

Project Report: CBR3A – UB Site

Activity 1

Daily Restart and Monitoring of IoT Gateway Performance

Design

This test aimed to evaluate the impact of daily restarts on the performance of the IoT gateway, specifically the Android smartphone used as the gateway device. The phone maintained an internet connection for the Raspberry Pi via a mobile hotspot while also performing BLE scanning tasks. Additionally, the GPS data from the driver's mobile phone was collected to monitor their routes.

Method

The IoT gateway was restarted daily to improve its performance and maintain stable internet connectivity for the Raspberry Pi. BLE scanning results were compared with previous data to assess improvements in detection reliability. GPS data from the driver's mobile phone was also analyzed to evaluate its accuracy in tracking the driver's route.

Implementation

The Android smartphone acting as the IoT gateway was configured to restart once daily at a scheduled time. After restarting, it reconnected to the internet and resumed its BLE scanning and hotspot functions. GPS tracking of the driver's mobile phone was also activated, collecting location data throughout the day to map the driver's routes.

Experiment

currStop	date	time	amPm
UB00000002	6/13/24	3:49:26	PM
UB00000003	6/13/24	3:45:23	PM
UB00000007	6/13/24	3:32:38	PM
UB00000008	6/13/24	3:21:53	PM
UB00000005	6/13/24	2:59:35	PM
UB00000002	6/13/24	2:54:38	PM



Results showed that daily restarts slightly improved the BLE scanning performance of the Android smartphone, with better detection rates compared to previous tests. However, challenges remained, particularly in the afternoon, where drivers frequently deviated from their specified routes. GPS tracking provided valuable data on driver movement, but the system encountered occasional issues when the driver left the phone behind, leading to gaps in the data. These findings highlight the need for better adherence to route protocols and more reliable GPS tracking solutions.