

RNGATS

Performan
assurée.
TECHNOLOGIE ET CON

BATMAN-EBT

Experiments

2020/11/19 – 2020/11/20

Experiment – November 19-20

The first experiment conducted in **November 19-20**.
Over **15 staffs** participated in the experiment.

The initial setup in the designated location took around **2 hours** involving:

1. Setup equipment and prepare power cables.
2. Ensuring safety measures including taping the power cables on the ground to avoid accidents, making sure the location and stability of tripods and surrounding objects.
3. Turning on the equipment.
4. Waiting for thermal camera (20 min) and external reference (5 min) to get ready for the measurement.
5. Setting the location of external reference on the system.
6. Checking the threshold and camera's settings before the experiment.
7. Executing the system.
8. Conducting system tests to ensure the system availability.

OBJECTIVES

Evaluate the measurement and system performance

Get the feedbacks of participants about the user interface

The system reliability and performance were tested. The system ran for around 7~8 hours to:

- Check whether the system performance stay steady over time.
- Check for possible system bugs during the execution.



Session 1 : Evaluate system measurement

The participants were asked to read the **guideline** first and then stand in the designated location for measuring their body temperature.

During the session, the body temperature were measured for each participant. Also, the measurement doublechecked with another device for comparison purposes.

BATMAN EBT

TORNGATS

AVANT LA MESURE, ENLEVEZ:

- DES LUNETTES
- MASQUE
- TOUT AUTRE OBJET QUI PEUT COUVRIR VOTRE VISAGE

RESTEZ DERRIÈRE LA LIGNE VERT AU SOL.

MERCI POUR VOTRE PARTICIPATION.

PRIOR TO MEASUREMENT, REMOVE:

- GLASSES
- MASK
- ANY OTHER OBJECT THAT MAY COVER YOUR FACE

STAY BEHIND THE GREEN LINE ON THE FLOOR.

THANKS FOR YOUR PARTICIPATION.

EXPERIMENT

TORNGATS @ BATMAN-EBT

Visible

TORNGATS

Targeted Region

37.41
± 0.05
Temperature

- Mask Detected! ❌
- Face Detection ❌
- External Reference ✅
- Fever not Detected ✅

Temp 37.41

Fever not detected!

Face not detected!

External Reference detected!

TORNGATS @ BATMAN-EBT

Visible

TORNGATS

Targeted Region

37.13
± 0.05
Temperature

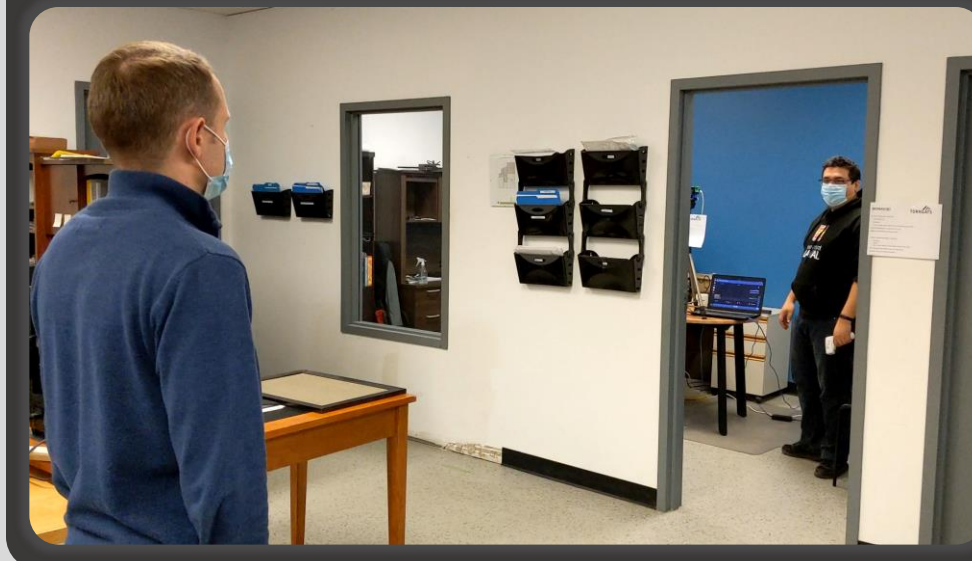
- Mask Detected! ❌
- Face Detection ❌
- External Reference ✅
- Fever not Detected ✅

Temp 37.13

Fever not detected!

Face not detected!

External Reference detected!



ACCEPTABLE

NOT ACCEPTABLE



★ **LOOK
FORWARD**



**WEAR
EYEGASS**



★ **LOOK
DOWN**



**NOT LOOK
FORWARD**



**WEAR
MASK**

CONDITIONS

RELIABILITY TEST

LOOK FORWARD



LOOK DOWN

In this test, repetitive measurement has been collected from users to indicate how reliable is the system measurements.

Three person were involved in this test.

Person	STD	MIN	MAX	State
P1	0.106	36.72	37.03	LOOK DOWN
P1	0.027	36.82	36.9	LOOK FORWARD
P2	0.043	36.83	36.97	LOOK FORWARD
P3	0.160	37.59	38.11	LOOK DOWN

CONCLUSION

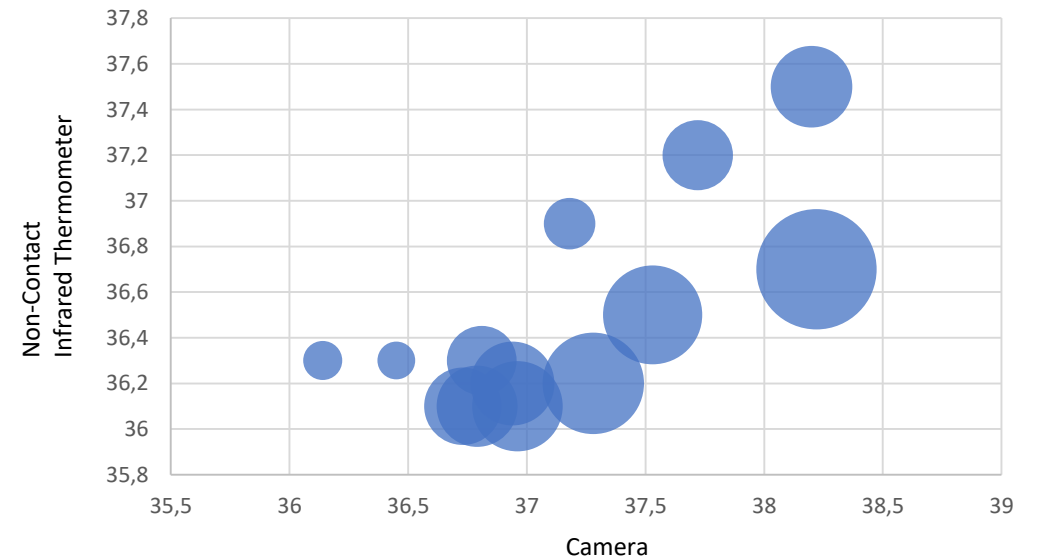
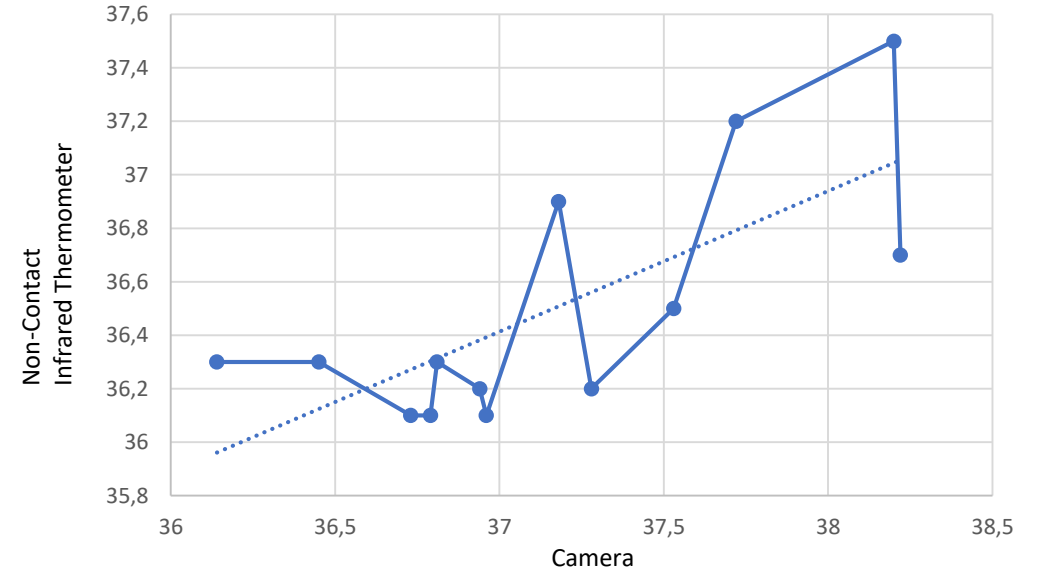
User needs to look directly to the camera to provide more stable and reliable results.

The system shows significant results in the matter of stability and reliability.

RELIABILITY TEST

External Reference	38	Difference	
Camera	37.98 – 38.2		0.2
Non-Contact Infrared Thermometer	37.5		0.5

Person	Camera	Ref.	Diff.
1	37.18	36.9	0.28
2	36.14	36.3	0.16
3	37.53	36.5	1.03
4	38.22	36.7	1.52
5	36.45	36.3	0.15
6	36.81	36.3	0.51
7	36.73	36.1	0.63
8	36.96	36.1	0.86
9	37.28	36.2	1.08
10	36.79	36.1	0.69
11	36.94	36.2	0.74
12	37.72	37.2	0.52
13	38.2	37.5	0.7
Mean			0.682
Median			0.69



Session 2 : User Feedback

During this session, the participants were asked to sit behind the system and work with the system. During the session, the system was explained to each participant and then they were asked to provide feedback.

Six person participated in this session providing user feedbacks.

All participants had positive opinion about the system and two of those provide some comments to improve the system.

Person 1	Person 2
The measurement indicators become bigger to be easy to find from distance.	Some of the items have different icons in the application, it should be the same icon for one item in all the system components
Visual-chips like fever detection should be more noticeable. It can be replaced by icons	Icon indicating the temperature should be changed to provide better sense to the user.
The fever detection icon should be more noticeable.	Icon should be used instead of text.