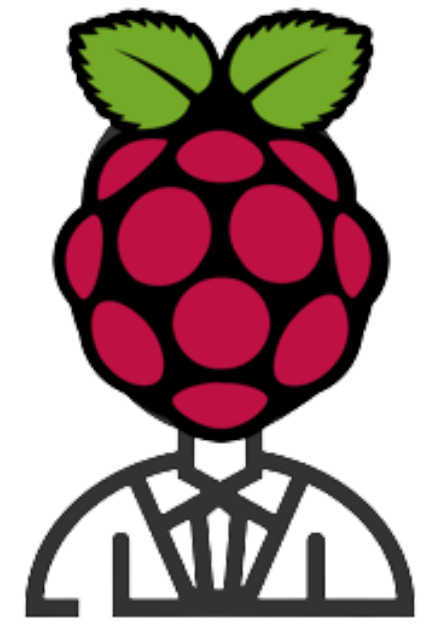# Network resilience improvement system

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Motivation

In the current campus setting, the internet functions as a complex system comprising people, networks, and devices. While monitoring systems for networks and devices are relatively advanced, there's a lack of user-centric monitoring. This project aims to enhance campus network resilience by integrating hardware and software systems for real-time detection and notification, improving the overall user experience.

## Network Anomaly Detection Subsystem

Social media detection

Integration of Three Network-Related Information Sources:
- Dcard
- Taoyuan District Network Center
- Line group messages

Analyzed by a network anomaly detection program, if any irregularities in the network are identified, it promptly notifies the designated maintenance personnel or technician groups for immediate attention and resolution.

Distributive detection
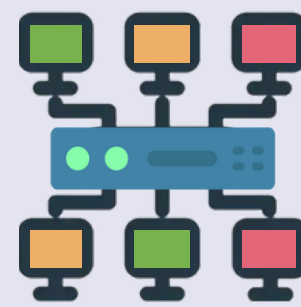
Using Raspberry Pi deployed in the equipment rooms of various buildings to simulate user behavior, three monitoring tasks are conducted:
- Website Loading Time
- Speedtest
- Traceroute

These tasks comprehensively monitor the network conditions at various monitoring points. The information is then displayed on a dashboard.

Data Center Personnel Detection Subsystem

Prohibited Items Detection

Use YOLOv5 to detect individuals carrying prohibited items entering the equipment room, an immediate activation of the voice warning mechanism will take place. Simultaneously, the system will utilize Line Notify to alert the technician group, automatically notifying the technical personnel team of the situation.

Overstep Detection

Using Mediapipe for detection, when individuals get too close to the equipment cabinet, a voice warning will be triggered. Simultaneously, Line Notify will be employed to notify the technician group, preventing potential damage to the equipment due to human factors.

LINE Notify

webloading   speedtest   traceroute