BikeWatch

by Sebastian Sovailescu and Hamza Merdan

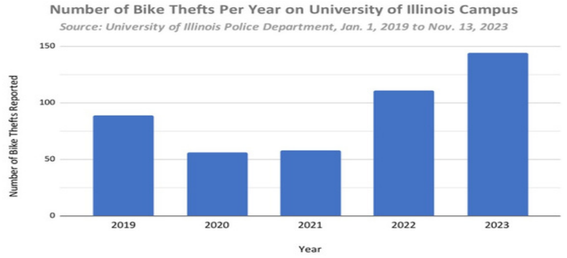
BikeWatch – Enhancing Bike Security with Affordable IoT

Presenters – Hamza Merdan, Sebastian Sovaliescu

Internet of Things, Department of Computer Science, University of Illinois Urbana-Champaign

Motivation: Prevent Bike Thefts

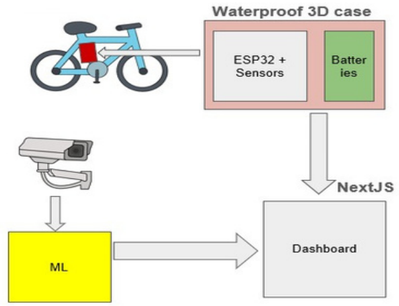
In 2 years, over **850+ bike theft cases**were reported in the CU community.*



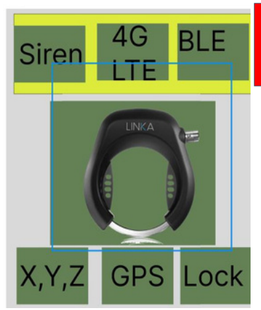
Proposed Solution

An affordable smart bike security system with AI-powered monitoring, real-time alerts, and remote tracking via a web dashboard.

- 3.7V LiPo battery powered ESP32 with Wi-Fi and Bluetooth displays its status on a web app through the cloud.
- A Raspberry Pi acts as a server, security camera, and microphone to capture detected faces, makes alarm sounds, and live-stream on a dashboard.



Related Work



Our Solution

$250

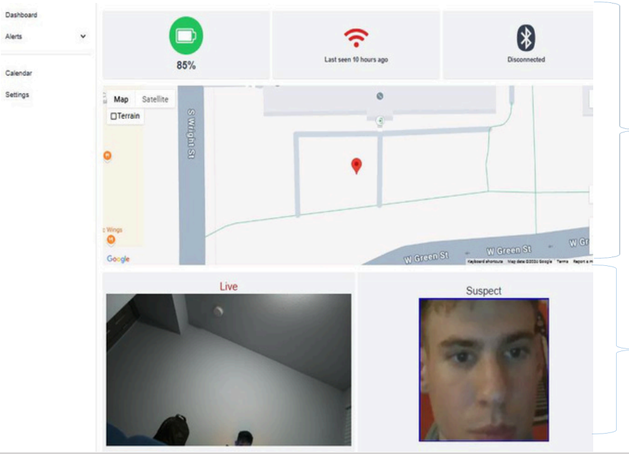
$100

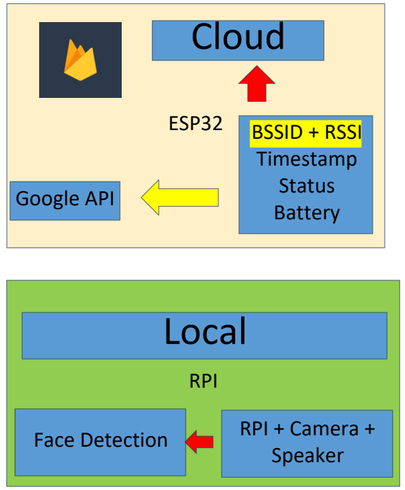
AI

Challenges

- Wi-Fi Geofencing
- Face Detection
- Memory Space
- Battery Efficiency

Approach





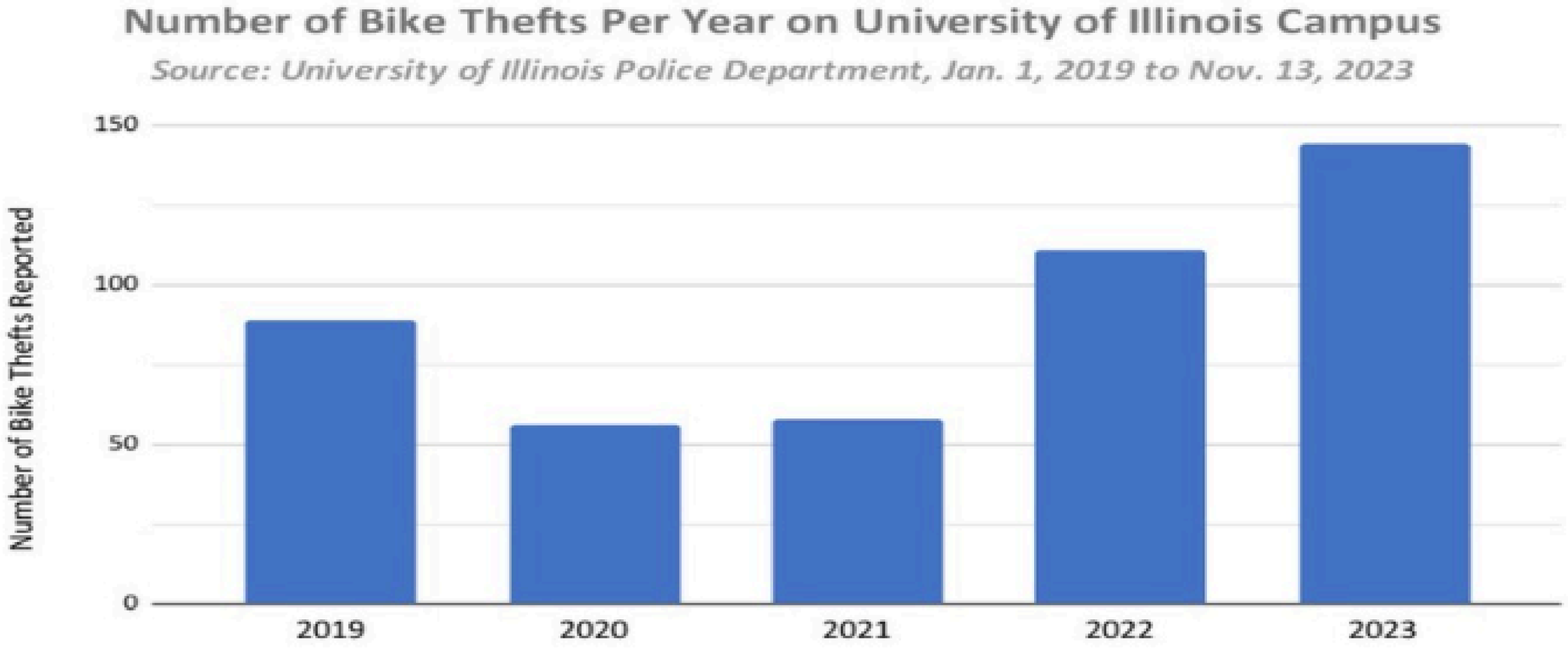
Main Results

Combiningsystems creatively can improve accuracy, decrease cost, and extend battery life.

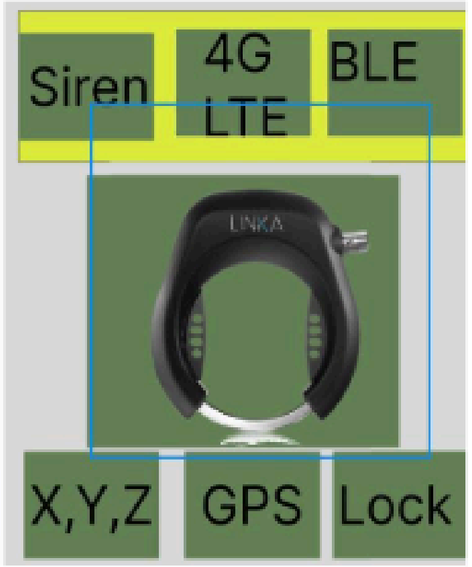
*: https://bikelab.shop/blog/bike-theft-champaign-urbana

Motivation: Prevent Bike Thefts

In 2 years, over **850+ bike theft cases**were reported in the CU community.*



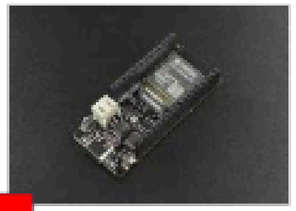
Related Work



$250

Our Solution

$100



AI

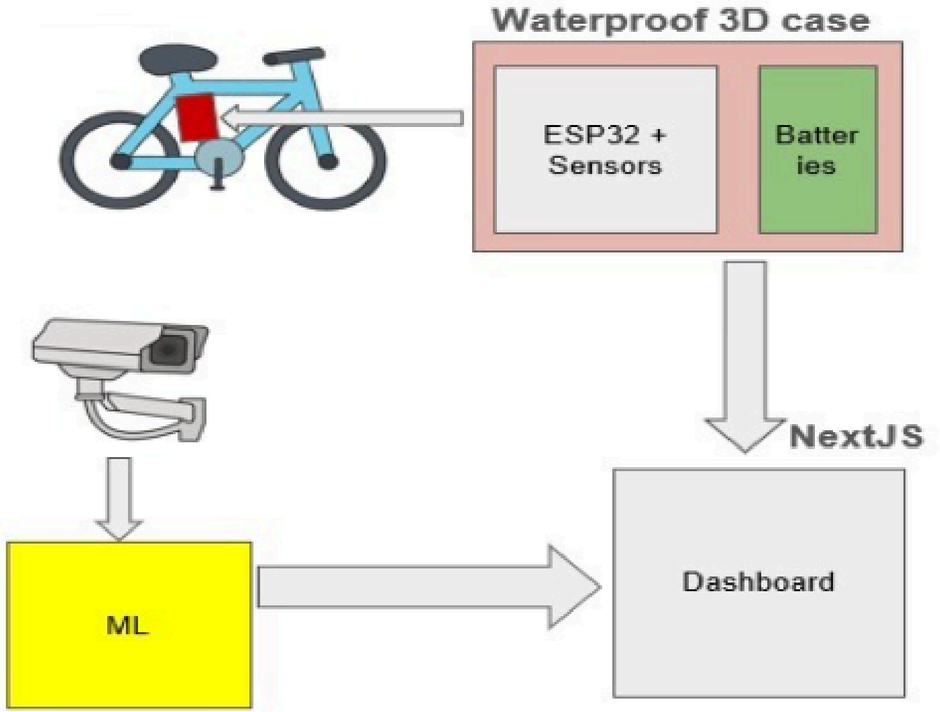
Challenges

- Wi-Fi Geofencing
- Face Detection
- Memory Space
- Battery Efficiency

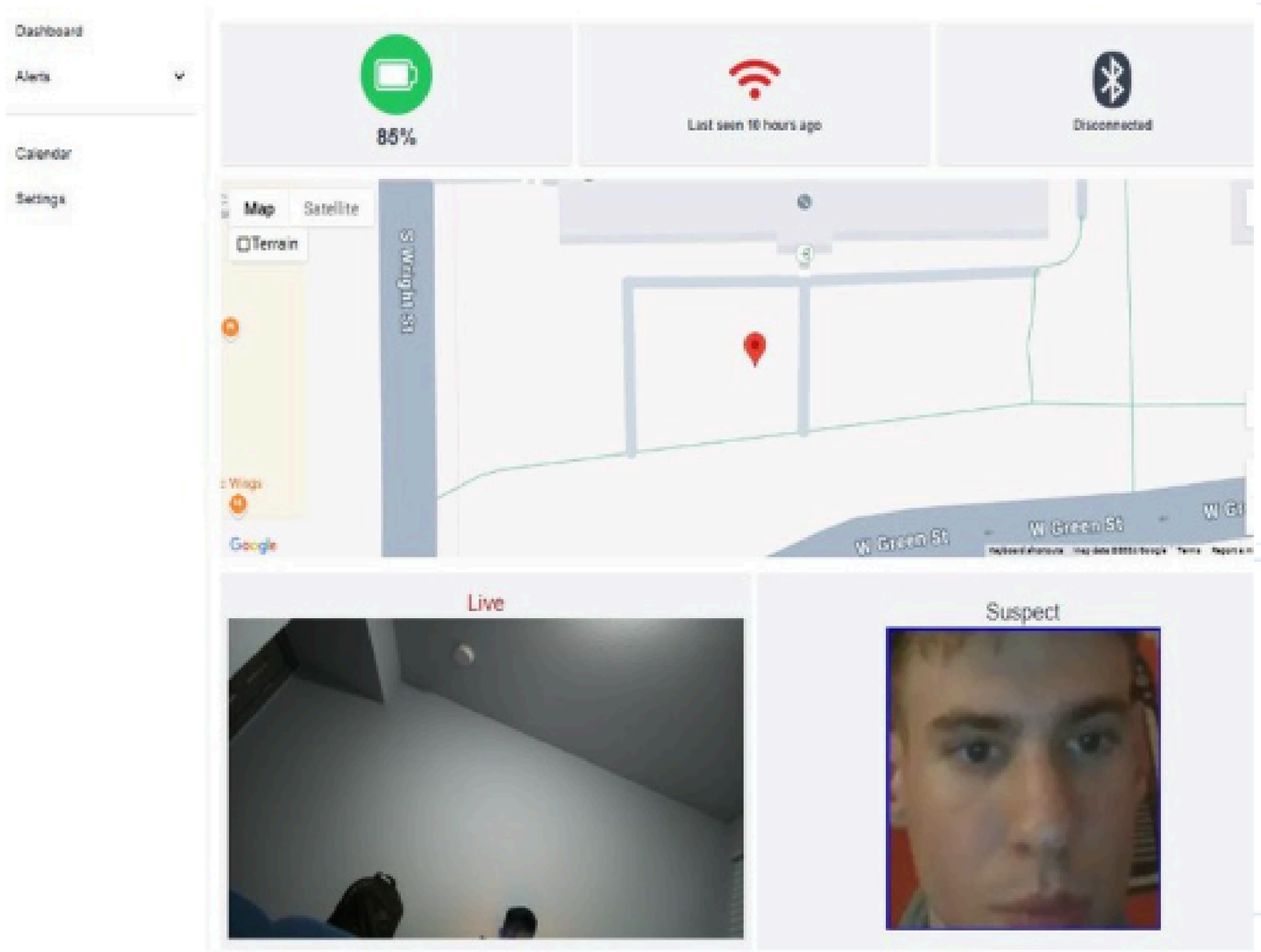
Proposed Solution

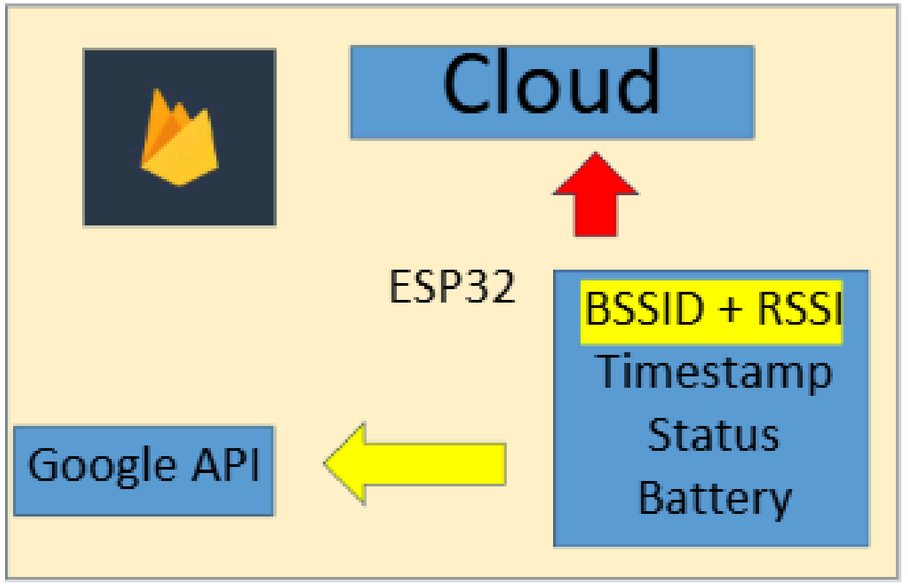
An affordable smart bike security system with AI-powered monitoring, real-time alerts, and remote tracking via a web dashboard.

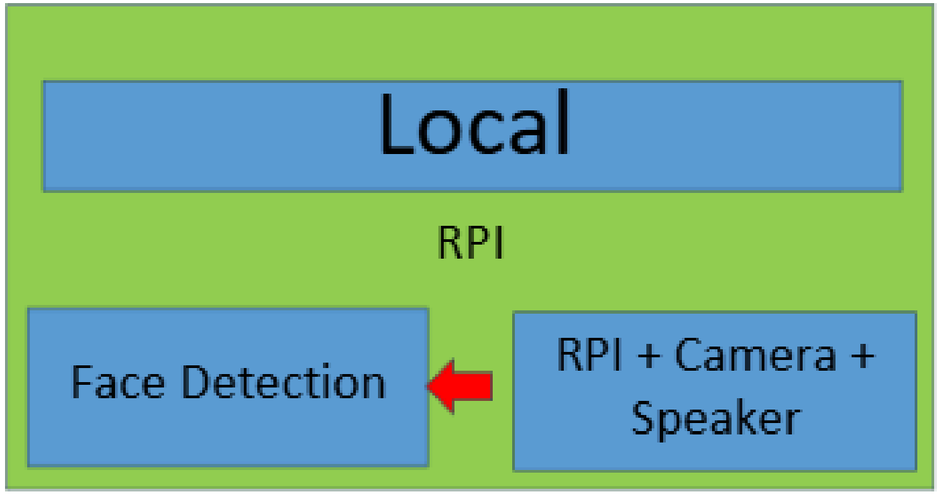
- 3.7V LiPo battery powered ESP32 with Wi-Fi and Bluetooth displays its status on a web app through the cloud.
- A Raspberry Pi acts as a server, security camera, and microphone to capture detected faces, makes alarm sounds, and live-stream on a dashboard.



Approach


Dashboard
Alerts
Calendar
Settings
85%
Last seen 10 hours ago
Disconnected
Map
Satellite
Terrain
S Mcgill St
W Green St
Google
Live
Suspect


Cloud
ESP32
BSSID + RSSI
Timestamp
Status
Battery
Google API


Local
RPI
Face Detection
RPI + Camera + Speaker

THANKS