Artificial Neural Network based System for Intrusion Detection using Clustering on Different Feature Selection

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Abstract

Intrusion Detection System (IDS) is an example of Misuse Detection System that works for detecting malicious attacks. This can be defined as software for security management. Many researchers have proposed the Intrusion Detection System with different techniques to achieve the best accuracy. In this paper it is projected that intrusion detection system with the amalgamation of k-means clustering and artificial neural network to improve the system. To obtain a better result benchmark dataset was split into training and testing part and then cluster the dataset into five different divisions. After getting the cluster data it has been trained by the different Artificial Neural Networks functions as- Feed Forward Neural Network (FFNN), Elman Neural Network (ENN), Generalized Regression Neural Network (GRNN), Probabilistic Neural Network (PNN) and Radial Basis Neural Network (RBNN). After implementing these functions we have proposed a comparative analysis between them and choose the best accuracy rate among them. Here, it has been proved that, using the clustering technique a better accuracy
rate can be found that improve the system with the best neural network functions which is the probabilistic neural network. It is also important to select efficient feature sets for better accuracy.

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Index Terms

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Keywords

Intrusion Detection System, K-means Clustering, Artificial Neural Network, FFNN, ENN, GRNN, PNN, RBNN