"Detection of Phishing Websites Using Machine Learning"

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Overview

Introduction

- Phishing costs Internet users billions of dollars per year. It refers to luring techniques used by identity thieves to fish for personal information in a pond of unsuspecting internet users.
- Phishers use spoofed e-mail, phishing software to steal personal information and financial account details such as usernames and passwords.
- This paper deals with methods for detecting phishing web sites by doing feature extraction of urls by Machine learning techniques and Natural Language Processing.

Objectives

- To explain what phishing websites are? And how they are major threat to peoples.
- To collect phishing websites database and perform processing on them
- After by applying various feature extraction techniques, fitting of the model with machine learning algorithm
- Improving accuracy of the model
- Deployment of model of web-page and make it ready mo use for end users.
- Users can enter their website on our website and check whether it is Phishing or not.

Problem Defination

- URLs sometimes known as "Web links" are the primary means by which users locate information in the Internet.
- Aim of the phishers is to acquire critical information like username, password and bank account details.
- Our aim is to derive classification models that detect phishing urls using machine learning and natural language processing. In Jupyter Environment

Hardware and Software Requirement

Hardware Requirement:-

- Intel Core i3 or above
- Processor: - 1.2GHz or above.
- RAM: - 2GB or above.
- Internal Storage: - 100GB or above.
- Internet Connectivity

Software Requirement :-

- Windows 7 or Higher
- Python 3.6.0 or Higher
- Visual Studio Code
- Flask

Tools Languages Used

Language Used:-

- HTML
- CSS
- Python

Software Used:-

- Jupyter Notebook
- Visual Studio Code
- Python 3.6

DataSet Used:-

- DataSet Of Phishing Website

Implementation Steps in Project

Implementation Steps :-

- Importing Some Useful Libraries.
- Data Preprocessing.
- Tokenizing the Strings.
- Stemming.
- Vectorization.
- Feature Extraction.
- Fitting the model in Support Vector Machine.
- Making the Pipeline.
- Loading the model with Pickle
- Predict the Output

Modules and Libraries used in Project

Modules used in Project :-

- Python Pandas.
- Python Numpy.
- Python Sklearn.
- Python Matplotlib.
- Python NItk
- Python Pickle

Algorithm

S.V.M. = Support Vector Machine :-

- The S.V.M. performs classification by finding the hyper plane that maximizes the margin between two classes.
- The vectors that define the hyper plane are the support vectors. Below is the figure showing how it works

Work Flow and Feature Extraction Diagram

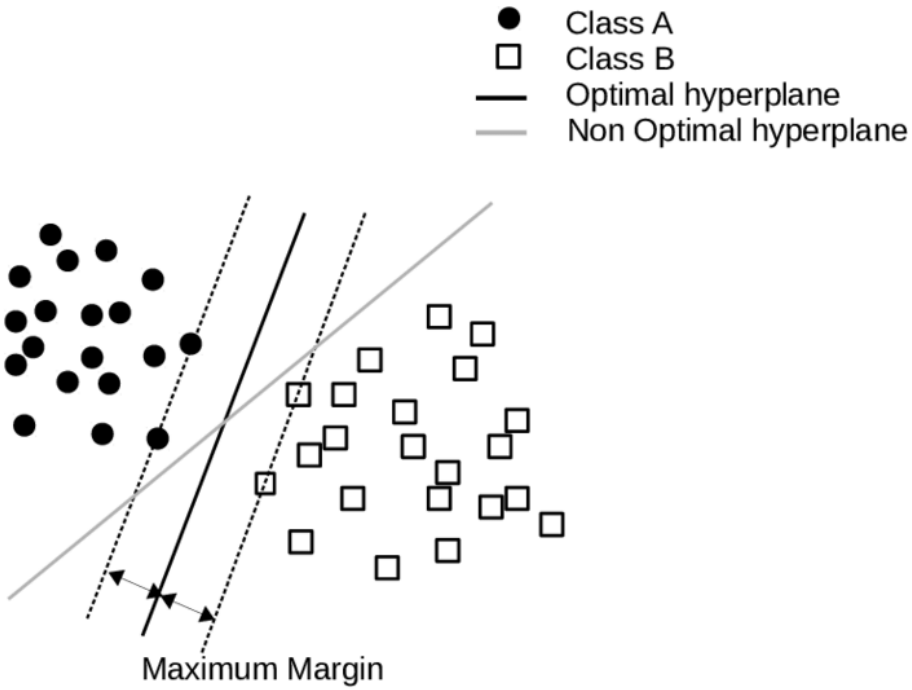

Figure: Work Flow and Feature Extraction

Data Flow Diagram

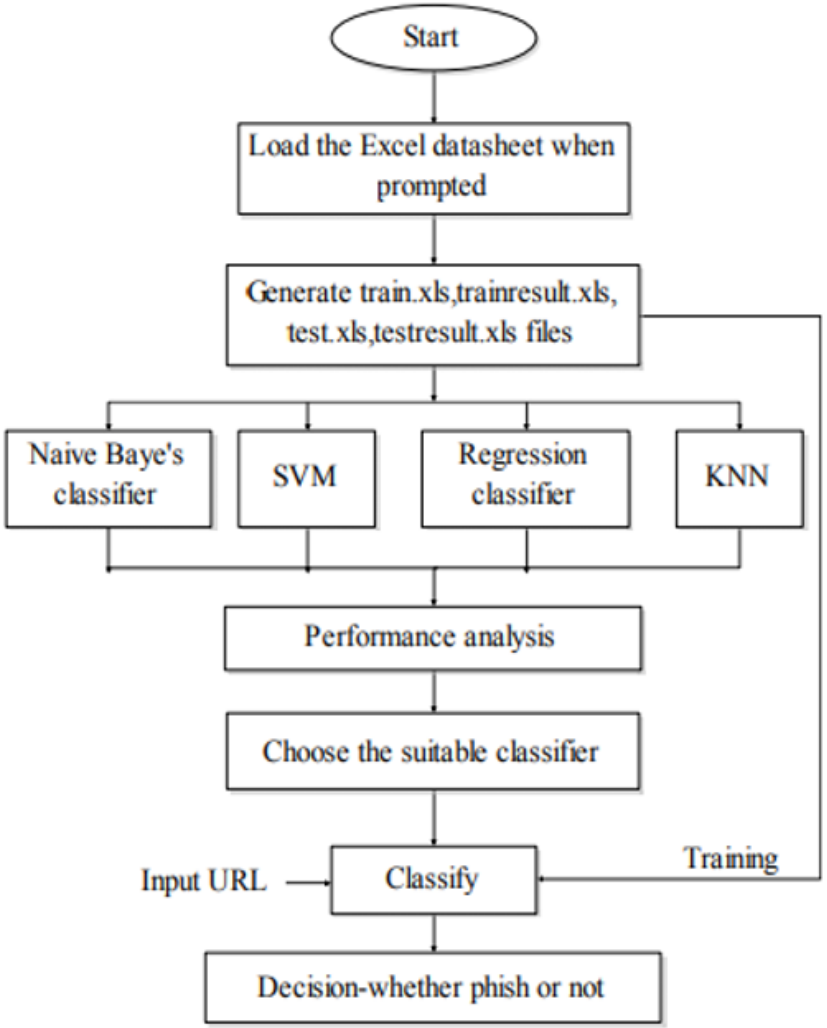

Figure: Data Flow Diagram

Use Case Diagram

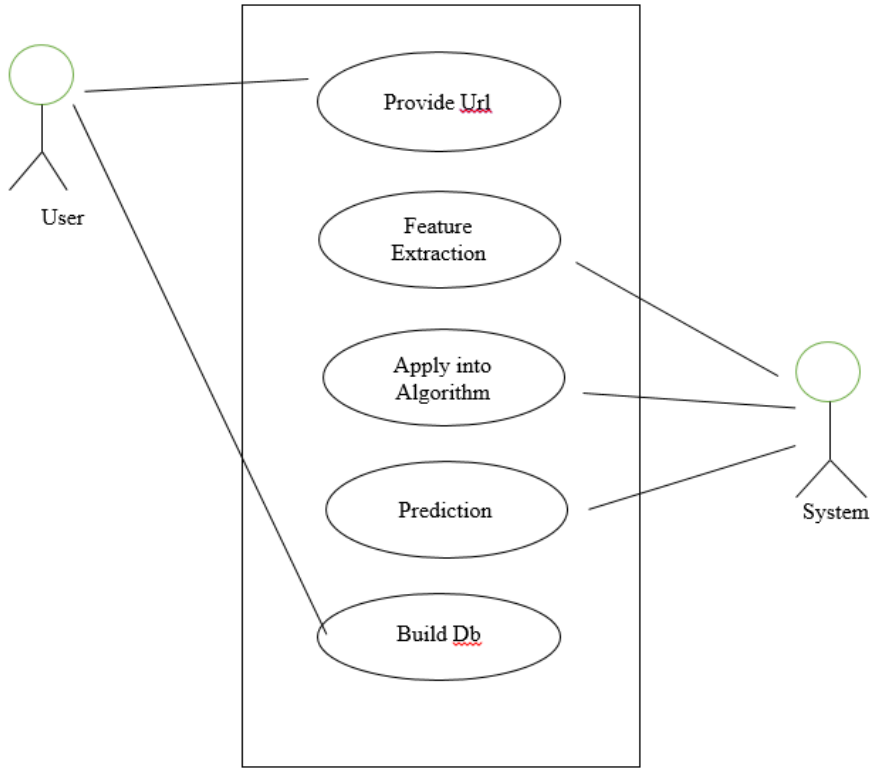

Figure: Use Case Diagram

Activity Diagram

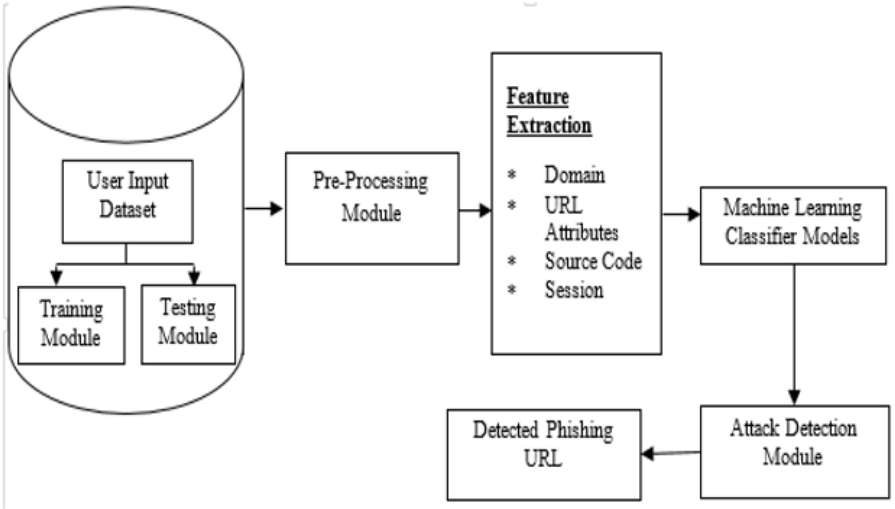

Figure: Activity Diagram

Component Diagram

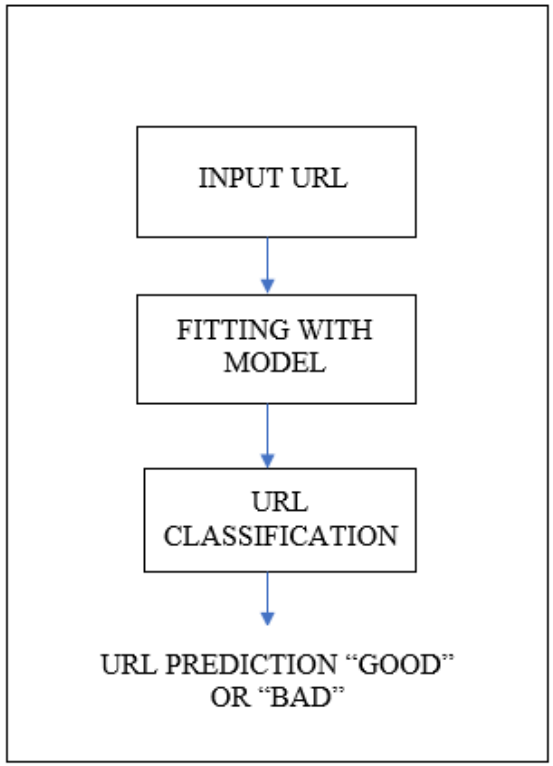

Figure: Component Diagram

Deployment Diagram

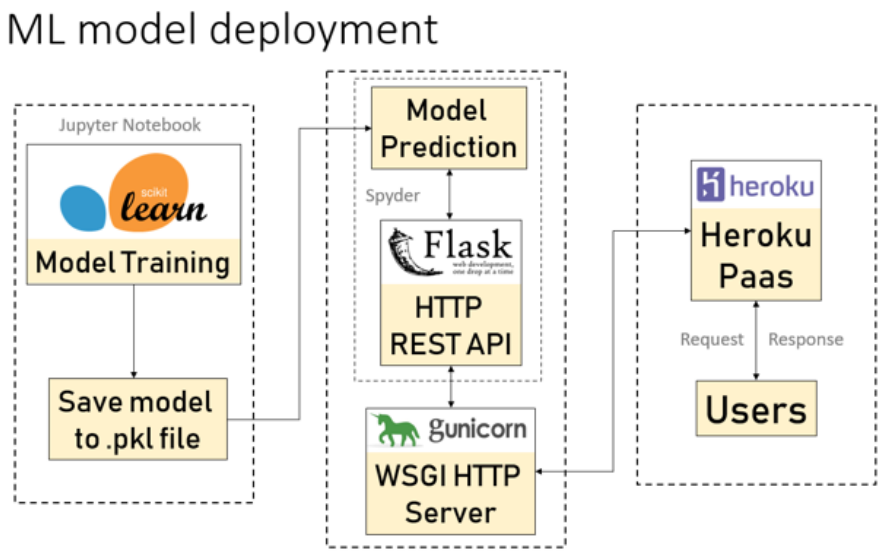

Figure: Deployment Diagram

Sequence Activity Diagram Of Phishing

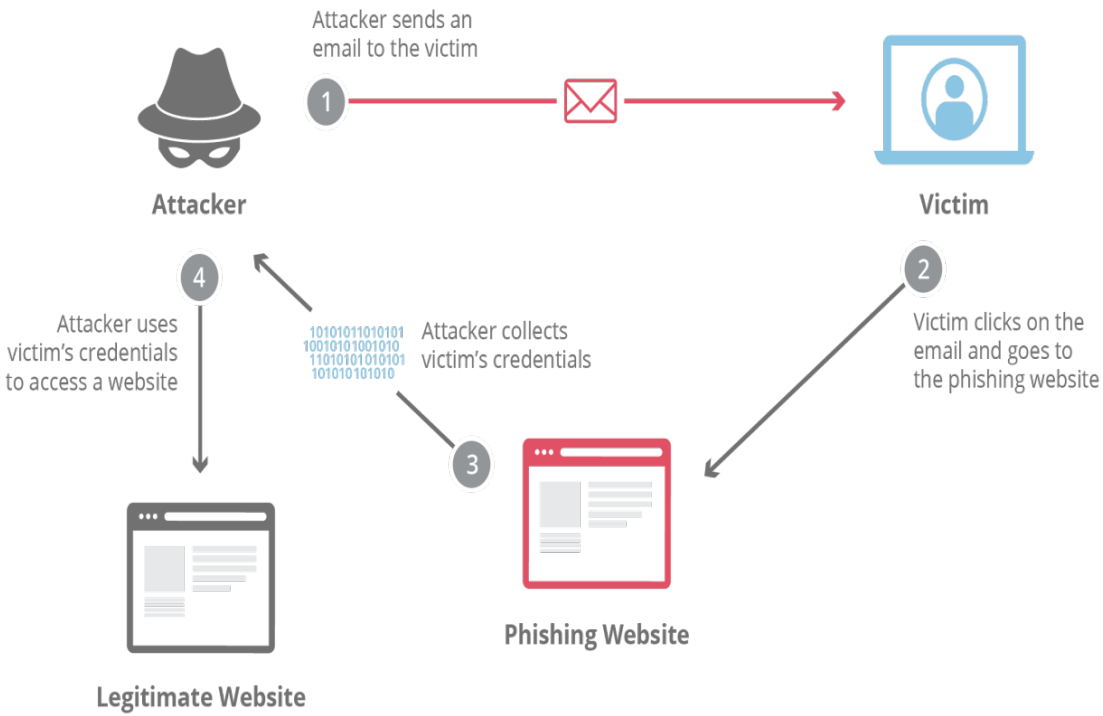

Figure: Sequence Activity Diagram Of Phishing

Result and Conclusion

Result and Conclusion :-

- We have detected phishing websites using Support Vector Machine with an accuracy of 97.94 Percentage.
- For future enhancements, we intend to build the phishing detection system as a scalable web service which will incorporate online learning so that new phishing attack patterns can easily be learned and improve the accuracy of our models with better feature extraction.

References

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Thank you