

INTRUSION DETECTION IN A NETWORK USING DEEP LEARNING

Intrusion detection has an important role in information security as it identifies various attacks and suspicious activities in any network. For securing the network from these threats, an Intrusion Detection System (IDS) software is designed that monitors the network traffic for such activities and issues alerts on discovering them. For this we use a deep learning approach using Recurrent Neural Networks (RNN-IDS) in which the hidden layer remembers information about a sequence and study the performance of the proposed model in binary (normal or anomaly) and multiclass classification (Denial Of Service, User to Root, Probe and Root to Local) based on the benchmark NSL-KDD dataset. The results and accuracy of the proposed model are then compared with other machine learning methods namely artificial neural network, random forest and support vector machine. The final result proves that the RNN-IDS model improves the accuracy of intrusion detection for a specific number of hidden nodes and learning rate. The future research of the project would be to reduce the training time using GPU acceleration, avoid exploding and vanishing gradients and study the bidirectional RNNs algorithm.

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