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| **ANOMALY BASED INTRUSION DETECTION SYSTEM FOR IOT NETWORKS USING RANDOM FOREST** | | | |
| **Abstract :**  IoT devices are becoming popular day-by-day. Several vulnerabilities in IoT present the need for IoT security. The number of attacks on these devices keep increasing and most of them are slight variations of the previously known attacks, which can bypass the conventional ﬁrewall systems.  The existing systems are not suitable for IOT devices as IOT devices have low computational power. Those that use signature-based intrusion detection work only on known patterns and attacks, hence they cannot recognize newer attacks with unknown pattern. Also, many systems use cloud computing, which has a downfall that it needs access to internet at all times, also the cloud services are most often paid.  In this system, we have used Random Forest ML model to achieve a real time anomaly-based detection system. The anomaly-based intrusion detection system comes into eﬀect when detecting newer attacks, that are not ﬁltered by the ﬁrewall. It is capable of handling newer/unknown attacks, which signature based cannot. Also we are setting up the IDS on a local higher powered device rather than on cloud. The model has been trained on the IoT network traﬃc dataset created from the IoT node in consideration. | | | |
| **Objectives:**  1. To develop a model for Intrusion Detection using Random Forest algorithm.  2. To establish connection between IoT devices in the network and send this data to the base station.  3. To preprocess the IoT network data and use ML model for classification of normal vs anomalous.  4. To notify user at the front end if intrusion has been detected in the IoT network in Real Time. | | | |
| **Dataset** –   1. Self created dataset 2. IoT network traffic monitored with TShark 3. Features :- frame number, frame time, frame length, source mac address, destination mac address, source IP address, destination IP address, IP protocol, IP length, TCP length, TCP source port, TCP destination port, packet info | | | |
| **Libraries and Framework/ Platform –**   * React.js * Django * Apache (Xampp) * TShark * Sqlite * Node * Npm * Python 3.6 * Pandas * Sci Kit Learn * WebSocket | | | |
| **Machine Learning Algorithm- Random Forest** | | | |
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