

Intrusion Representation and Classification using Learning Algorithm

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Abstract—At present, machine learning (ML) algorithms are essential components in designing the sophisticated intrusion detection system (IDS). They are building-blocks to enhance cyber threat detection and help in classification at host-level and network-level in a short period. The increasing global connectivity and advancements of network technologies have added unprecedented challenges and opportunities to network security. Malicious attacks impose a huge security threat and warrant scalable solutions to thwart large-scale attacks. These activities encourage researchers to address these imminent threats by analyzing a large volume of the dataset to tackle all possible ranges of attack. In this proposed method, we calculated the fitness value of each feature from the population by using a genetic algorithm (GA) and selected them according to the fitness value. The fitness values are presented in hierarchical order to show the effectiveness of problem decomposition. We implemented Support Vector Machine (SVM) to verify the consistency of the system outcome. The well-known NSL-knowledge discovery in databases (KDD) was used to measure the performance of the system. From the experiments, we achieved a notable classification accuracies using a SVM of the current state of the art intrusion detection.

Keyword—Cybersecurity, decomposition, discriminatory, intrusion



Babu Kaji Baniya received the B.E. degree in Computer Engineering from Pokhara University, Nepal in 2005 and M.E. and Ph.D. in Electronic Engineering and Computer Science from Chonbuk National University, Rep. of Korea in 2015. He also worked as a postdoctoral researcher in the Department of Computer Science and Biomedical Engineering at the University of South Dakota. Currently, he is an assistant professor in the Department of Computer Science and Digital Technologies at Grambling State University, Louisiana, United States of America. His main research interest includes audio signal processing, information retrieval, cybersecurity, bioinformatics, machine learning, etc.