IJARSCT

International Journal of Advanced Research in Science, Communication and Technology



International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

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Volume 5, Issue 3, June 2025

Detecting Phishing Attacks Using Machine Learning Algorithms : SVM, Naïve Bayes and Random Forest.

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Abstract: Phishing attacks pose a significant threat to cybersecurity, compromising sensitive data and undermining trust in digital communication. With the evolution of attack techniques, traditional rulebased systems struggle to effectively identify new phishing tactics. This research investigates the use of three supervised machine learning algorithms—Support Vector Machine (SVM), Naive Bayes, and Random Forest—to detect phishing attacks based on URL and content-based features. We evaluate their effectiveness using benchmark datasets and analyze their accuracy, precision, recall, and F1-score. The findings suggest that Random Forest performs best overall, offering high accuracy and robustness, while Naive Bayes excels in speed and efficiency. This study contributes to the ongoing development of intelligent, adaptive cybersecurity mechanisms.

Keywords: Phishing attacks



