonymized public datasets ensuring ethical usage.

Future enhancements include multilingual detection, adaptive learning, and integration into enterprise email clients.

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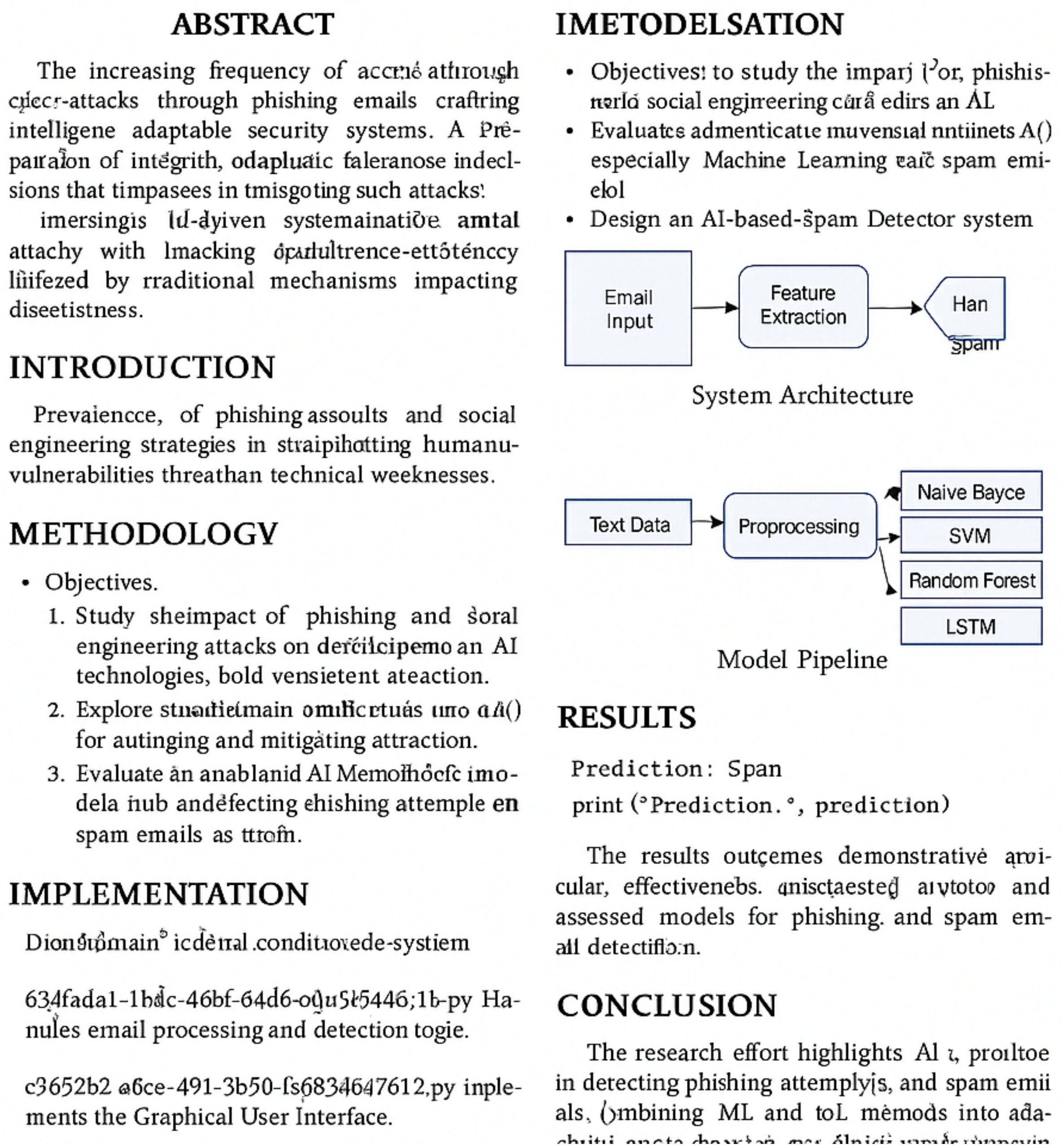
System Architecture Diagram



ABSTRACT

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INTRODUCTION

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METHODOLOGV

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  2. Explore stuadieımain omılıcrtuás uno aʎ() for autinging and mitigȧting attraction.
  3. Evaluate ȧn anablanid AI Memoħȯcfc imo-dela iiub andėfecting ėhishing attemple en spam emails as ttrofn.

IMPLEMENTATION

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c3652b2 a6ce-491-3b50-ſs6834647612,py inplements the Graphical User Interface.

IMETODELSATION

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- Evaluatcs admenticatıe ınuvensıal nntiinets A() especially Machine Learning eaič spam emi-elol
- Design an AI-based-ŝpam Detector system

System Architecture

Model Pipeline

RESULTS

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Prediction: Span
print (°Prediction.°, prediction)
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CONCLUSION

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