

A cryptographic based I2ADO-DNN security framework for intrusion detection in cloud systems

M. Nafees Muneera; G. Anbu Selvi; V. Vaissnave; G.L Rajora

Abstract-

Cloud computing's popularity and success are directly related to improvements in the use of Information and Communication Technologies (ICT). The adoption of cloud implementation and services has become crucial due to security and privacy concerns raised by outsourcing data and business applications to the cloud or a third party. To protect the confidentiality and security of cloud networks, a variety of Intrusion Detection System (IDS) frameworks have been developed in the conventional works. However, the main issues with the current works are their lengthy nature, difficulty in intrusion detection, over-fitting, high error rate, and false alarm rates. As a result, the proposed study attempts to create a compact IDS architecture based on cryptography for cloud security. Here, the balanced and normalized dataset is produced using the z-score preprocessing procedure. The best attributes for enhancing intrusion detection accuracy are then selected using an Intelligent Adorn Dragonfly Optimization (IADO). In addition, the trained features are used to classify the normal and attacking data using an Intermittent Deep Neural Network (IDNN) classification model. Finally, the Searchable Encryption (SE) mechanism is applied to ensure the security of cloud data against intruders. In this study, a thorough analysis has been conducted utilizing various parameters to validate the intrusion detection performance of the proposed I2ADO-DNN model.

Index Terms- Cloud Computing, Security, Intrusion Detection System (IDS), Z-Score Normalization, Intelligent Adorn Dragonfly Optimization (IADO), Intermittent Deep Neural Network (IDNN) Classification, and Searchable Encryption

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