Prevention and detection of violence with CCTV

AI Realtime Violence Detection with Raspberry-pi

outline

Team : ProjectRVD
(itwill bigdata 21)

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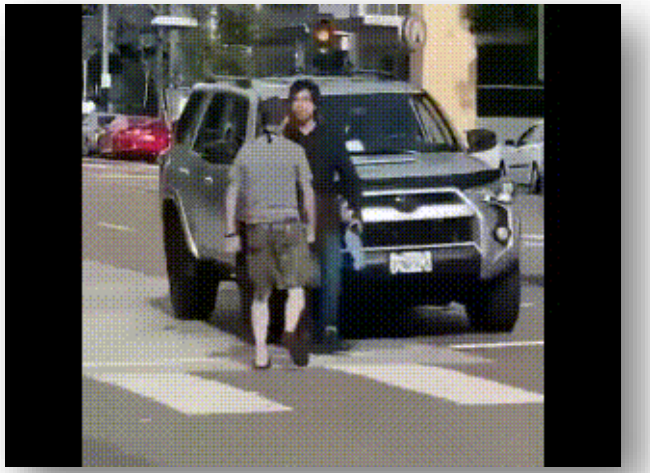
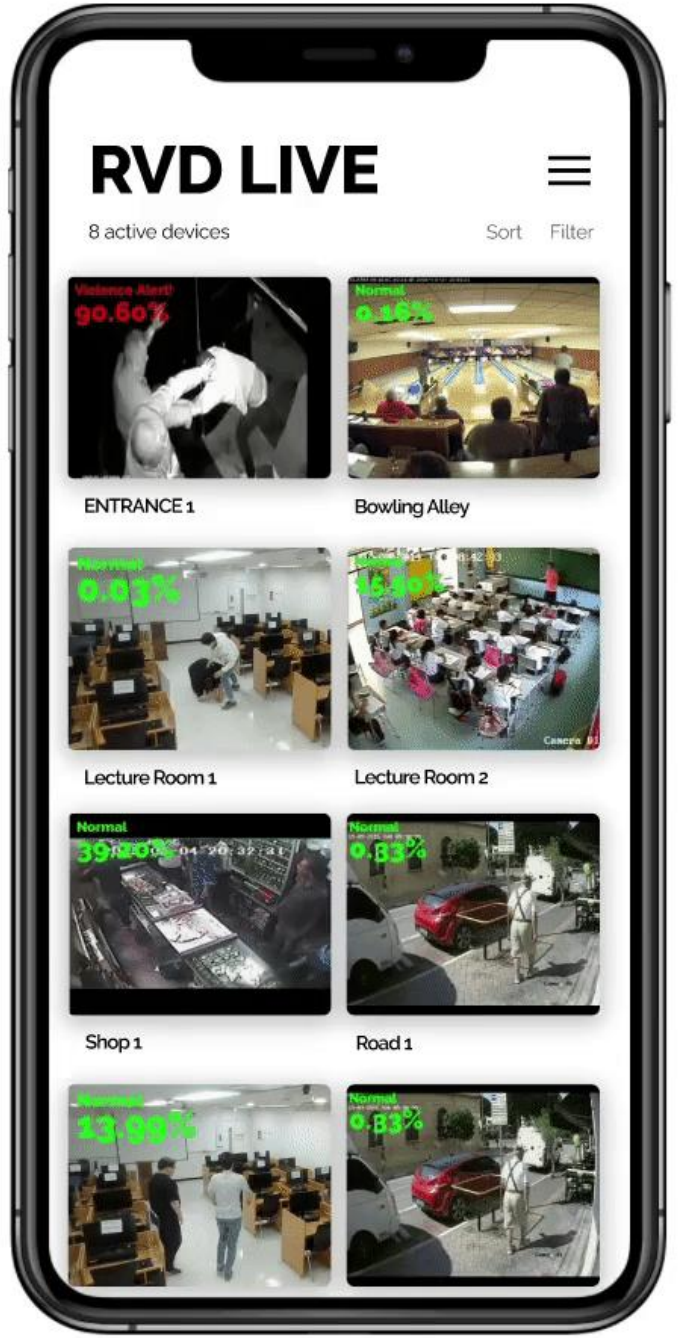
Project Objectives

Real-time monitoring to detect violence



Violence Detection Model

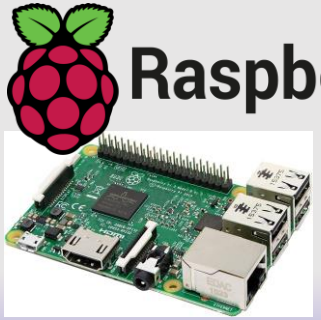


Development Environment

Windows 10

Linux

Operating System



Raspberry Pi 3

Camera Module

python 3.9

PyCharm

Language environment

TensorFlow

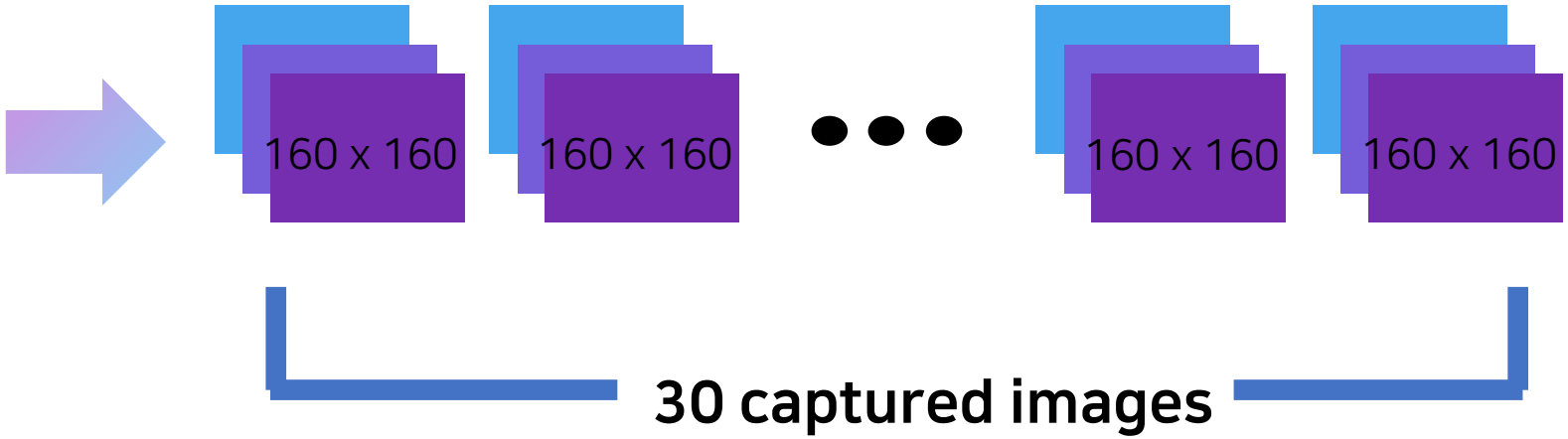
Keras

CV2, OS,
imgezmq, numpy

Packages

video ndarray extraction

1 video



- Resize all images to 160x160
- Convert to npy files on (30, 160, 160, 3) arrays per image and save

Model Training– MobileNet + LSTM

```
# 모델 테스트

result=model.evaluate(X_test_reshaped, y_test)
23/23 [==============================] - 21s 893ms/step - loss: 0.1390 - accuracy: 0.8319

#모델 정확도, 손실률 출력

for name, value in zip(model.metrics_names, result):
    print(name, value)

loss 0.139018326997756 96
accuracy 0.831944465637207
```

- Accuracy : 0.8319
- Loss: 0.1390

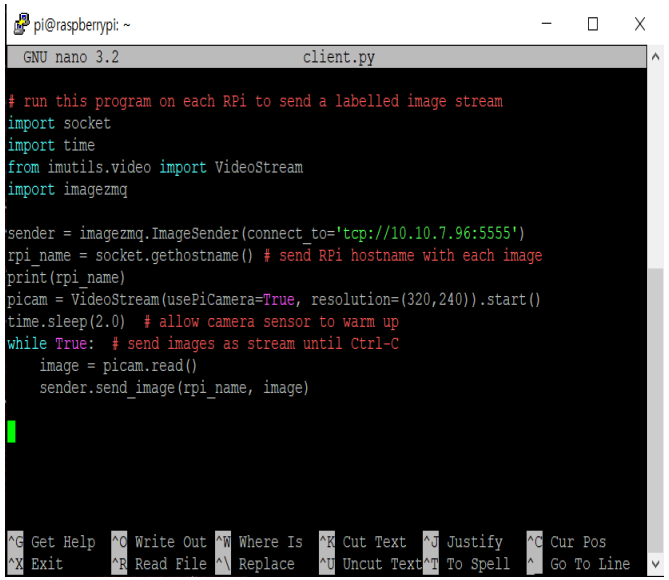
Model Functional Check Video → output video

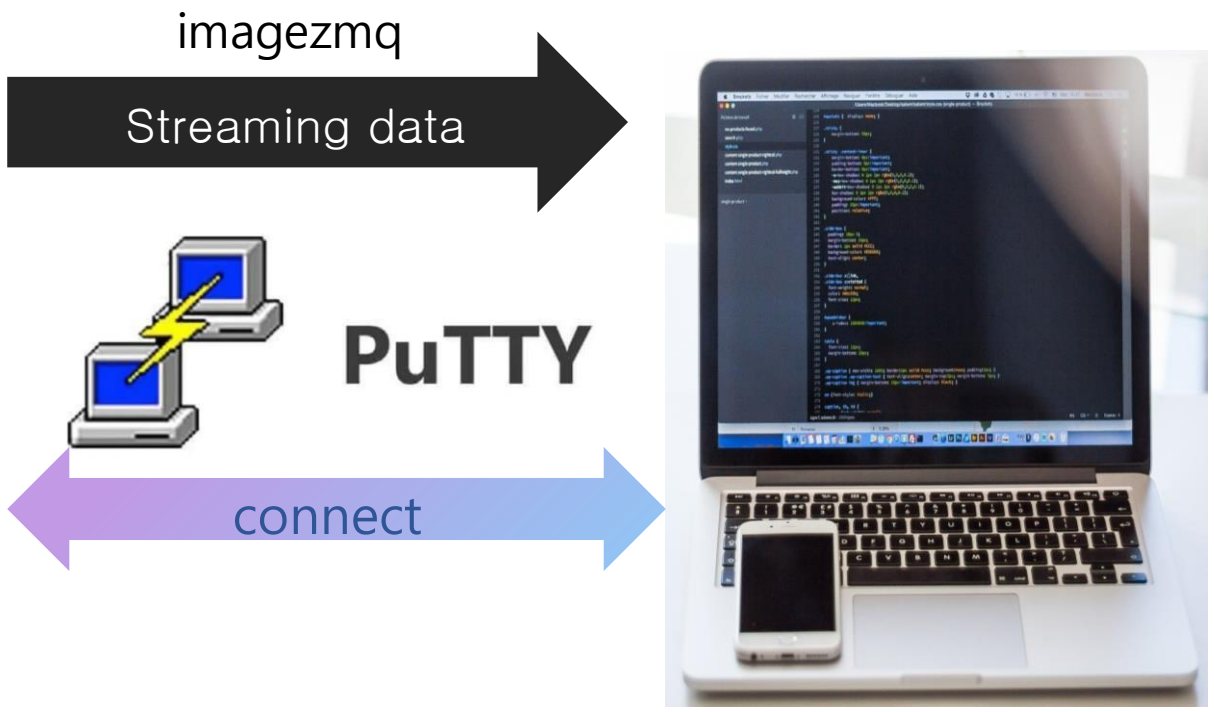
If there's no violent scene,
Show 'Normal'

If there's violent scene,

Show 'Violence Alert!'

Raspberry Pi camera to computer





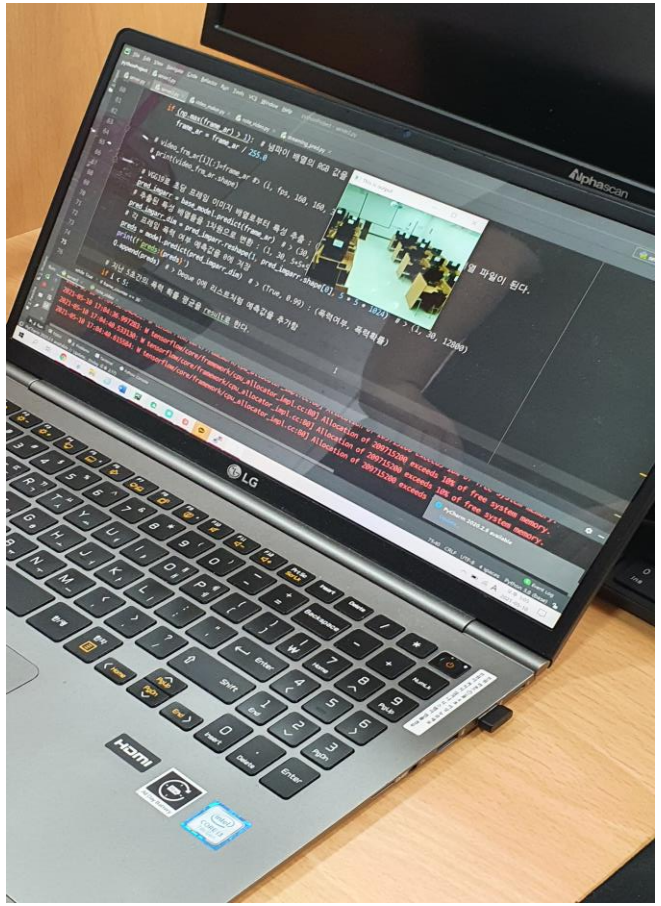
RaspberryPi

To connect the raspberry pie to the laptop,
In an environment that shares the same network (WIFI, ip), you must use the PuTTY program to connect your device.

CCTV setup situation

Improving angle and shaking

Typical CCTV location



Real-time transmission and classification