Feature Engineering & Machine Learning framework for DDoS attack Detection in the Standardized IoT

The project aims to create a strong security framework for combating Distributed Denial of Service (DDoS) attacks in standardised IoT environments.

Key Features :

Dashboard

- **Flow Agents:** A component responsible for monitoring and analysing network traffic
- **Flow Bytes:** Indicates the amount of data being transferred across the network in bytes per second.
- **Flow Packets:** Measures the number of packets being transmitted through the network per second.
- **Apps:** Indicates the number of applications currently running or being monitored.
- **Apps Failed:** Tracks the number of applications that have encountered failures or errors.
- **CPU Process:** Shows the percentage of CPU resources being used by individual processes.
- **Scripts:** Indicates the number of scripts currently running for various tasks.
- **Scripts Failed:** Tracks the number of scripts that have encountered failures or errors.
- **CPU System:** This shows the overall percentage of CPU resources being used by the entire system.
- **HTTP Connections:** Indicates the number of active HTTP connections.
- **HTTP Connections per Second (cps):** Measures the number of new HTTP connections established per second.
- **Memory:** Shows the percentage of the system's memory currently being used.

Apps

- **Browse-Metrics:** Analyzes and displays browsing performance metrics.
- **DDoS-protect:** Protects against Distributed Denial of Service attacks.
- **Flow-Trend:** Monitors and analyzes network traffic trends.
- **Mininet-Dashboard:** A dashboard interface for managing Mininet network simulations.
- **Sflow-Test:** Tests and monitors sFlow network traffic sampling and analysis.

Installation Guide :

1. **Download and Install VirtualBox:**
   - Visit the VirtualBox website and download the latest version for Windows.
   - Run the installer and follow the on-screen instructions to install VirtualBox.
2. **Download Ubuntu ISO:**
   - Go to the Ubuntu website and download the latest version of the Ubuntu Desktop ISO.
3. **Pre-requisites :**
   - Java : $ sudo apt install openjdk-11-jdk
4. **Floodlight (Follow Floodlight installation steps.txt)**
5. **Mininet :**
   - $ sudo apt install git build-essential
   - $ git clone https://github.com/mininet/mininet
   - $ cd mininet
   - $ sudo ./util/install.sh -a
   - $ mn --test pingall
6. Follow Steps in Commands.txt