



RESEARCH ARTICLE

A Novel Fuzzy Logic Analysis & Study on Intrusion Detection System

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Abstract— Classification of intrusion attacks and normal network activity is increasing problem in computer network security. In this paper, we present a novel intrusion detection approach to extract both accurate and interpretable fuzzy classifier from computer network data. The proposed fuzzy rule-based system is evolved from a feature selection KDD Cup framework. In addition, the proposed system presents the genetic feature selection wrapper to search for an optimal feature subset for dimensionality reduction. To evaluate the intrusion detection classification and feature selection performance of our approach, it is compared with some well-known data mining classifiers as well as feature selection. The comparative results on the KDD-Cup99 intrusion detection benchmark data set demonstrate that the proposed approach produces interpretable fuzzy systems, and outperforms other classifiers by providing the highest detection accuracy for intrusion attacks and low false alarm rate for normal network traffic with minimized number of features.

Key Terms: - *Fuzzy classifier; Genetic algorithms; Feature selection; Intrusion detection*
