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Invention Title	EFFECTIVE IOT MONITORING BY APPLYING ML TECHNOLOGIES TO REDUCE DIMENSIONS FOR TRAFFIC DATA AND THE DETECTION OF II
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Abstract:

Abstract The burgeoning realm of Internet of Things (IoT) devices has ushered in a new frontier for cyber-security challenges. As these devices become increasingly in the fabric of daily life, the imperative for robust Intrusion Detection Systems (IDS) has never been more pronounced. This study introduces a Logistic Regression-base tailored for the IoT ecosystem, aiming to balance accuracy and computational efficiency. The suggested model achieves a respectable 94.5% accuracy by careful exam network traffic data, with precision and recall metrics of 92.7% and 93.3%, respectively. The reliability in detecting intrusions that the model can demonstrate is show score of 93%. According to the findings of a comparative study, the Logistic Regression-based intrusion detection system (IDS) is more precise than the conventional I based systems and more efficient than the other machine learning competitors. The fact that the model can perform well in binary classification tasks is demonstrate Receiver Operating Characteristics (ROC) plot having an Area Under the Curve (AUC) value of 0.92. As a result of these findings, it is abundantly apparent that Logistic is a realistic and successful technique for IDS in IoT environments. It offers the perfect mix of precision and processing speed necessary for safe real-time operations.

Description:Effective IoT Monitoring by Applying ML Technologies to Reduce Dimensions for Traffic Data and the Detection of Intrusions

Field and Background of the Invention
The "Internet of Things" (IoT) is a paradigm shift in the digital revolution, defined as the interconnection of previously unconnected physical items over the Internet.
interconnected system of sensors, cell phones, and wearable's may share information, fostering more creative commercial, residential, and public ecosystems. The
relevance of IoT rests in its potential to provide real-time data gathering, automation, and analysis, which may improve efficiency, understand user preferences, and
maintenance issues before they arise, thereby revolutionising how industries and consumers interact with the physical world. The proliferation of IoT networks has
rise in security concerns. IoT ecosystems are especially susceptible to cyber threats due to the variety of devices involved and the pervasive nature of the Internet.
Combining IoT devices and their typically limited computational resources renders traditional security techniques ineffective, leaving them open to exploitation. To
Internet of Things (IoT) infrastructures, Intrusion Detection Systems (IDS) are essential. They serve as sentinels, constantly scanning network traffic for anomalies th
suggest an attack. When IDS detects suspicious network activity, it notifies the appropriate people so they can take immediate action to prevent harm. For an IDS to
protect an IoT network, it must perform with pinpoint precision and almost no lag to avoid impacting service quality. Despite its simplicity, logistic regression is a sta
procedure that is very effective for binary classification issues. The effectiveness with which it deals with massive datasets, including various variables, such as those
IoT traffic data, justifies its use in IDS. Logistic regression is a powerful analytical tool for IDS because it can model the probability of incidence of an occurrence by s
data to a logistic curve, which allows it to predict whether a given set of IoT network traffic data represents normal behaviour or a potential intrusion.

View Application Status