

Detecting Phishing Attacks using NLP and Machine Learning

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Abstract: *Phishing emails remain one of the most pervasive threats to cybersecurity, often leading to unauthorized access, data breaches, and financial losses. Due to their deceptive nature and close resemblance to legitimate communication, identifying phishing attempts automatically poses a significant challenge. This study presents a machine learning-based approach to detect phishing attacks by analyzing various features of emails, including text content, subject lines, and metadata. Using Natural Language Processing (NLP) techniques and neural network models, each component of an email is independently processed to capture linguistic and structural patterns commonly found in phishing messages. An ensemble of machine learning algorithms is then employed to combine these insights and classify emails as phishing or legitimate. This multi-faceted framework emphasizes the importance of analyzing composite email features for robust phishing detection and provides a foundation for real-world deployment of intelligent anti-phishing systems*

Keywords: Machine Learning, Natural Language Processing (NLP), Phishing Detection, Cybersecurity, Spam Filtering

