Development of Falling Accident Response System for the Elderly people

TIMI-RUM

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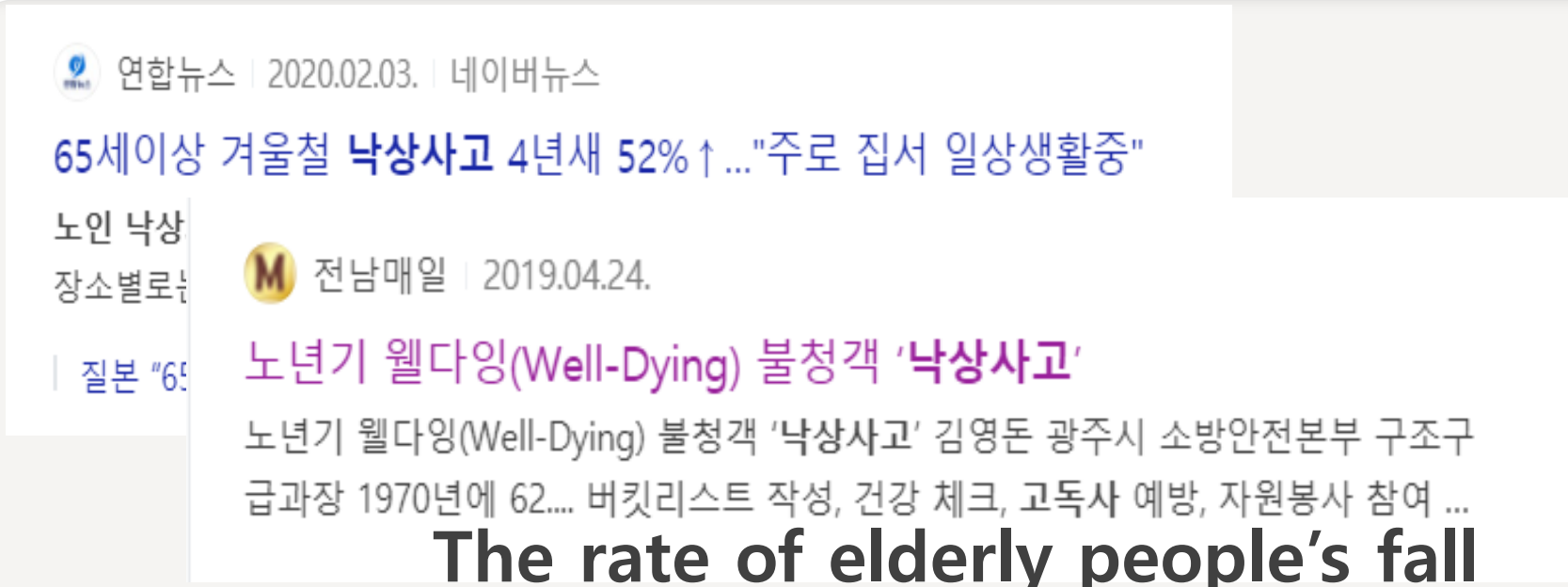
1. Project Background

NECESSITY OF PROJECT



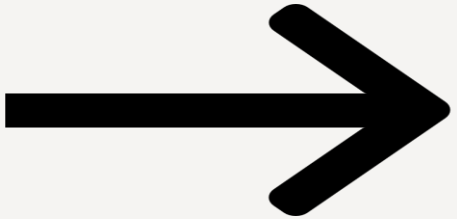
The rate of elderly people's fall accidents has increased.

However, elderly people living alone often suffer from absence of appropriate response system if accidents occur.

2. Project Progress

IDEA

Detect falling accident



Show the cam screen to protector

IDEA MATERIALIZATION

Check point

IMAGE RECOGNITION

Image recognition using YOLO v3

SOUND DETECTION

Sound detection using python

DJANGO & REACT

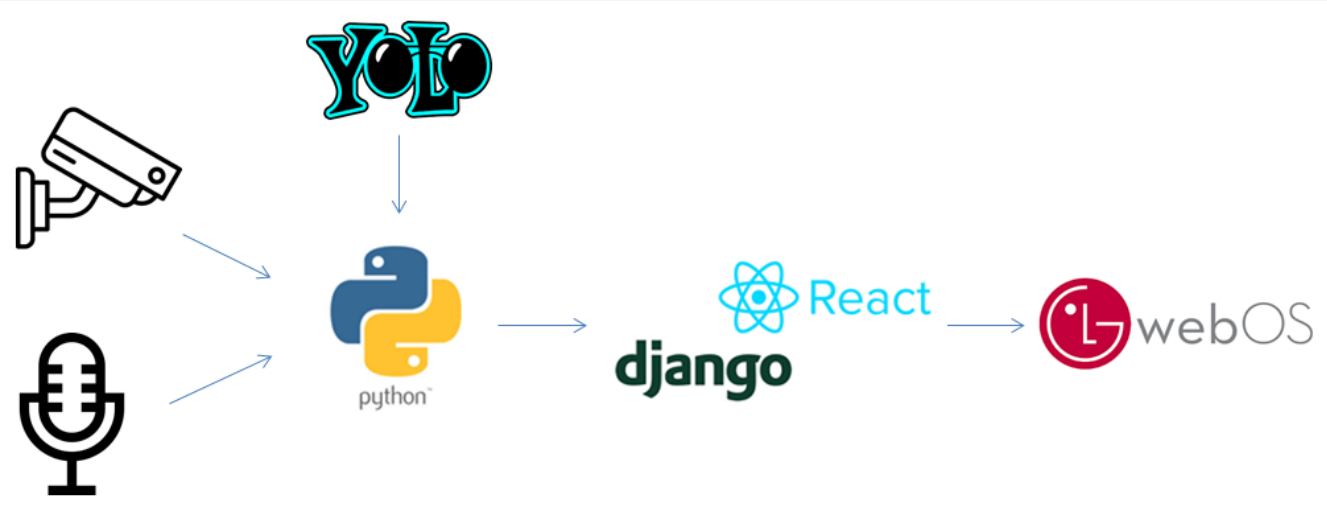
Able to check the result on web page

STT & TTS

Inquiring to user about the seriousness when falling is detected

SYSTEM OVERVIEW DIAGRAM

- Falling image
- Falling sound

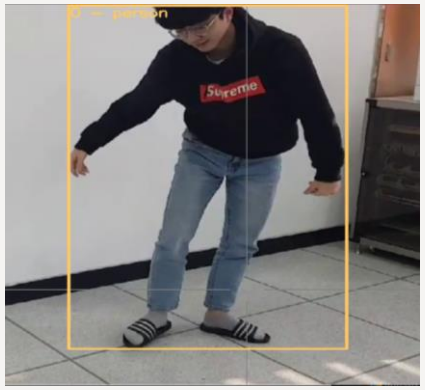


IMPLEMENTATION PLAN

1. IMAGE RECOGNITION
2. SOUND DETECTING
3. JUDGMENT OF FALLING ACCIDENT
4. SEND JUDGMENT TO REACT
5. IMPLEMENTATION WEB WITH REACT

Labeling

Labeling two posture (general, falling) using YOLO-MARK



General

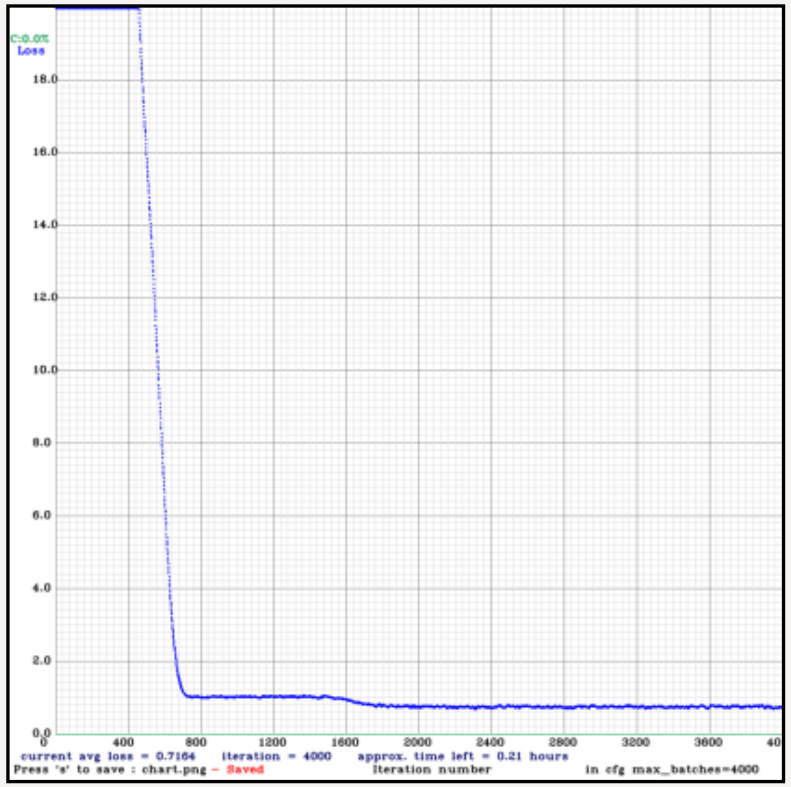
Falling

IMPLEMENTATION PLAN

Training

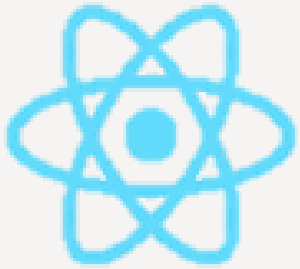
Training dataset using YOLO v3

Dataset is composed to 20,000 labeled photo



Loss Graph

USAGE OF WEBOS COMPONENT



REACT.JS

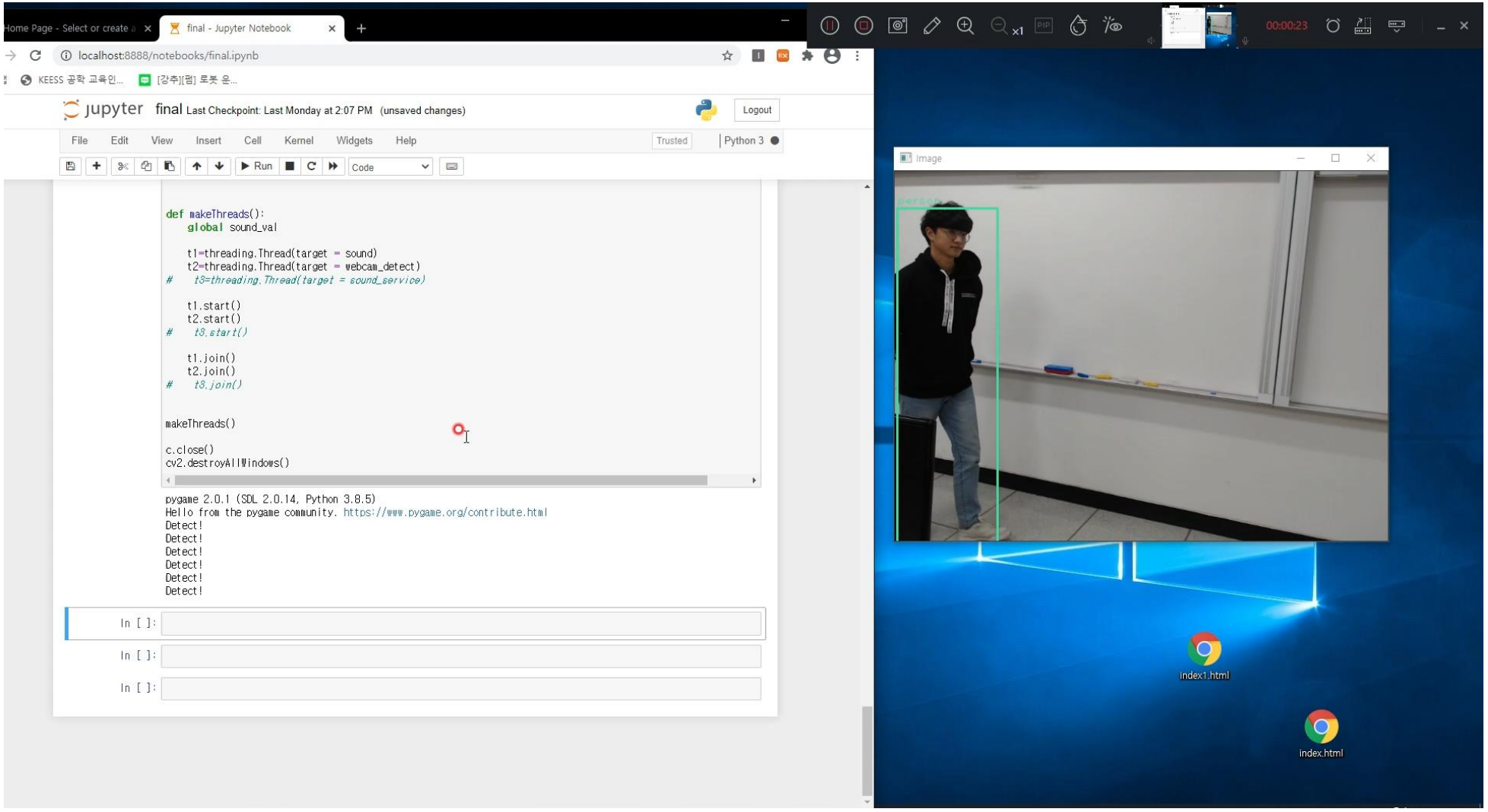
For web implementation

CAMERA MODULE

For image recognition & sound detecting

3. Results of Project Execution

TRAINING RESULT



WEB PAGE - Home

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Home Result

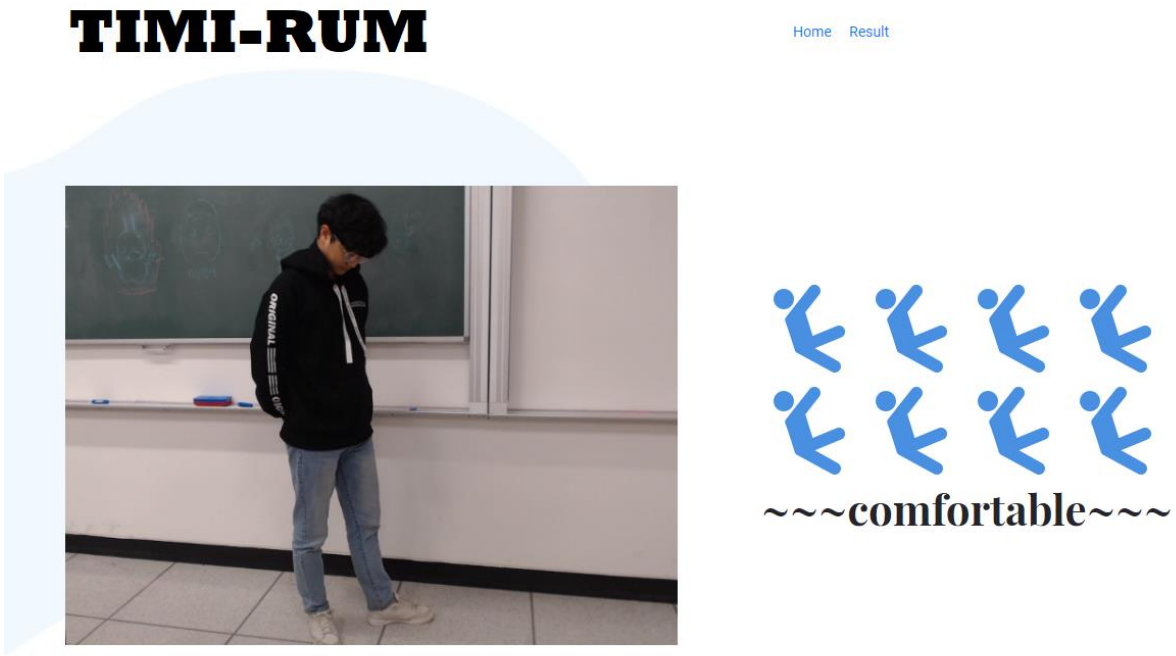
Falling Accident Response System for the Elderly people

As the number of single-person elderly households increases these days, there are many cases in which the situation worsens as appropriate measures are not taken in the event of falls.

The project is carried out with the aim of developing a response system that can detect and report in the event of a fall accident.

GO TO SHOW RESULT

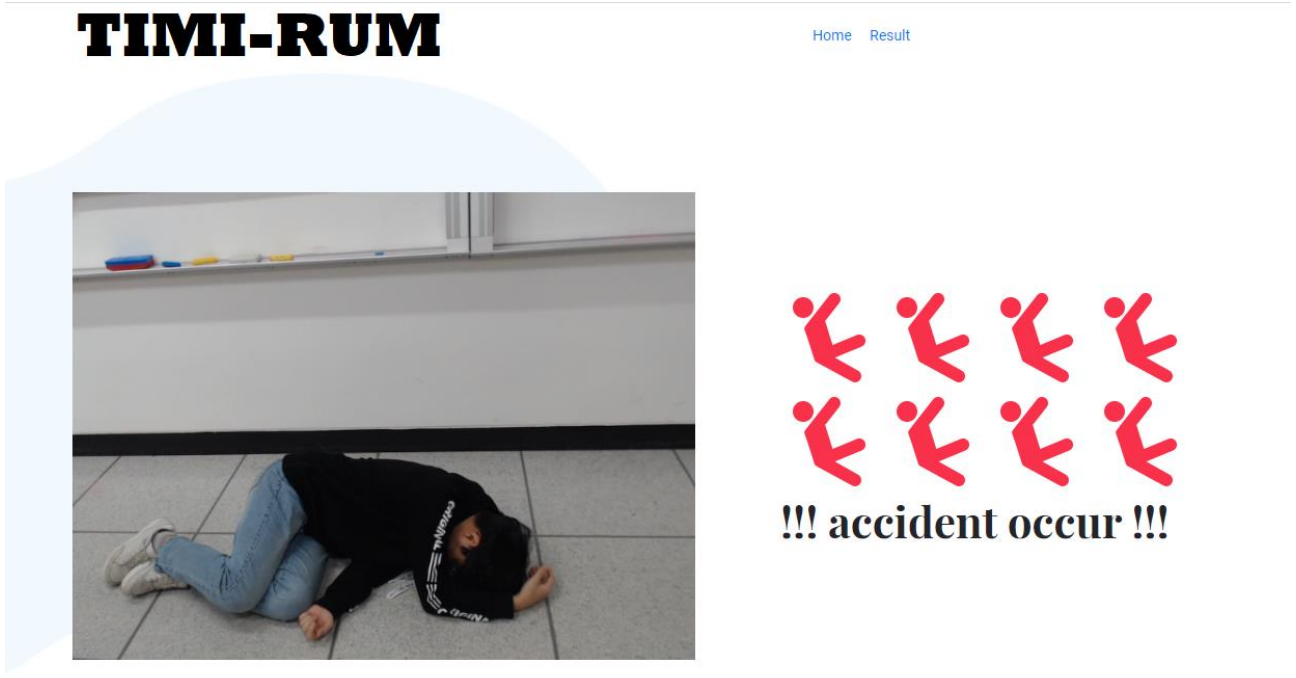
WEB PAGE – Result / Comfortable



Level 0 – Nothing Happened

The state that falling is not detected yet

WEB PAGE – Result / Accident Occur

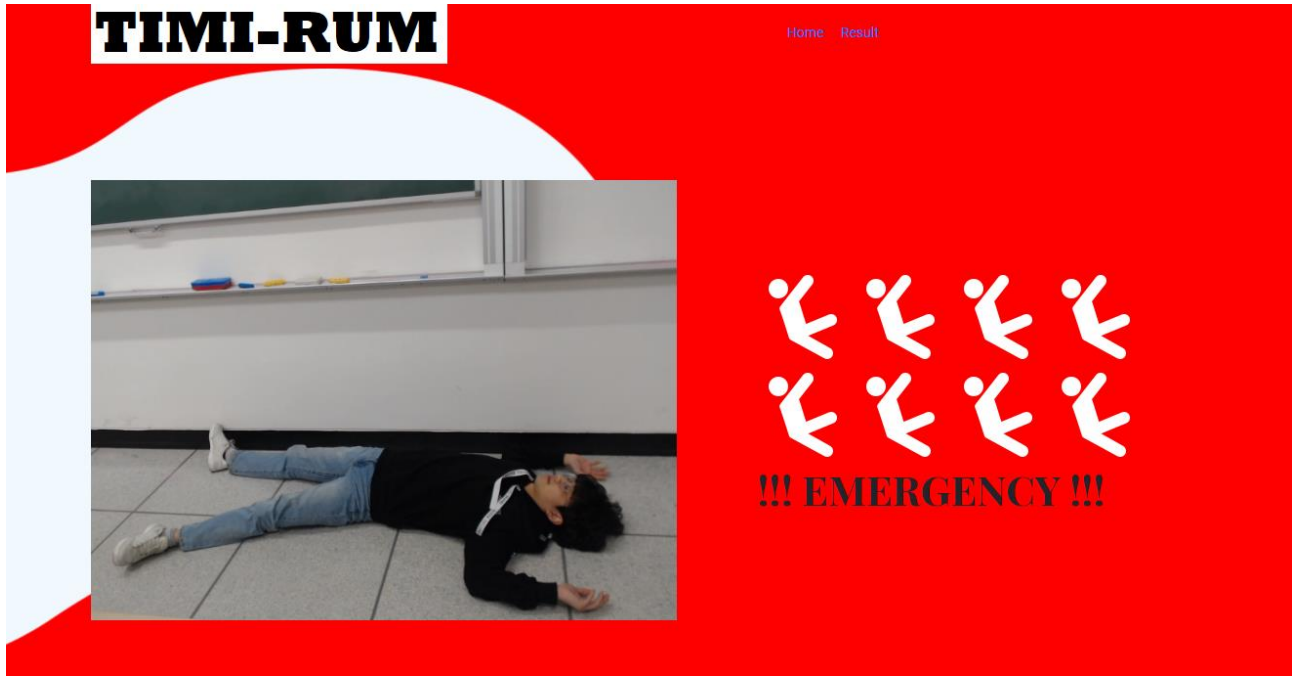


Level 1 – Falling Detected

Falling is detected both web cam screen and sound occurrence at the same time

System ask whether help is needed

WEB PAGE - Result / Emergency



Level 2 – Help is needed

If the person say yes, then in web page, design is changed to red, and alarm is played

THANK YOU!