Home Security Detection System

Group 2 Final Project

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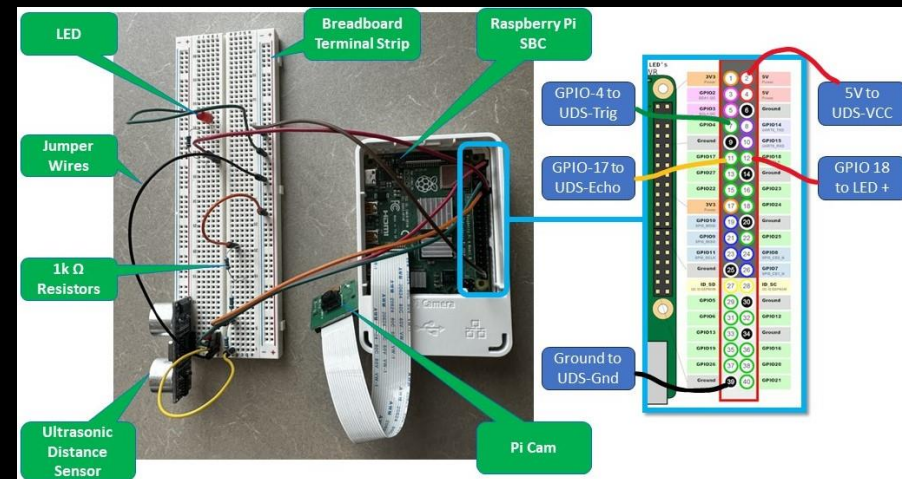**Ping Li   400551395**

Shu Li   400194787

Zitong Wang 400485710

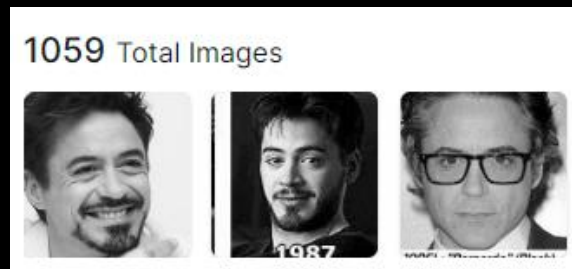**Purva Singh   400545113**

Raspberry Pi Hardware

- Raspberry Pi

- Pi cam

- Ultrasonic Distance Sensor

- LED

YOLO-v8

- Customized 1000+ images dataset originate from Kaggle
  - RDJ (Host) vs. Unknown Guest
- Training and Model Deployment
- OpenCV
- Threshold Algorithm
  - 0.9 confidence score
  - 15 occurrence out of the last 20 frame confidence score annotation

1059 Total Images

```
0: 224x224 Robert_Downey_Jr 0.97, Other_People 0.03, 24.8ms
Speed: 1.7ms preprocess, 24.8ms inference, 0.1ms postprocess

0: 224x224 Robert_Downey_Jr 0.98, Other_People 0.02, 25.6ms
Speed: 1.6ms preprocess, 25.6ms inference, 0.1ms postprocess

0: 224x224 Robert_Downey_Jr 0.98, Other_People 0.02, 17.0ms
Speed: 2.0ms preprocess, 17.0ms inference, 0.1ms postprocess

0: 224x224 Robert_Downey_Jr 0.98, Other_People 0.02, 17.3ms
Speed: 1.2ms preprocess, 17.3ms inference, 0.1ms postprocess
```
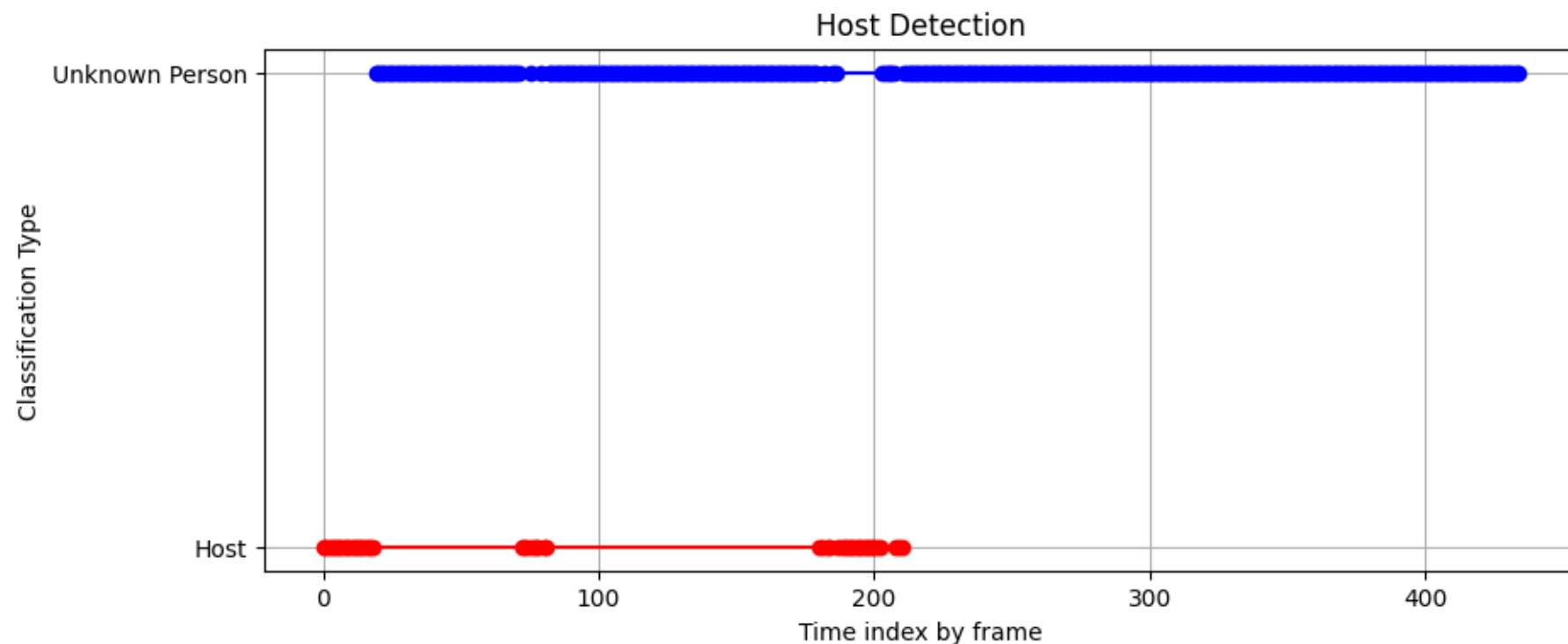
Robert_Downey_Jr 0.96,
Other_People 0.04

YOLO-v8 Result Integration

Analyze Complete

Host is detected

Host Detection

Inference analysis is the determination by frame, this does not really represent the determination of Host vs. Unknown Person

50 times for host detected through inference analysis

385 for unknown person detected through inference analysis

JavaScript Server

Module Imports

- Express server model
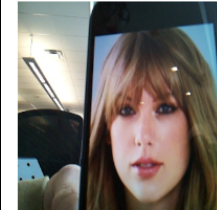
- Pug template engine

- SQLite3 database

How user check the Unknown

Register & Login

Register for Our Website

Username:

Password:

Register

Already have an account? Login here
Back to Home

Home | Register

Username:

Password:

Login

System Operation

Welcome to watch our demo