Patent Search

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Abstract:

The term "Internet of Things" refers to a broad category of technologies and actual items, including both the gadgets that communicate and interact online and the enormous data that these devices produce.Security concerns with internet infrastructure protocols, the use of risky network services like Telnet and SSH, and vulnerability in routers and unprotected ports are all significant challenges.Even specialised hacked IoT devices with low capacity can be leveraged to leverage important infrastructure systems, including database servers, with ability to monitor and collect data on IoT.The creation of numerous effective solutions to improve security and safety of IoT is possible thanks to the promising technique of machine learning. In this invention, ML based framework is developed to enhance the security of IoT devices from spoof and Sybil attacks. The inventors employed support vector machine (SVM) for identification of attacks and random forest (RF) classifier for classification of attacks and normal applications. The inventors also developed architecture for offloading to reduce the latency and energy consumption in a network with more than 100 mobile devices.

Complete Specification

Description:Support vector machine (SVM), random forest (RF),K-nearest neighbour (K-NN), naive Bayes, deep neural networks (DNNs) are supervised learning approaches that can be used to classify the network traffic or app traces of IoT devices in order to develop a classification or regression model.For instance, SVM, K-NN, and neural networks can be used by IoT devices to detect malware and network intrusion, network intrusion, and denial-of-service threats, respectively.Naive Bayes can be used in intrusion detection and RF algorithms in IoT devices.IoT devices with greater computational power and memory can use DNN to detect spoofing attacks.
The labelled training data help these supervised ML algorithms gain experience.They examine the training data and suggest a function that could be applied to map fresh samples of data.Regression and classification are two categories for supervised learning.The classification category's dataset is finite and binary, as in anomaly detection, or multi-dimensional, as in speech and face recognition, among other things.In order to forecast future results, it is frequently useful to determine relationship between one or more variables using the regression technique.
In this invention, SVM and RF classifiers are used. SVM technique creates a hyperplane using the attributes of many classes to classify datasets.The RF algorithm is employed in the identification of anomalies and intrusions.Compared to other classifier algorithms like SVM, the RF produced better classification results.if there are only a few feature datasets available, KNN and ANN.The RF accurately identifies IoT devices by utilising the features obtained from network data.In order to train the classifier using the RF method, the researcher retrieved network data from IoT nodes that were split into groups.RF is more useful for locating unauthorizedIoT devicescompared to other ML algorithms.
The data of the chosen features are collected during the offline phase. The database that is tracked and maintained.Our database includesboth the regular and unusual facts.In order to producereputable duties, correct classification procedures, and consider the data to be standard traffic.The procedure for themonitoring for anomalous

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