Subject : **Mini Project - COM-612**

Intrusion Detection in Home Automation Using Computer Vision and Honeypots

Project Name : Chakravyuh

Project Description : A state of the art Intrusion Detection Framework that secures network as well as parameter by using honeypot technology and computer vision integrated into a centralized smart notification IOT system.

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Contents

- Problem
- Global Landscape
- Proposed Solution
- Tech Stack
- Framework
- Workflow
- Product / Modules
- Demonstration

Problem

Cyber crime now a days is booming at an alarming rate. The Nieveness and the lack of awareness among the users has increased the rate of cyber crime by a large number. The Most common attacks to which the users are most succeptible are the phishing and the MITM(Man In The Middle Attacks) that are usually carried out on the free public wifi's and home gateways.

Problem 1

People dont really care about their online activities and the cyber crimes untill they encounter one.

Problem 2

Users dont have access to the heavy hardware and software to protect themselves in the online jungle.

Problem 3

There are different kinds of cyber attack techniques and no one stop solution.

Global Cyber Landscape

Global Cost

An estimate of about **10.5 Trillion Dollars** is the round figure that cyber frauds are going to cost the world in the coming years.

Accessibility

Only the Big Data companies and large scale industries use advance methods and protocols to detect and deal with a cyber crime.

Emerging Trends

With the advancements in technology and security measures , the hackers are also evolving and developing better and stealthier malwares.

Solution

One stop Intrusion Detection System

Solution 1

Development of an advanced intrusion detection networking system, automation, and notification system using the latest Computer Vision and Honeypot technology.

Solution 2

Creating a hardware and software solution that accurately classifies the level of intrusion in a premises or Local Area Network/Wide Area Network.

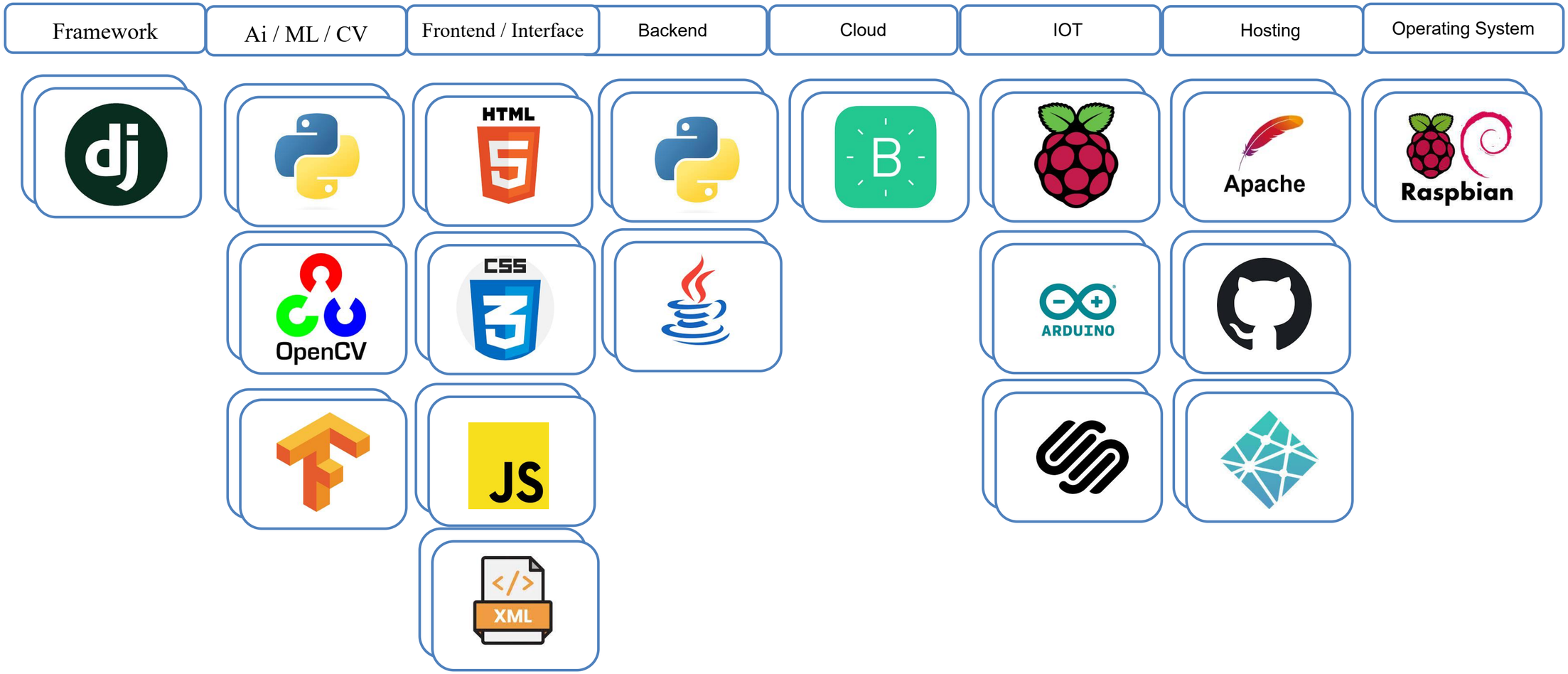
Solution 3

Design and implementing an IoT-based locking system that prevents unauthorized access to the property using Computer Vision and Neural Networks framework.

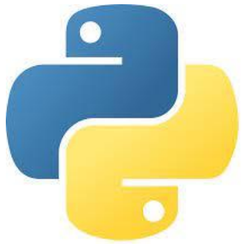
Solution 4

Making the solution availbale to a common man by using low cost , efficient hardware that provides the same set of functionalities that of a large scale IDS.

TECH STACK


Framework
Ai / ML / CV
Frontend / Interface
Backend
Cloud
IOT
Hosting
Operating System
dj
OpenCV
HTML
CSS
JS
XML
B
ARDUINO
Apache
Raspbian

LANGUAGES

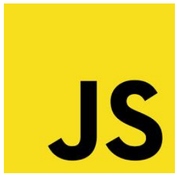


For Django App Deployment and database

For Django app deployment and , dashboard development

For IOT and centralized smart notification system

For Android App Development and integrations

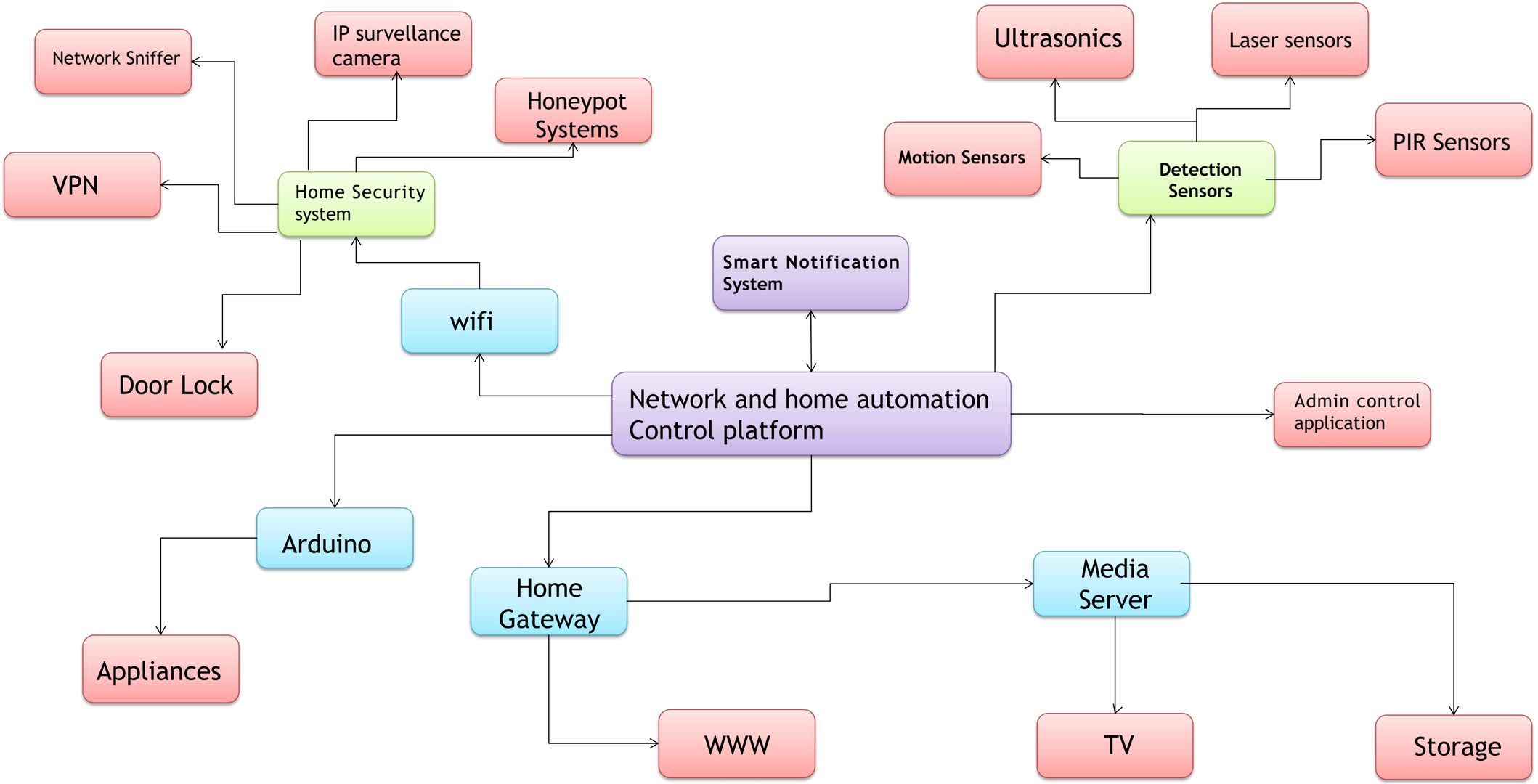


For Django deployment and , dashboard development

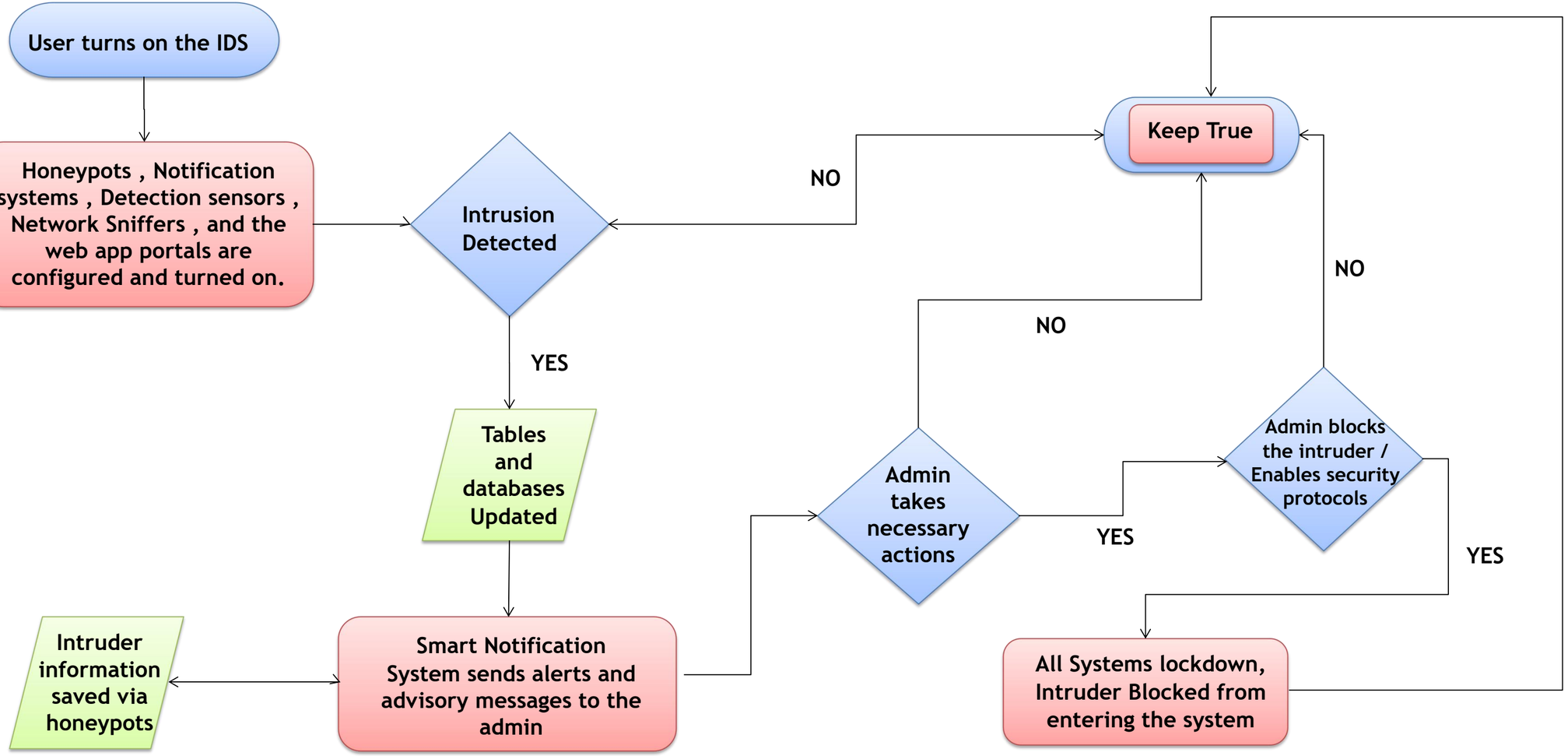
For Android App Interfaces

For web portal interfaces

FRAMEWORK


Network Sniffer
IP survellance camera
Honeypot Systems
VPN
Home Security system
Ultrasonics
Laser sensors
Motion Sensors
Detection Sensors
PIR Sensors
Smart Notification System
wifi
Door Lock
Network and home automation Control platform
Admin control application
Arduino
Home Gateway
Media Server
Appliances
WWW
TV
Storage

WORKFLOW


User turns on the IDS
Honeypots , Notification systems , Detection sensors , Network Sniffers , and the web app portals are configured and turned on.
Intrusion Detected
NO
Keep True
YES
Tables and databases Updated
Smart Notification System sends alerts and advisory messages to the admin
Intruder information saved via honeypots
Admin takes necessary actions
NO
YES
Admin blocks the intruder / Enables security protocols
NO
YES
All Systems lockdown, Intruder Blocked from entering the system

HARDWARE COMPOENTS

Micro Computers
Raspberry Pi 4 Model B

Micro Controllers
Arduino UNO

Sensors

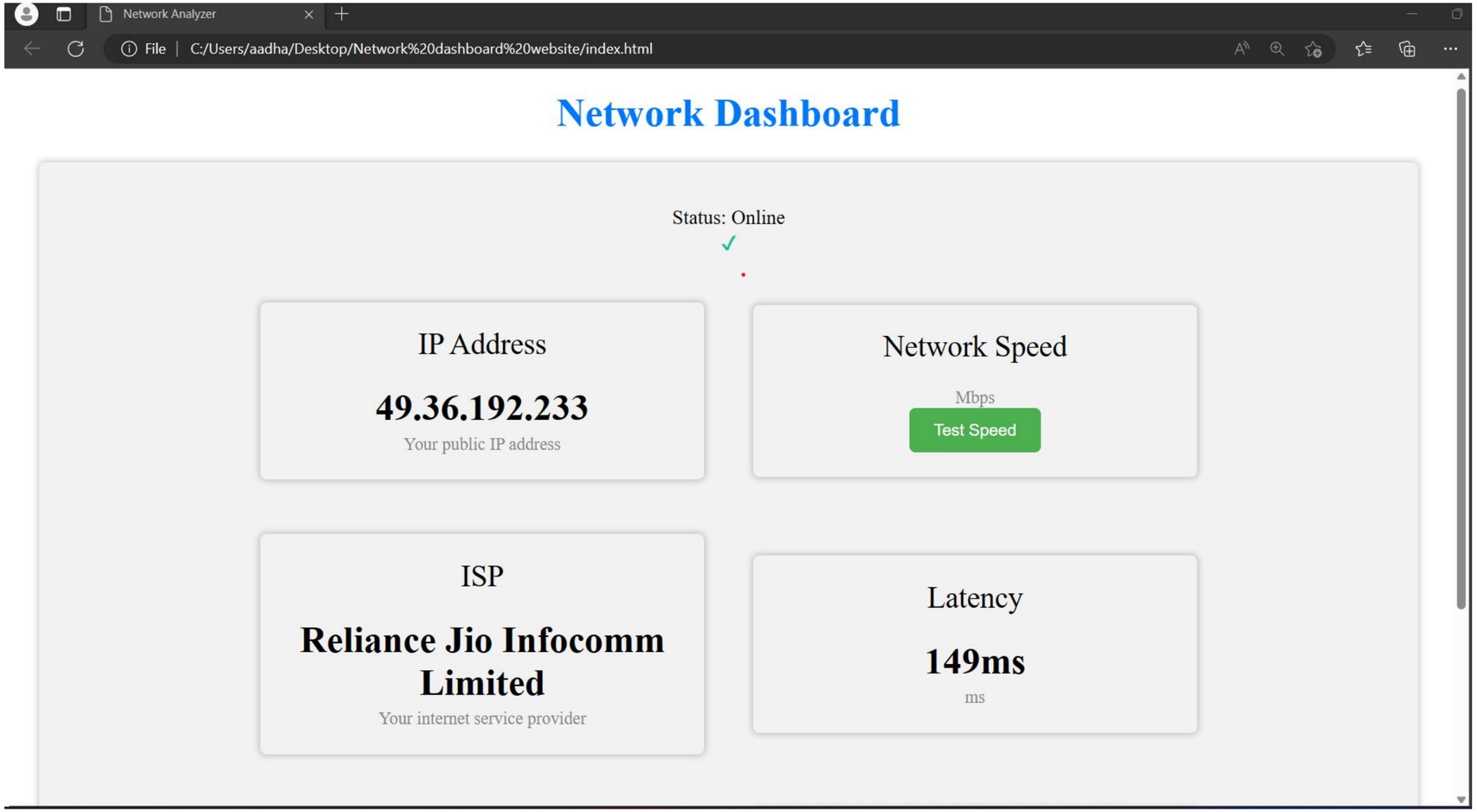
Wifi Module
ESP 8266

Camera Module
ESP 32 CAM

PRODUCT MODULES

- **Network Gateway Module**
- **Honeypot Module**
- **IOT Modules**
- **Blynk Cloud Module**
- **Computer Vision Module**
- **Survelliance Module**
- **Android App Module**

NETWORK GATEWAY DASHBOARD

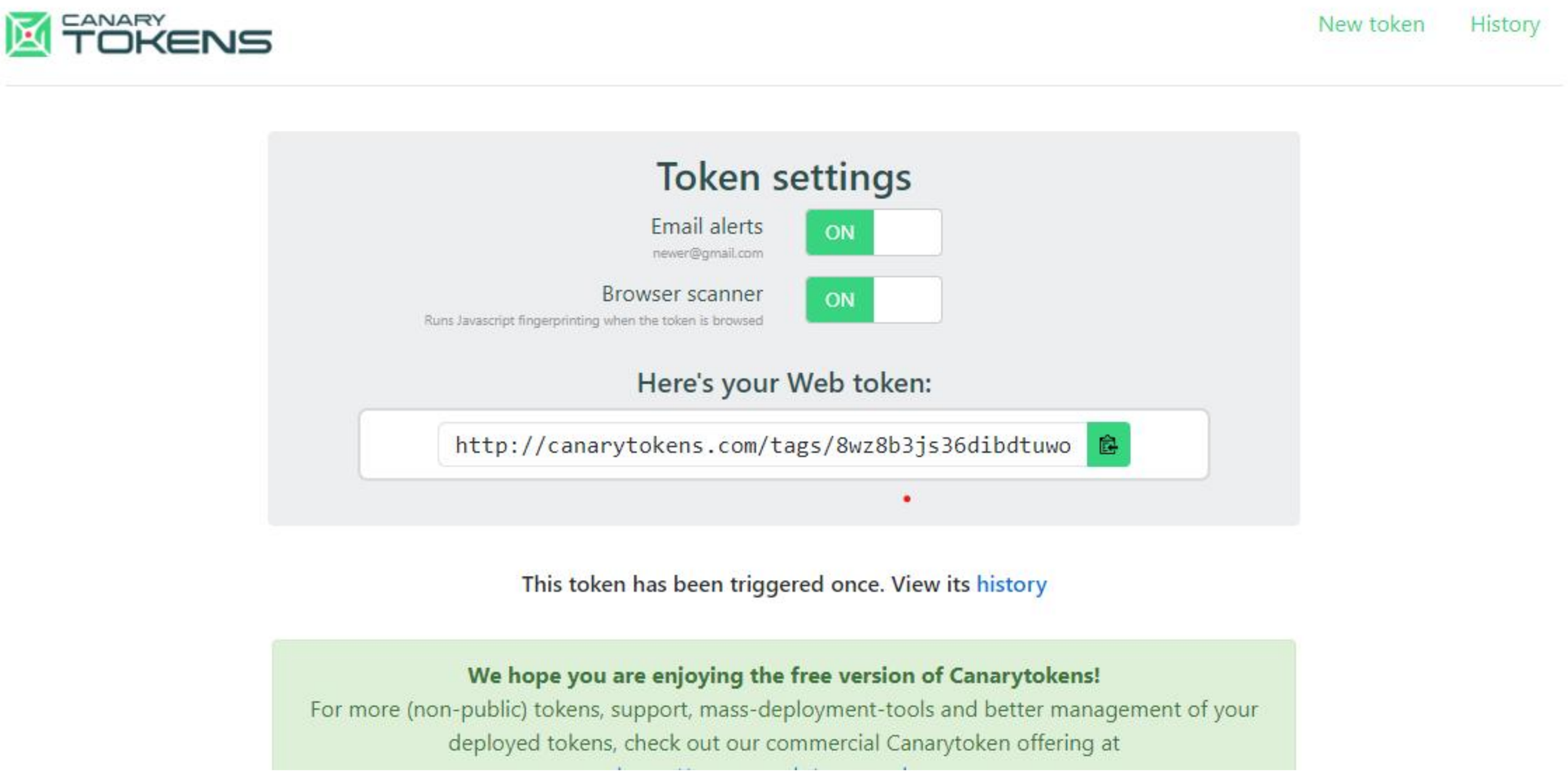


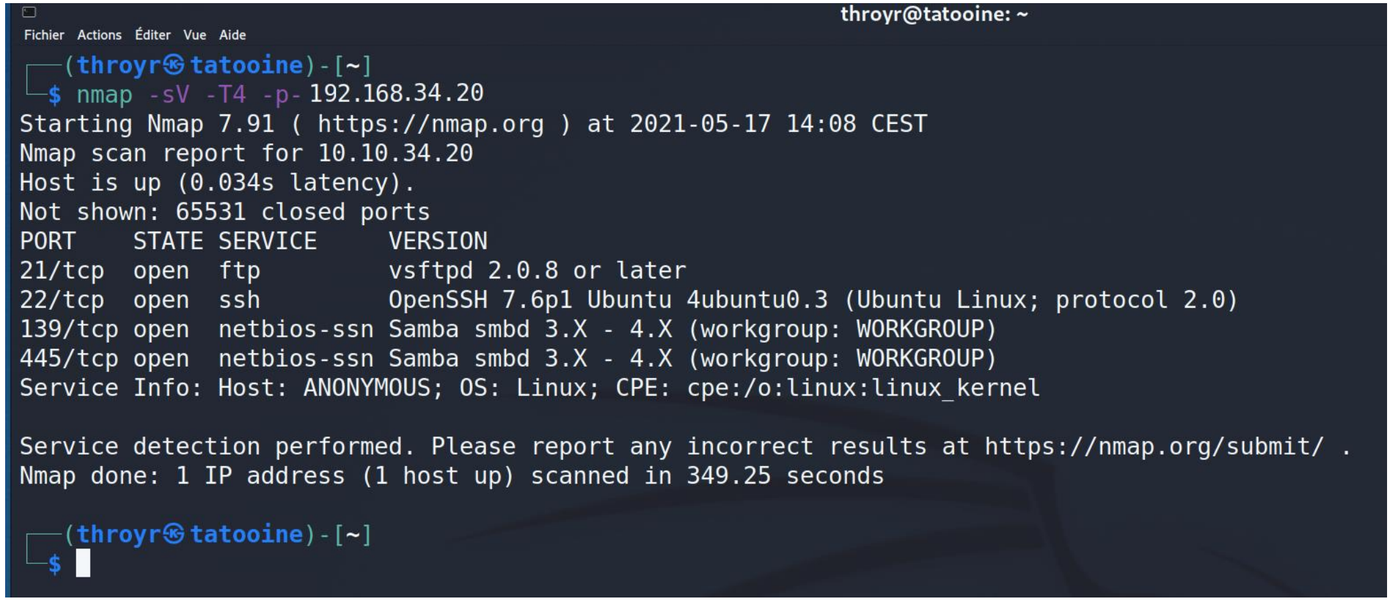
Features

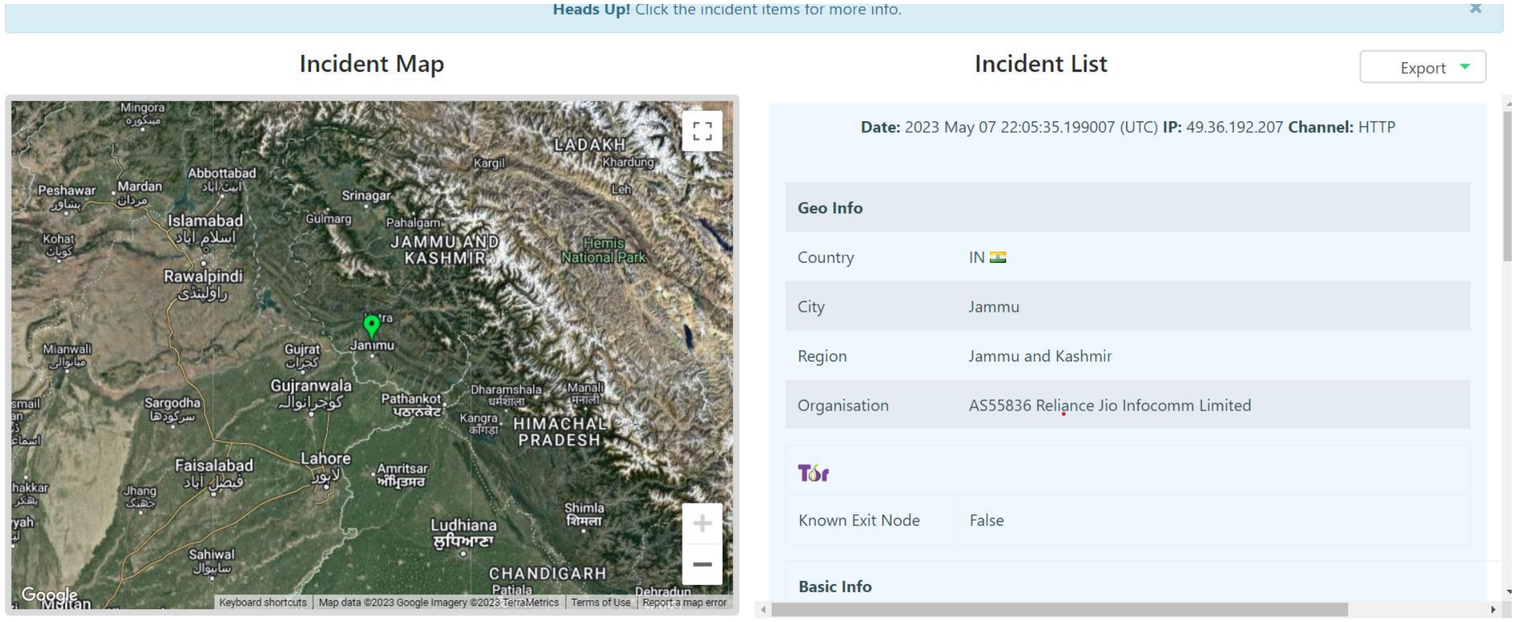
* Login functionality
* Network IP
* Network Speed
* ISP
* Network Latency
* Router’s IP
* DNS IP
* Apache2 Network Load Balancing

Test it Out on your device:

HONEYPOT SYSTEM





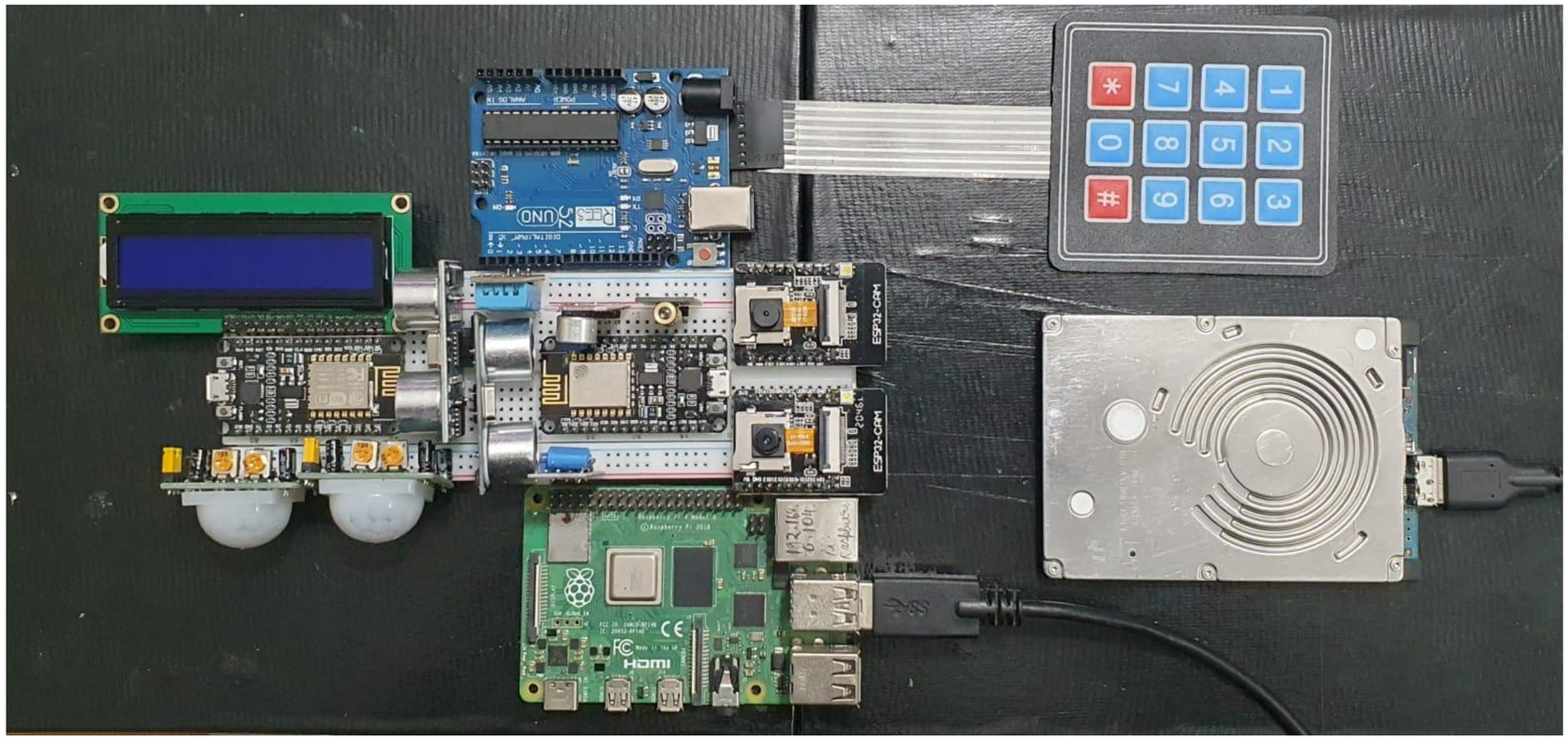


Features

* Decoy Vulnerable FTP server
* Flag based Tracking
* Type of attack vector identification
* Attack vector Location
* Attacker IP address
* Realtime network monitoring

Test it Out on your device:

IOT MODULES



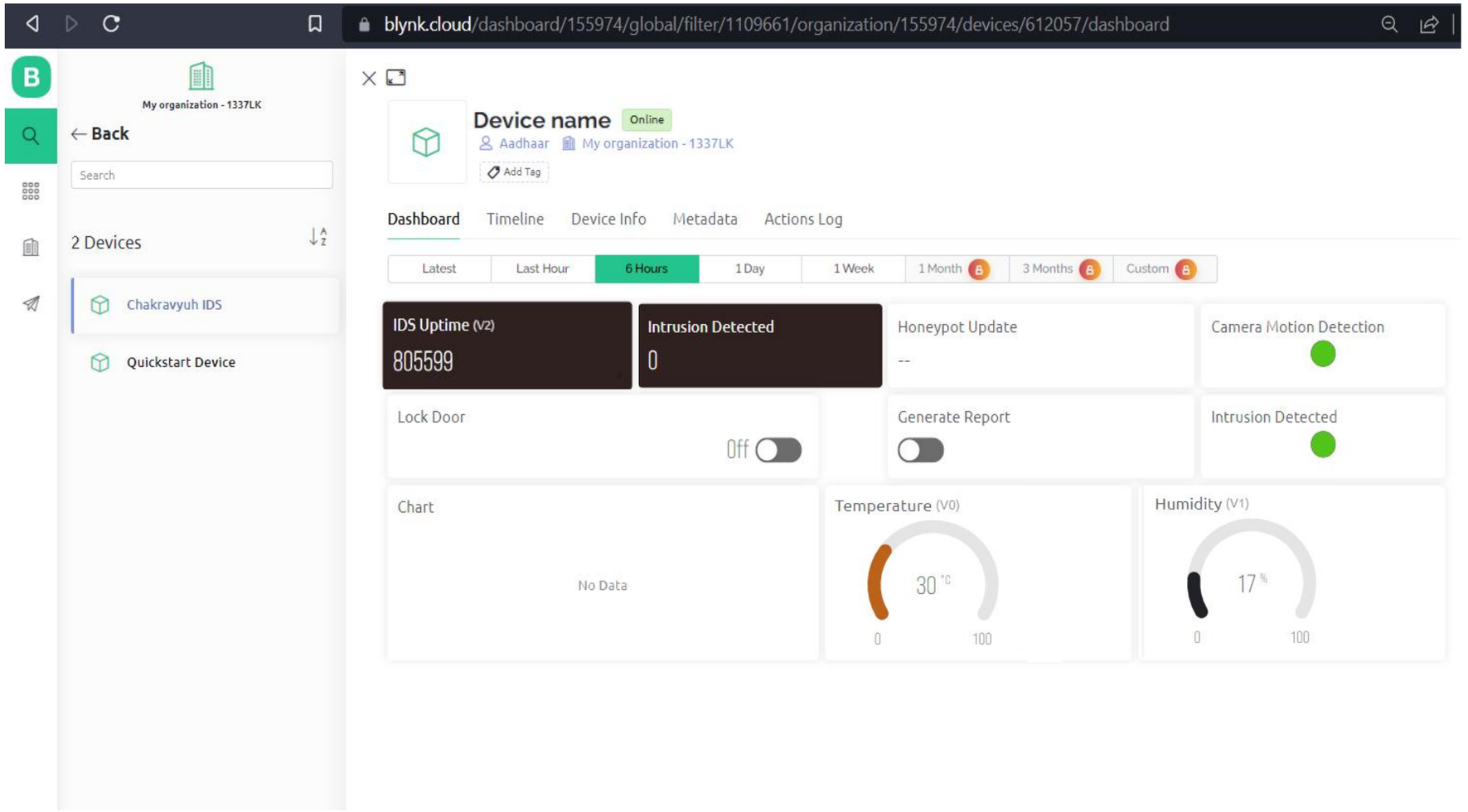
Features

* Cheap , Sustinable hardware

*

Test it Out on your device:

BLYNK CLOUD DASHBOARD

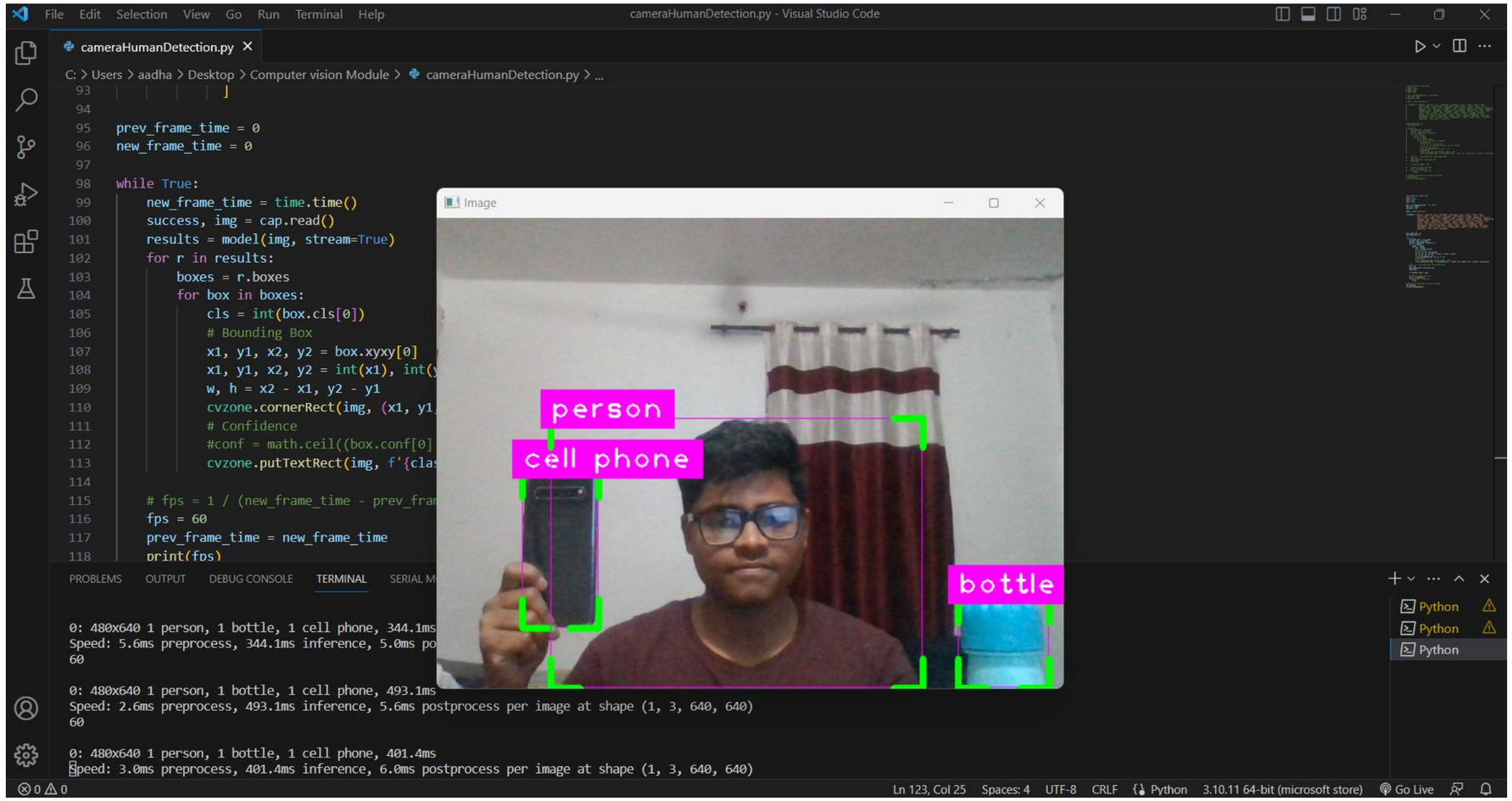


Features

* Real time sensor readings
* Seamless UI
* Integratable API Key
* Mobile and Web based platforms availble
* Drag and Drop Modular / admin dashboard
* Receive real time push and email notifications.
* Add and control multiple devices in a single go.

Test it Out on your device:

COMPUTER VISION MODULE



Features

* Login functionality
* Network IP
* Network Speed
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* Network Latency
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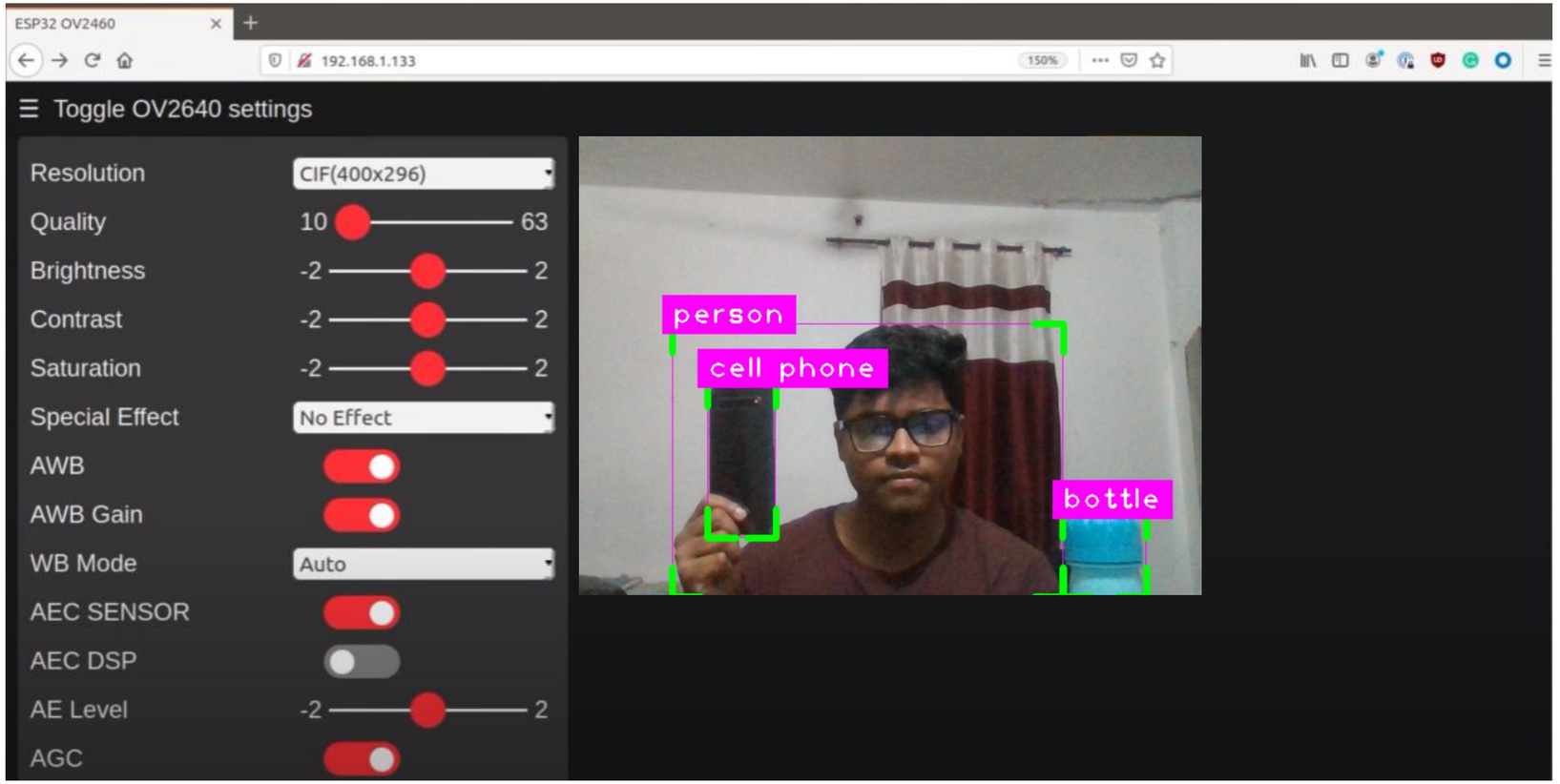
* DNS IP
* Apache2 Network Load Balancing

Test it Out on your device:

SURVEILLANCE DASHBOARD



Features

* Login functionality
* Network IP
* Network Speed
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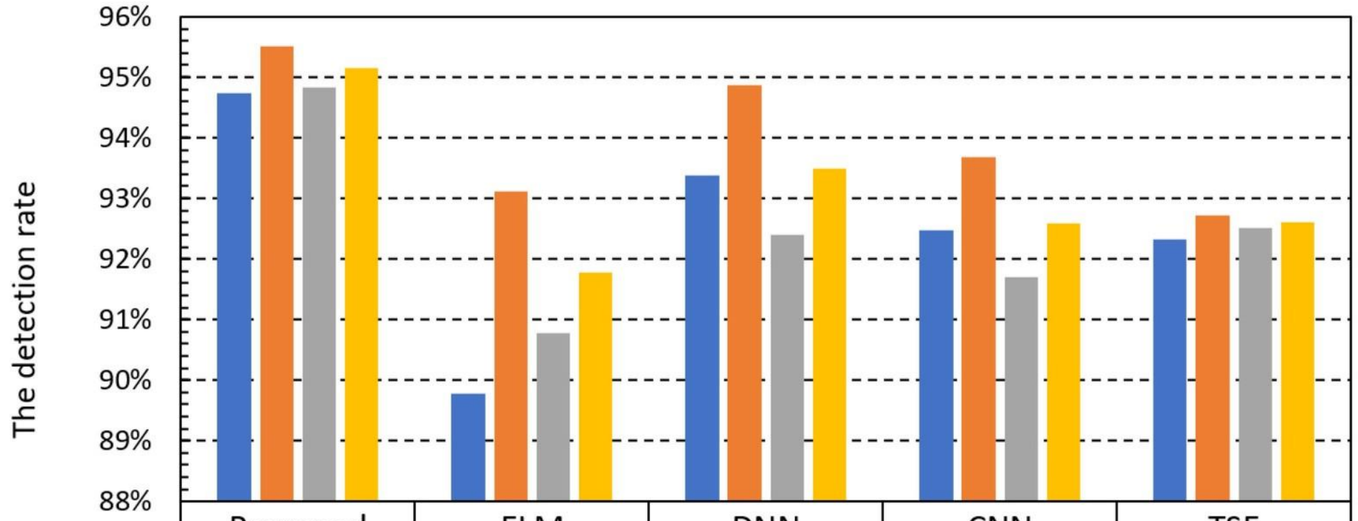
Test it Out on your device:

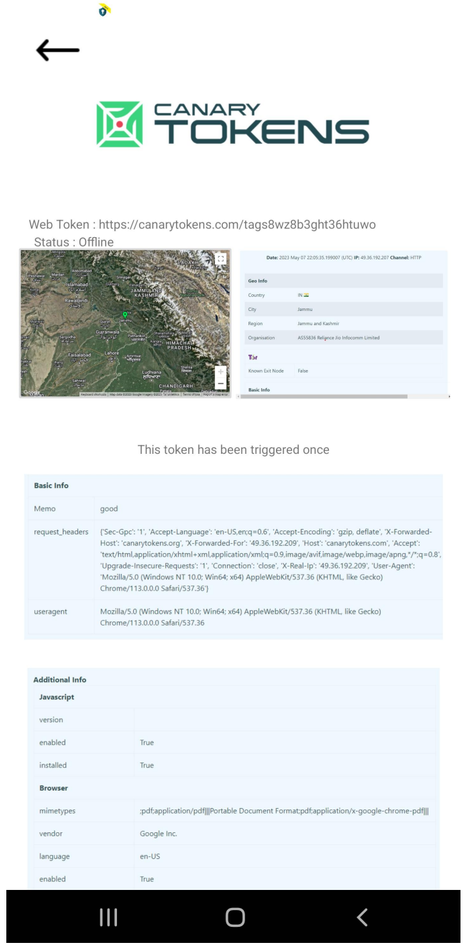
Traction

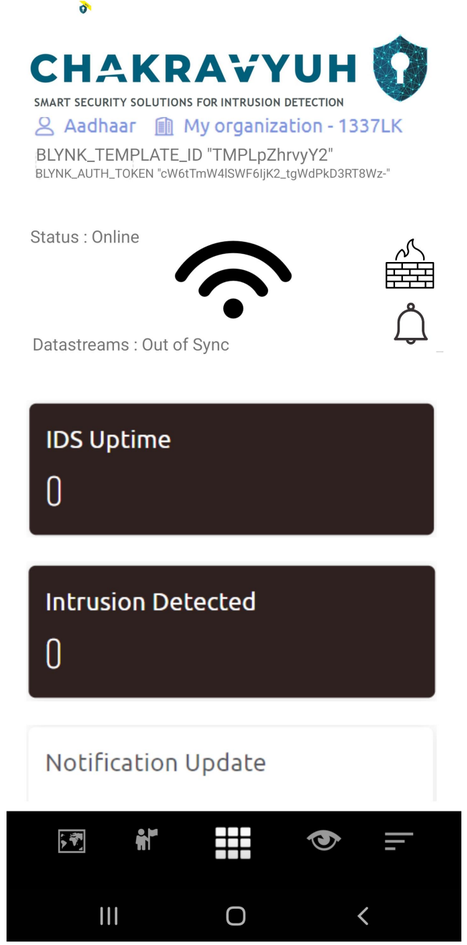
Where is your company currently at? Visualize with a graph to highlight significant developments.

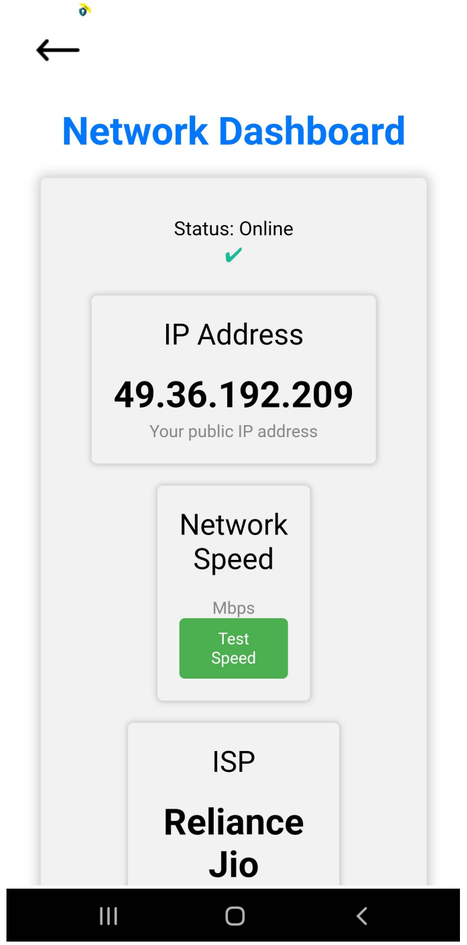


	Proposed	ELM	DNN	CNN	TSE
Accuracy	94.73%	89.77%	93.39%	92.48%	92.32%
Precision	95.52%	93.12%	94.88%	93.68%	92.73%
Recall	94.83%	90.78%	92.40%	91.70%	92.51%
F1-score	95.16%	91.77%	93.49%	92.59%	92.61%

ADMIN CONTROL APPLICATION







Features

* Real time Sensor Readings
* Push Notificatrions
* Seamless Interface
* Admin Login Functioality
* Supported version of Android6.0 and Above
* Analytical report Dashboard
* Remote access functionality
* AR control Functionality

Test it Out on your device:

Target Market

- General Public
- Government Agencies
- Companies / Enterprises
- Large Scale Industries
- Small scale Industries

Direct Competitors

- McAfee Host IPS
- Cisco IDS /IPS
- McAfee Host IPS

Indirect Competitors

- CylancePROTECT
- CrowdStrike Falcon
- Check Point Firewall

DEMONSTRATION

DEPLOYMENTS

Future Roadmap

What are your next steps and goals? How much support do you need from investors, and what will it get you?

Step 1

Increased Use of AI and Machine Learning

Step 2

Integration with Cloud-Based Security

Step 3

Expansion of IoT Security

Step 4

Embeded AR functionality

Meet our Team

Aadhaar Koul

Networking & IoT Engineer

Baseer Fatima

IoT , Cloud & Integrations Engineer

Navneet Kaur

IoT , Cloud & Integrations Engineer

Arjun Charak

AI/ML & AR Engineer

QUESTIONS ?

THANK YOU