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Securing Clouds with Machine Learning: Advancements in Theoretical and Experimental Research

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Abstract: *Cloud computing is becoming increasingly prevalent and is being adopted by many businesses to serve their own needs or those of their customers. However, the expansion of the cloud has also resulted in various security concerns for the market and consumers. To address these issues, machine learning (ML) techniques are being employed in a variety of ways to detect and prevent security threats in cloud computing (CC). Here we present a literature review on the application of ML methods to cloud security. We reviewed appropriate works and classified the results into different research topics like various types of cloud security threats, ML-based security mechanisms, and theoretical and experimental analysis of various state-of-the-art papers. Our analysis revealed that Distributed Denial of Service (DDoS) and Confidentiality, Integrity, and Availability of Data are the mutual cloud security domains. Based on our analysis, we found that various machine learning approaches were being used in cloud security research, including stand-alone and hybrid technologies. The article will serve as a stepping stone for new researchers in the area of cloud security*

Keywords: Cloud security, ML technique, cryptographic method, data security, IDS, DDoS attack, hybrid model.