

Machine Learning for Cybersecurity in Spam Filtering

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Abstract: *Spam emails constitute a significant portion of global email traffic, posing a serious threat to cybersecurity by facilitating phishing, malware distribution, and other malicious activities. This paper explores the application of machine learning techniques in enhancing spam filtering systems. Through a detailed examination of various algorithms, including Naive Bayes, Support Vector Machines, and Neural Networks, we highlight their respective advantages and limitations. The paper also discusses practical implementation strategies, challenges, and future research directions in the field. Our findings indicate that machine learning significantly improves the accuracy and adaptability of spam filters, making them a critical component in modern cybersecurity defenses.*

Keywords: Machine Learning, Cybersecurity, Spam Filtering, Naive Bayes, Support Vector Machines (SVM), Decision Trees