DETEKSI *LRDDOS* PADA JARINGAN *SD-IOT* MENGGUNAKAN *MACHINE LEARNING* DENGAN *FEATURE IMPORTANCE RANDOM FOREST CLASSIFIER*

Laporan Tugas Akhir

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2023

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Demikian surat pernyataan ini saya buat dengan sebenar-benarnya. Apabila kemudian ditemukan adanya pelanggaran terhadap etika keilmuan dalam karya saya ini, atau ada klaim dari pihak lain terhadap keaslian karya saya ini maka saya siap menanggung segala bentuk resiko/sanksi yang berlaku.

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INTISARI

Serangan DDoS (Distributed Denial-of-Service) semakin merusak, menyebabkan penurunan kinerja jaringan, kehilangan data, dan bahkan downtime. Pada Penelitian ini membahas tentang pentingnya deteksi serangan LR-DDoS pada jaringan SD-IoT untuk memastikan keamanan jaringan. Serangan DDoS dapat mengancam keamanan sistem, infrastruktur, dan data, dan dengan meningkatnya penggunaan IoT, serangan terhadap jaringan IoT juga semakin meningkat.

Meskipun ada beberapa metode deteksi yang ada, metode yang dapat bekerja pada jaringan SD-IoT dan memberikan hasil yang akurat masih menjadi tantangan. Oleh karena itu, penelitian ini mengusulkan penggunaan metode Machine Learning dengan metode feature importance RFC untuk deteksi serangan LR-DDoS pada jaringan SD-IoT.

Hasil penelitian menunjukkan bahwa metode yang diusulkan mampu mendeteksi serangan DDoS dengan akurasi tertinggi ada pada paket pengiriman 50pps mencapai 90,36%, untuk terendah pada 20pps dengan tingkat accuracy 90,34% serta rata rata hasilnya dari semua rate adalah 90,35%. Dengan menggunakan 8 algoritma machine learning dan feature importance yang efektif seperti RFC dengan fitur penting, studi ini dapat membantu meningkatkan keamanan jaringan di jaringan SD-IoT dan memberikan perspektif baru pada penggunaan metode pembelajaran mesin untuk memperbaiki keamanan jaringan

Kata Kunci: *SD-IoT, LrDDoS , Random Forest Classifier.*

ABSTRACT

Distributed Denial-of-Service (DDoS) attacks are becoming increasingly destructive, causing network performance degradation, data loss, and even downtime. This study discusses the importance of detecting LR-DDoS attacks on SD-IoT networks to ensure network security. DDoS attacks can threaten the security of systems, infrastructure, and data, and with the increasing use of IoT, attacks on IoT networks are also increasing.

Although there are several detection methods available, methods that can work on SD-IoT networks and provide accurate results remain a challenge. Therefore, this study proposes the use of Machine Learning methods with RFC feature importance for detecting LR-DDoS attacks on SD-IoT networks.

The results of the study show that the proposed method is able to detect DDoS attacks with the highest accuracy at a packet delivery rate of 50pps, reaching 90.36%, while the lowest accuracy is at 20pps with an accuracy rate of 90.34%, and the average of all rates is 90.35%. By using 8 machine learning algorithms and effective feature importance such as RFC with important features, this study can help improve network security in SD-IoT networks and provide new perspectives on the use of machine learning methods to enhance network security .

Keywords: *SD-IoT, LrDDoS , Random Forest Classifier.*

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" DETEKSI *LRDDOS* PADA JARINGAN *SD-IOT* MENGGUNAKAN *MACHINE LEARNING* DENGAN *FEATURE IMPORTANCE RANDOM FOREST CLASSIFIER*"

Di dalam tulisan ini disajikan pokok-pokok bahasan yang meliputi penjelasan terkait penelitian-penelitian terdahulu, metode dan dataset yang digunakan, serta hasil Deteksi *LrDDoS* Pada Jaringan *SD-IoT* Menggunakan *Machine Learning* Dengan *Feature Importance Random Forest Classifier*.

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