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Intrusion Detection System Using Machine Learning

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Abstract: *The system administrator can find network security breaches in their own organization with the aid of a system network intrusion detection system (NIDS). However, several challenges arise when developing a sophisticated and potent NIDS for unforeseen and erratic attacks. One of the main areas of interest in NIDS research in recent years has been the use of machine learning techniques. This system proposes a network intrusion detection technique that effectively detects various types of network intrusion i.e., Dos, U2R, R2L, Probe, Normal. It is based on decision tree and twin support vector machine.The decision tree for the network traffic data is first constructed using the trees. The bottom-up merging approach is then used to maximize the separation of the decision tree's upper nodes, thereby reducing the accumulation of errors during the decision tree's construction. Subsequently, the network intrusion detection model is implemented by embedding twin support vector machines into the decision tree. This performance evaluated network intrusion detection analysis dataset, particularly KDD-CUP99,NSLKDD dataset.*

Keywords: Network intrusion detection, Decision Tree, win support vector machine, Encoder, KDD Dataset