Smart IR Thermal Surveillance For Human Temperature
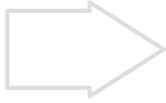
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System proposal overview

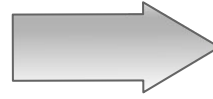- **Target Development**

KIS 80/160 → Face detection + Thermal Check → Field Application

1. **Whole Face Temp. check**
   * Head , eyes, nose, neck, mouth

2. **Individual temp. database for personal health care.**

3. **Physical Alert (voice buzzer) for Abnormal high temperature**

- **Hardware Optimization plan**

1. Two way calibration
   → **10 ~ 90 degree & 30 ~ 50℃ to be same accuracy as single point heat checker.**
   → **Comparison with regular IR human temp. checker.**
2. Temperature accuracy
   → **Target tolerance : ± 1 ℃**
   Display resolution : 0.01 ℃
3. RJ45 direct connection & PoE support
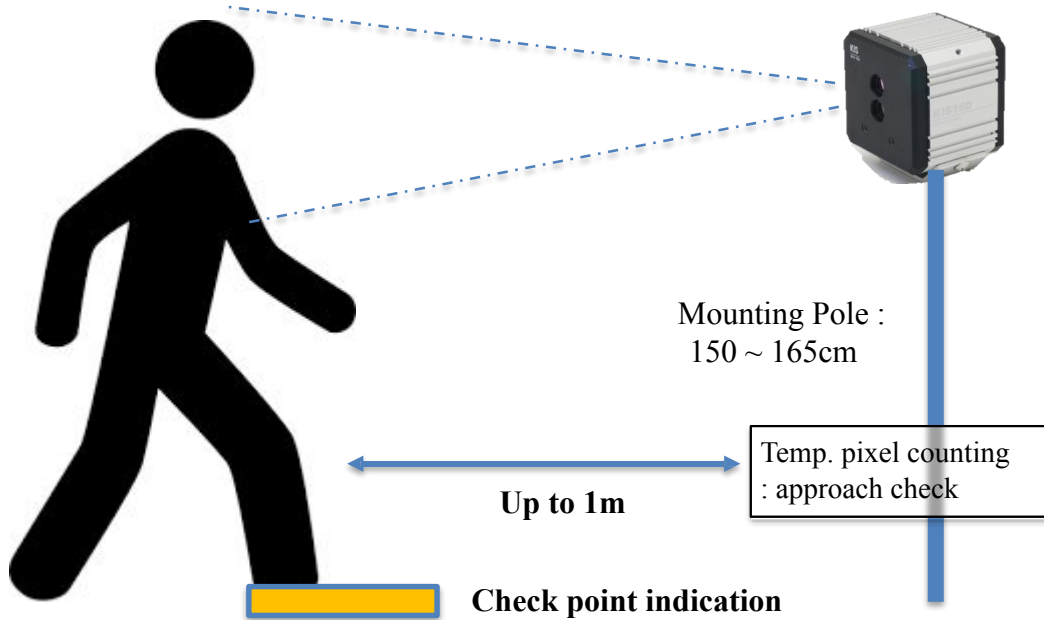
- **Software Specification**

1. Background processing
   → **Remain Human temp. color only for easy recognition**
2. Face detection
   → **Watch whole face and recode**
   → **It would be applicable for personnel database.**
3. Auto targeting for face area
4. Thermal & Real image sink in certain distance (1M)

EXAMPLE OF APPLICATION

Installation condition & SW status

Mounting Pole :
150 ~ 165cm

Temp. pixel counting
: approach check

Up to 1m

Check point indication

- **Temperature Check Scenario**

    1. **Stop at checkpoint 1 ~ 2 sec**
    2. **Check whole face & parts temperature**

    3. **Notice temperature status**
        → **Normal , High,**
    4. **Guide by Comment (Example)**
        → **Please stop at the checkpoint**
        → **"You temp. is Okay" or "Your temp. is high, please check with Doctor."**
    5. **Let people check by themselves and do as guide comment**

System consisting for face temp. detection

Thermal Camera

KIS160/80-FT

Two way calibration (General + Human range) to reach 0.2 ~ 0.5 tolerance
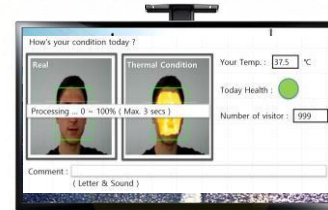In human temperature range.

Application SW

Dedicated SW for Face temperature detection

Auto detection & checked data logging for Human Face & temperature
In excel format.

Operation System

How's your condition today ?

Real	Thermal Condition	Your Temp. :	37.5	℃
Processing ... 0 ~ 100% (Max. 3 secs)		Today Health :	●
		Number of visitor :	999

Comment : _____
(Letter & Sound)

TV stand for monitoring for people who is checking Temperature.
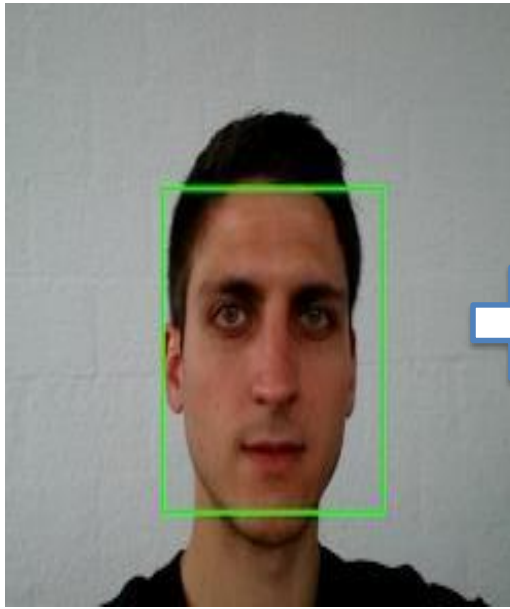
728 mm

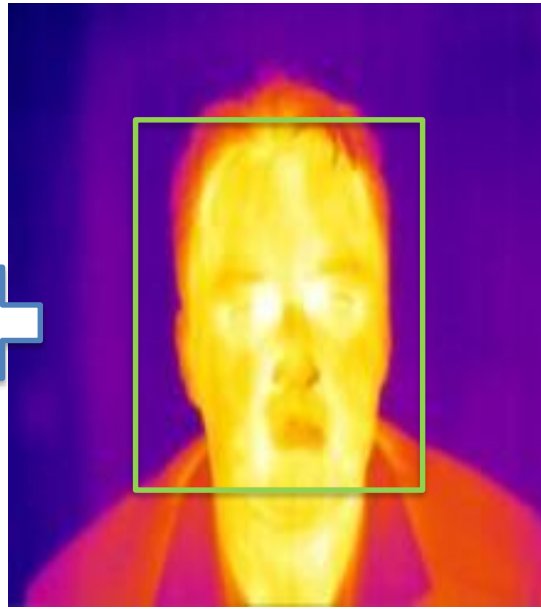478 mm

435 mm

32inch Monitor with speaker

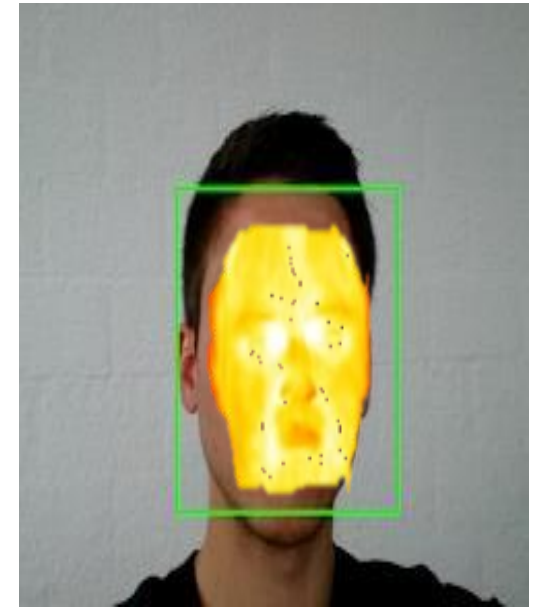Intel Atom processor 3Ghz mini PC with embedded OS

Face temperature detection

Real Image

**Thermal image
position sink with real image**

**Temperature
Marking Overlay**

WORKING PROCEDURE

Target : Check Top 10% of temperature pixel in face area to decide the threshold temperature value for alert

1. Mark detection area automatically with real image
2. Temperature mark overlay for easy recognition for checked people
3. Improve stability of face recognition with several other functions such as eyes detection and frame marge etc.
4. Make log file for real, thermal image with measured value for reports and analysis & further development

Actual development status – 2ⁿᵈ version

Particial Overlay

Function selection

Overlay Blending Percentage

Face detection Setting

Behavior guide
Alert Comment

Top, Min, Avg Temperature