Enhancement of Network Attack Classification using Particle Swarm Optimization and Multi Layer-Perceptron

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Abstract

Network intrusion detection systems (NIDSs) give classification for all data passing during these systems and produce an alarm report whether these data are normal or abnormal. Many researchers have used various techniques to solve classification problems in IDSs but these techniques still have some vulnerability by getting imperfect classification for attacks. In this study, a proposed system has been developed that achieves classification technique by using hybrid soft computing technique which is Multi Layer-Perceptron (MLP) with Particle Swarm Optimization (PSO). The PSO has been used to improve the learning capability of the MLP by setting up the linkage weights in an attempt to enhance classification accuracy of the MLP. Simulation results conducted over three forms of experiments show that the proposed system gives high classification compared with other methods. The results show also that the percentages of classification has been reached to (98.9%) with (1.1) false alarm.

References
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Index Terms

Computer Science Networks
Keywords

Network Intrusion Detection (NIDS), Multi Layer-Perceptron (MLP), Particle Swarm Optimization (PSO), NSL-KDD99.