

ABSTRAK

Serangan *Distributed Denial of Service* (DDoS) dapat mengganggu ketersediaan layanan dengan membebani jaringan atau server menggunakan trafik dari banyak sumber. Penelitian ini bertujuan membangun sistem klasifikasi DDoS berbasis web dan membandingkan performa *Logistic Regression*, *Decision Tree*, *Random Forest*, serta XGBoost. Dataset SNT yang digunakan terdiri atas 1.034.668 data trafik berbasis *flow*. Empat atribut identitas dikeluarkan sehingga diperoleh 17 fitur masukan. Pola fitur identik dikelompokkan dan data dibagi menggunakan *StratifiedGroupKFold* untuk mengurangi risiko *pattern leakage*. Model dievaluasi menggunakan *accuracy*, *precision*, *recall*, *F1-score*, *confusion matrix*, ROC-AUC, dan validasi silang berbasis grup, kemudian dipilih menggunakan *Weighted Sum Method*. Pada komparasi awal menggunakan 17 fitur, XGBoost memperoleh *accuracy* 99,9104%, *precision* 99,8187%, *recall* 99,9980%, *F1-score* 99,9083%, AUC 0,9999, dan skor WSM 0,9547. Setelah eksperimen pengurangan fitur, XGBoost enam fitur ditetapkan sebagai model final dan diintegrasikan ke aplikasi Flask. *Black-box testing* oleh tiga penguji pada 21 skenario mencapai keberhasilan 100%. Sistem juga mampu memproses 1.000.000 baris dengan rata-rata waktu total 3,3080 detik.

Kata kunci: DDoS, XGBoost, klasifikasi, *StratifiedGroupKFold*, aplikasi web.

ABSTRACT

Distributed Denial of Service (DDoS) attacks can disrupt service availability by overwhelming networks or servers with traffic from multiple sources. This study aims to develop a web-based DDoS classification system and compare the performance of Logistic Regression, Decision Tree, Random Forest, and XGBoost. The SNT dataset contains 1,034,668 flow-based traffic records. Four identity-related attributes were excluded, leaving 17 input features. Identical feature patterns were grouped, and the data were split using StratifiedGroupKFold to reduce the risk of pattern leakage. The models were evaluated using accuracy, precision, recall, F1-score, confusion matrix, ROC-AUC, and group-based cross-validation, then selected using the Weighted Sum Method. In the initial comparison using 17 features, XGBoost achieved 99.9104% accuracy, 99.8187% precision, 99.9980% recall, a 99.9083% F1-score, an AUC of 0.9999, and a WSM score of 0.9547. After the feature-reduction experiment, a six-feature XGBoost model was selected as the final model and integrated into a Flask application. Black-box testing by three testers across 21 scenarios achieved a 100% success rate. The system also processed 1,000,000 rows in an average total time of 3.3080 seconds.

Keywords: *DDoS, XGBoost, classification, StratifiedGroupKFold, web application*