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(57) Abstract :
Abstract One of the techniques that can be used in attack detection is intrusion detection system (IDS). The IDS is one of the techniques that can be used to protect data and networks. With the specific characteristics of IoT, building IDS faces enormous challenges. Therefore, the dimensionality reduction (DR) application technique is very crucial. Currently, existing IDSs are based on data mining, machine learning (ML), and deep learning (DL) algorithms and are being implemented as one of the solutions in recognizing attacks. The use of DR makes the IoT IDS become more efficient with faster execution time, so the required computational and other resources such as required storage media are less. Moreover, DR can also be used to visualize the traffic data. This chapter presents an overview of the DR, starting with the techniques, main function, and application on IoT IDSs, followed by visualizations of IoT IDS, and ending with a discussion on the impact of the use of DR techniques in IoT IDSs' performances. The types of anomalies detected by DL-1DS include denial of service (DoS), user-to-root (U2R) attack, probe attack, and remote-to-local (R2L) attack. Extensive analysis indicates that the proposed DL-IDS achieves better performance in terms of accuracy, precision, recall, and F-score.

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