

ABSTRACT

Machine Learning is used to build an Intrusion Detection System (IDS) that functions to automatically detect and classify attacks on networks, malicious attack traffic is constantly changing and occurs on a large scale, causing many challenges that require measurable solutions. In previous research, a comparison of algorithms with accuracy, precision and recall parameters was carried out as a result, therefore the research carried out was to look for the accuracy, precision, recall, specificity, sensitivity and error rate in detecting anomalous network traffic using the Random Forest, Naive algorithm. Bayes and J48. The value search process was carried out twice with a percentage split of 80% and 90%. Testing the 80% percentage split, the results for the Random Forest algorithm were accuracy 99.88%, precision 95.69%, recall 92.15%, specificity 98.61%, sensitivity 92.15% and error rate 0.12%. The Naive Bayes algorithm has an accuracy of 81.58%, precision of 44.27%, recall of 75.17%, specificity of 90.24%, sensitivity of 75.17% and error rate of 18.42%. The J48 algorithm has an accuracy of 99.88%, precision of 98.62%, recall of 88.54%, specificity of 97.72%, sensitivity of 88.54% and error rate of 0.12%. Testing the 90% percentage split, the results for the Random Forest algorithm were accuracy 99.84%, precision 93.29%, recall 83.31%, specificity 98.05%, sensitivity 83.31% and error rate 0.16%. The Naive Bayes algorithm has an accuracy of 81.00%, precision of 47.73%, recall of 65.40%, specificity of 90.45%, sensitivity of 65.40% and error rate of 19.00%. The J48 algorithm has an accuracy of 99.80%, precision of 83.31%, recall of 83.29%, specificity of 98.87%, sensitivity of 83.29% and error rate of 0.20%. It was concluded that the results of the 80% and 90% percentage split tests show that the Random Forest algorithm is better at detecting network traffic that is anomaly with higher accuracy, precision, recall, specificity and sensitivity values than the Naive Bayes and J48 algorithms, but the error rate is lower. better obtained Naive Bayes algorithm.

Keywords : J48, Naive Bayes, Random Forest