**Individual In-depth Report**

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**Evaluated by:** [Justin Young](mailto:jtyoun15@asu.edu)

**Date:** 09/10/23

**Tasks Assigned:**

* Review of A new approach for the detection and analysis of phishing in social networks : the case of Twitter

**Summary:**

* This paper proposes a three step approach to detect and analyze phishing in Twitter.
* Here, the methods used in the paper are tested on real data, but the database chosen in each of the steps, Blacklist, has only suspicious URLs and websites, which means that there is almost no chance of false grouping, which in turn means that the integrity of an honest user is not questioned.
* The main objective of this paper is to gather better results than the following approaches, which generate high amount of false negatives:
  + Feature extraction to analyze malicious site links or phishing URLs
  + Analysis of content on a website or text of a post on Twitter
  + Combination of previous two approaches
* To overcome this, the paper proposes a new approach which has the following steps:
  + Verification of URL occurrence in database of malicious URLs (Blacklisting)
  + Classification of URLs using supervised machine learning
  + User Analysis Mechanism
* In the first step, the URL within the tweet is verified from the database and an alert is generated if it is a phishing URL. It focuses on reducing false negatives.
* The second step involves using machine learning to classify URLs.
* The third and final step is the analysis of user accounts on Twitter, which is done using machine learning algorithms.
* The approach used in this paper has been done using three machine learning algorithms - Logistic Regression, Support Vector Machine and Random Forest.
* From the results it is found that for the prediction of malicious users, the best accuracy is achieved for Random Forest Classifier with 74.96% accuracy.
* In case of prediction results, the highest precision value is obtained for Random Forest, with 95.51%.
* The approach is tested by posting phishing URLs on Twitter and the result of each prediction was recorded.

**Outcome:**

This research paper focuses on minimizing the number of false negatives which are usually generated when trying to detect and analyze phishing on Twitter, using a three step approach while also keeping the integrity of honest users in check.

**References** *(with citation)*

[35] K. A. Djaballah, K. Boukhalfa, Z. Ghalem and O. Boukerma, "A new approach for the detection and analysis of phishing in social networks: the case of Twitter," *2020 Seventh International Conference on Social Networks Analysis, Management and Security (SNAMS)*, Paris, France, 2020, pp. 1-8

**Evaluation of Report**

**Evaluation summary with justification.**

This research paper provides a three step procedure using supervised machine learning methods in a new approach to detect and analyze phishing on Twitter. A comparison of machine learning algorithms concluded that Random Forest was the most effective method.

**The quality of the major result(s) with justification.**  
This paper covers a detailed procedure using relevant methods and a comparative performance analysis on some other ML algorithms.

**The usefulness of the paper to the overall project.**   
This will provide a potential solution to a problem relevant to our topic using machine learning algorithms.

**Other comments**

**Evaluation Approval  
  
Evaluation by:** [Justin Young](mailto:jtyoun15@asu.edu) **Date: 9/11/23**

**Is the written report of the in-depth study complete with all the major result(s) of the paper(s)? If not, provide as many examples of the major result(s) missing in the written report as possible. (in bullet form). [Normally within 100 words]**

* The report contains all sufficient information from the reference paper.

**Is each section of the guidelines sufficiently completed? If not, point out what is missing. [Normally within 40 words].**

Yes, each section of the guidelines is sufficiently completed.

**Is the quality of this version of the written report satisfactory? If not, then why not? [Normally within 40 words]**

Yes, the quality of this version of the written report is satisfactory.

**Approval.  
  
Approved by:** [Gautham Vijayaraj](mailto:gvijaya6@asu.edu) **Date: 9/11/23  
  
Is the quality of this written in-depth study report and Evaluation report satisfactory? If not, then why not? (limit: 40 words)**

The in-depth report and evaluation report contain sufficient information. Both the reports are satisfactory and are approved.